House Prices, Stock Returns, National Accounts,
and the Riksbank Balance Sheet, 1620–2012

Historical Monetary
and Financial Statistics for Sweden,
Volume II:

House Prices, Stock Returns, National Accounts, and the Riksbank Balance Sheet, 1620–2012

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1.1. Background to the project

This book is the second volume in the research project run by Sveriges Riksbank, *Historical Monetary and Financial Statistics for Sweden, 1668–2008*. The first volume, published in 2010, is entitled *Historical Monetary and Financial Statistics for Sweden: Exchange rates, prices, and wages, 1277–2008*, and deals with, e.g., exchange rates, consumer prices, and wages, from as far back as the Middle Ages to the present day. The present Volume II includes chapters on historical house prices, GDP, stock returns, and money supply from the 17th century onwards. This introduction reiterates some of the points made in the corresponding chapter in Volume I and presents the contributions to this volume.

   The Riksbank research project – undertaken by a group of Swedish scholars from the disciplines of economic history and economics – has compiled existing evidence and assembled new data from historical sources. The overall ambition has been to construct time series that are both consistent over time and adjusted so as to fit current data definitions as closely as possible. There is a great difference between compiling contemporary statistics, for which data are often readily accessible, and historical statistics, where data availability is much more problematic. Linking long-run time series requires not only an understanding of their economic importance, but also a thorough knowledge of the relevant historical circumstances when the data

were generated. Needless to say, this poses great challenges for the researchers when compiling the series.

History offers empirically oriented economists an indispensable substitute for scientists' laboratories. Having comparable series that span extensive time periods will greatly facilitate long-term analysis of a number of important issues. For example, understanding the relationship between money supply and inflation, or detecting specific long-run patterns in the macro economy, require that data are consistent and comparable across time periods. Economic forecasting can be based on consistent historical series that go a long way back in time instead of just the last decade or so. Moreover, our comprehension of the causes and effects of financial crises arguably relies on historical analysis, e.g., by comparing the course of events leading up to the Great Depression around 1930 and the recent financial turmoil starting in 2007.

Our intention with the series generated within this project is that their use will not be confined to academic research. People working with policy analyses, wishing to draw conclusions from historical comparisons, as well as teachers and students at universities and high-schools, should find much useful material here. In order to make the database as accessible to as many as possible, all data and descriptions presented in both volumes, as well as additional material used to construct the series, are freely available on the web site of the Riksbank.[1]

A main source of inspiration for this project is a similar recent project at Norges Bank, the central bank of Norway. In the fall of 2004, the bank published *Historical Monetary Statistics for Norway 1819–2003*, with Øyvind Eitrheim, Jan T. Klovland and Jan F. Qvigstad as editors. Together with a second volume published a few years later (Eitrheim, Klovland and Qvigstad, 2007), the Norwegian project has generated considerable new macroeconomic historical evidence with long-run series on prices, money, banking statistics, interest rates, exchange rates and GDP. Most importantly, all series were made freely available on the bank's internet site for scholars, students and the public to use at will.

While the Bank of Norway's project is arguably unique in scope and explicit focus on building a broad historical statistics database, there are other previous contributions with similar ambitions. For example, the seminal contributions of Friedman and Schwartz (1963) and Cagan (1965) in describing U.S. monetary history greatly increased the general knowledge of and interest in the historical development of monetary and financial systems. Following their lead, subsequent studies of monetary histories in other countries are, e.g., Jonung (1975) on Sweden and Capie and Webber (1985) on the United Kingdom.[2]

Why should the Swedish Riksbank take on the responsibility to build up a new public-access database with historical monetary and financial statistics? There are

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1   The address to the database is http://www.riksbank.com/research/historicalstatistics (English version) and http://www.riksbank.se/forskning/historiskstatistik (Swedish version).

2   There are some other previous attempts to compile international historical statistics, e.g., Flandreau and Zumar (2004).

several reasons for this. First, building and maintaining a scientific database is a public good that individual researchers cannot be expected to provide. As scholars tend to move on to different places or topics, the continuity needed for maintaining a scientific database will be lacking. In contrast, a public institution is better suited to run a database and in the context of a monetary database the Riksbank represents perhaps the most natural "focal point" for the research community. Second, the Riksbank already has long-standing traditions in taking an active part in promoting the Swedish monetary and financial system, as well as gathering information about it. The Riksbank is the world's oldest central bank, founded in 1668 by the Swedish Parliament, with a central role in the monetization of Sweden.[3] Moreover, in the 1920s the Riksbank initiated a research project with many resemblances to ours. Although it was mainly aimed at writing the history of the bank, a considerable part of the undertaking involved assembling historical monetary and financial statistics, including long-run series on prices, interest rates, exchange rates and bank balance sheets (Sveriges Riksbank, 1918–1931). A fourth reason why the Riksbank should take responsibility for a project like this as that it continues where the Bank of Norway started, extending the work on the construction of an extensive international historical statistical database. Hopefully, these early Nordic efforts will inspire central banks in other countries to begin their own similar projects.

1.2. Contents of this volume

The other seven chapters present novel time series evidence collected exclusively for this project. Each chapter provides the reader with a careful description of the making of the series, an introduction to the series as such, and how they have evolved over time.

The major contribution of the chapters is the detailed assessments of the construction of the series. This includes providing details on how and from where the underlying data were assembled but also to what extent the series have been adjusted so as to ensure consistency and comparability over time. In many cases, the underlying data come from different sources and may even differ somewhat in their definitions, depending on how they were generated in the first place. For example, historical national accounts have undergone a number of revisions over time, not least because the international guidelines and the national accounts published by Statistics Sweden have also changed. The series of prices of residential property are not comparable over time, and are based on different types of property and geographic coverage. This is also complicated by rent regulation and the dominance of different forms of ownership over time.

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3   One can, of course, discuss whether the Swedish Riksbank was the first central bank in a modern sense. The Bank of England was established later, in 1694, but carried out more central bank-like practices, such as being lender of last resort, earlier than the Riksbank (Brisman, 1918).

Götaplatsen in central Göteborg. Chapter 2 presents a historical real estate price index for Göteborg.
Source: Wikimedia.

1.3. Chapters 2 and 3: Price indices for residential property in Göteborg and Stockholm

Chapters 2 and 3 present price indices for residential property in Göteborg and Stockholm, respectively. The work has been greatly aided by a similar project in Norway, where housing prices were obtained for four towns from 1819 onwards. Øyvind Eitrheim and Solveig K. Erlandsen (2004) write that series which go so far back in time are rare internationally. Their material is based on an extensive empirical compilation, consisting of more than 21,000 sales. The index is not national but a weighted average for four towns. For Sweden, we can only present series for two cities, and for a shorter period, but the material is pioneering, since no data have previously been provided for these two cities that stretch back so far in time.

In Sweden there is an ongoing discussion about to what extent the substantial price increases since the early 1990s are generating a housing bubble. A longer time horizon can add significant weight to this discussion. Even so, long-term analysis is not simple.

Designing a price index for housing is complicated not least by the difficulty in measuring qualitative changes. Chapters 2 and 3 counterpoise two methods: the

View over Southern Stockholm (Södermalm and Stadsgården) from Kastellholmen. Painted in 1866 by Christian Fredrik Svensson (1834–1909). The series of real estate prices for Stockholm presented in Chapter 3 starts in the following decade.
Source: Stockholm City Museum.

repeated sales method and the sales price ratio method. They both aim to hold quality constant by following the same properties over time. However, the quality of a particular property may not be constant over time. As a property ages, its value declines due to depreciation but this may be counteracted by renovations and other changes. Often, as in Chapters 2 and 3, the assumption is made that the former effect cancels out the latter. This is questionable but there is no simple solution to the problem.

Another factor that complicates long-term analysis is that prices developed differently for different types of property. Due to the regulation of rents, prices for apartment buildings (for renting) were less favourable for the owners than prices for (owner-occupied) houses and are not truly market prices. The series presented up to 1957 is mostly comparable to the series of apartment buildings from 1957 onwards.

Another issue is how to deflate residential property prices, and which deflator yields stationary series. In Figure 1.1 the house price index, a geometric average of Stockholm and Göteborg, is deflated by four other indices: the Consumer Price Index, the cost-of-building index, the cost-of-building per square metre and nominal GDP per capita.

A common view is that in the long term, residential property prices, and the cost

Building site in Stockholm around 1900.
Source: Photo by Anton Blomberg (1862–1936). Stockholm City Museum.

of producing new residential properties, should follow the Consumer Price Index. The price of housing deflated by the CPI does in fact roughly follow the price deflated by the cost-of-building index. It was quite stable from 1957 to the 1990s but the increase from the 1990s onwards has broken that pattern.

Another view is that residential property prices should follow disposable income. This would especially be the case if land is both a scarce resource and the main component of the property price. An indicator of disposable income could, for example, be GDP per capita. The prices of houses deflated by GDP per capita in Figure 1.1 give a completely different picture from the series deflated by the CPI and cost-of-building index. It is the mid-1980s and the mid-1990s that represent a dip, while the picture since the mid-1990s is just a return to the level in 1957.

A final series to consider is the property price deflated by the cost-of-building per square metre. This series has been closer to the one deflated by GDP per capita, and the level in 2012 was actually below that in the late 1970s. Interestingly, the cost-of-building per square metre increased 116 per cent more than the cost-of-building index between 1957 and 2012; quality per square metre (the building cost per square

metre deflated by the cost-of-building index) more than doubled in this period. An important factor behind the high prices of residential property in the early 2010s is the high cost of building one square metre of living space. If indeed residential property prices did exceed the cost of building by a certain margin, there would be an increase in building activity, which would again exert downward pressure on residential property prices. However, the level of building activity in Sweden has been very low since the economic crisis of the 1990s.

Figure 1.1: *The house price index, geometric average of Stockholm and Göteborg, deflated by four other indices, 1957–2012 (logarithmic scale).*
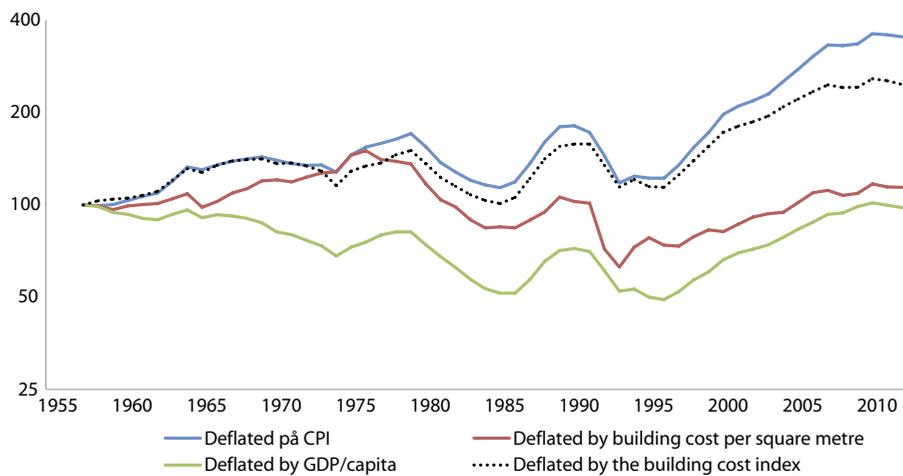
Sources: Chapters 2, 3 and 4 in this volume, Edvinsson and Söderberg (2010).

Figure 1.2 presents similar time series, but for apartment buildings (for renting), and goes back to 1875. Due to rent regulation, prices of apartment buildings were less favourable for the owners than house prices since the latter reflected market conditions to a greater degree. In 2012 the series deflated by the Consumer Price Index was only slightly above the level in the early 20th century, while the series deflated by the cost-of-building index was slightly below. The series deflated by GDP per capita displays a continual deterioration between 1900 and 1980, and a small rebound since 1980, but the level in 2012 was only one tenth of the level around 1900. This clearly shows that living space was much less affordable earlier in time, even though the trend has been reversed since the 1990s.

Figure 1.2: *The price index for apartment buildings, geometric average of Stockholm and Göteborg, deflated by four other indices, 1875–2012 (logarithmic scale).*
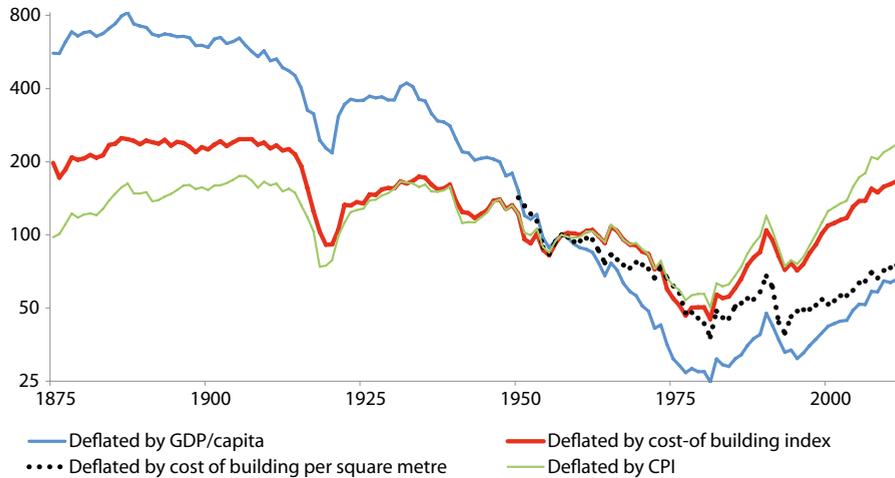
Sources: Chapters 2, 3 and 4 in this volume, Edvinsson and Söderberg (2010).

1.4. Chapter 4: The Gross Domestic Product of Sweden within present borders, 1620–2012

The chapter on GDP presents a series that goes back almost four centuries. It discusses and presents the latest revisions to Swedish historical national accounts. An ongoing project, involving Rodney Edvinsson (author of the chapter), Olle Krantz and Lennart Schön, is making further updates of Swedish historical national accounts, but the results have yet to be published.

The main revisions to historical national accounts that are presented in the chapter are a new series of agricultural production and the inclusion of home industries. This has particular relevance for the agricultural community. Harvest fluctuations were the main determinant of economic activity's rhythm, and reliable harvest data are essential for the construction of historical national accounts in this period. Up to the 19th century, home industries accounted for a substantial part of industrial production and their inclusion is therefore crucial for this period.

The chapter shows that in terms of GDP per capita, growth was slight up to the mid-19th century. The main factor behind economic growth in the early modern period was the increase in the population, which in itself was an achievement for an economy that still possessed certain Malthusian characteristics. Since the 1850s, GDP per capita has increased continually, albeit with many considerable medium and short-term fluctuations. The GDP series also puts the most recent economic crisis in a longer perspective. Although the decline in GDP in 2009 was very severe, history knows of many economic crises of the same or a larger magnitude.

Peasant interior in the winter. Painting by Carl Larsson from 1890. Home industries stood for a large part of GDP in the 19th century. The exclusion of home industries from GDP gives a biased picture of the transformation from agrarian to industrial society, which is why the international guidelines recommend their inclusion.
Source: Wikipaintings.

1.5. Chapter 5: Fiscal statistics for Sweden, 1670–2010

Chapter 5 by Klas Fregert and Roger Gustafsson presents newly compiled data on public debt and other fiscal dimensions of Sweden's central government since 1670. The main focus is on reconstructing the historical evidence on central government debt, state expenditures and revenues, but also on discussing how these series may contribute to our assessment of the links between fiscal and monetary policy developments. The measures constructed and presented are broad and meaningful, and correspond to those used in today's budgetary system.

One of the most important series presented in the chapter is shown in Figure 1.3 below: the level of central government debt in relation to GDP in Sweden over the past 340 years. An inspection of the series shows that wars were a notable factor for public indebtedness. Even during the Second World War, when Sweden was not a belligerent country, government debt as a share of GDP more than doubled in the course of just a few years. At the same time, the impact of wars seems to be less marked than the dramatic debt spikes in the 1970s, 1980s and 1990s. These rapid build-ups of public debt correspond to domestic economic turmoil, particularly in the 1990s with its all-time high of 94 per cent.

Figure 1.3. *Government debt as a share of nominal GDP (B).*
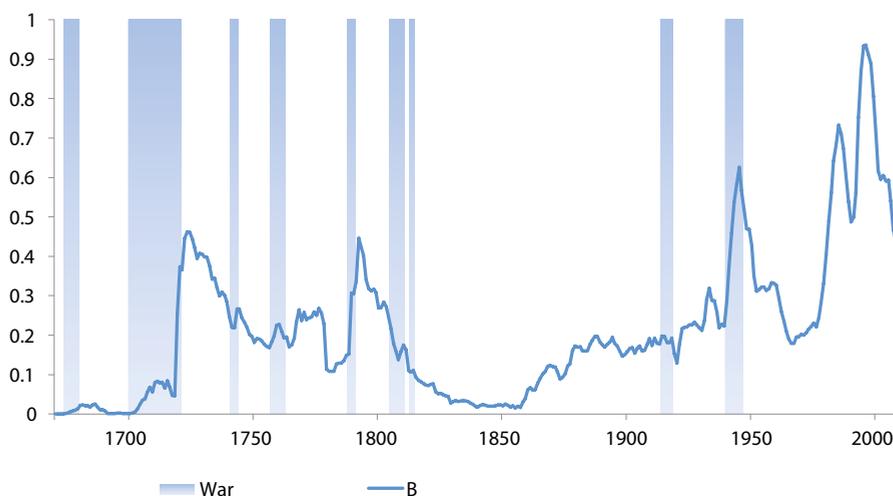
Sources: Chapter 5 in this volume.

Overall, this chapter provides a basis for understanding the long-run evolution of Swedish fiscal outcomes and presents key ingredients for a serious assessment of Sweden's long-term development. We can now draw more well-founded lessons from past policies concerning these variables.

1.6. Chapter 6: Swedish stock and bond returns, 1856–2012

Chapter 6 presents evidence on the evolution of stock returns and interest rates in the Swedish economy from the 19th century until the present. The stock market evidence is based on trading at the Stockholm Stock Exchange, Sweden's leading secondary securities trading venue ever since its establishment in 1863. Market interest rate data are collected for both long-term and short-term horizons, using various government low-risk securities. In the case of short-term interest rates, the Riksbank's official discount rate is presented, while various government bond yields are used to reflect long-term interest rates.

   The chapter contains lengthy assessments of the quality of the available historical evidence. This entails describing how the series are constructed and how they have been adjusted so as to be comparable over time. Furthermore, the chapter describes the institutional context of the stock and money markets at which the asset prices were quoted. This means regional and national market regulations, listing requirements as well as the market microstructure of the stock exchange.

   Figure 1.4 shows the basic series, which reveal a number of fascinating results. To understand the importance of the long-run returns, imagine a person in 1901 want-

ing to invest 1,000 Swedish kronor (just above an average unskilled worker's annual pay) in either stocks, bills or bonds.[4] The question is: which of these investments would have generated the highest return over the past century until today? Figure 1.4 (and the tables in the chapter) shows that the stock portfolio would be worth 442,000 kronor in 2012, a 441-fold increase reflecting an (geometric) average annual rate of return of 4.2 per cent. The short-term bill investment would be worth about 7,000 kronor and the long-term government bond portfolio 13,000 kronor. The equity risk premium, that is, the additional annual return on risky stock investments over and above the government bill and bond investments, is thus slightly less than two per cent.

A striking finding is the tremendous variation in historical returns in Sweden over the past century. The total stock return since 1901 has indeed been higher for stocks than for bonds, but there are several shorter periods for which the opposite is true. The average annual equity risk premium was negative in five out of the twelve considered decades: the 1910s, 1920s, 1930s, 1970s, and the 2000s. On the other hand, in some eras the equity risk premium has been huge, e.g., in the 1980s it was 18 per cent and the 1990s seven per cent. In fact, Swedish stock returns increased fivefold during the 1980s and another fivefold in the 1990s, an unparalleled increase in the Western world, more than five times the contemporaneous increase in the value of the New York Stock Exchange. Over longer investment horizons, stocks tend to outperform fixed-income securities and for horizons of more than a decade, stocks have outperformed bonds since the 1930s.

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4   Assume that stocks perfectly mimic the market portfolio of the Stockholm Stock Exchange over time and that dividends paid out by corporations are reinvested in the portfolio. Similarly, the bills generate a return equivalent to the Riksbank discount rate (and from the 1980s 3-month bills) and the long-term bonds are the holding period returns of 10-year government bonds, with coupon rents retrieved in the total returns.

Figure 1.4: *Stock, bill and bond return indices, inflation adjusted, 1901–2012*

—Stock price index —Stock return index —Yield on short-run bill —Yield on long-run bond
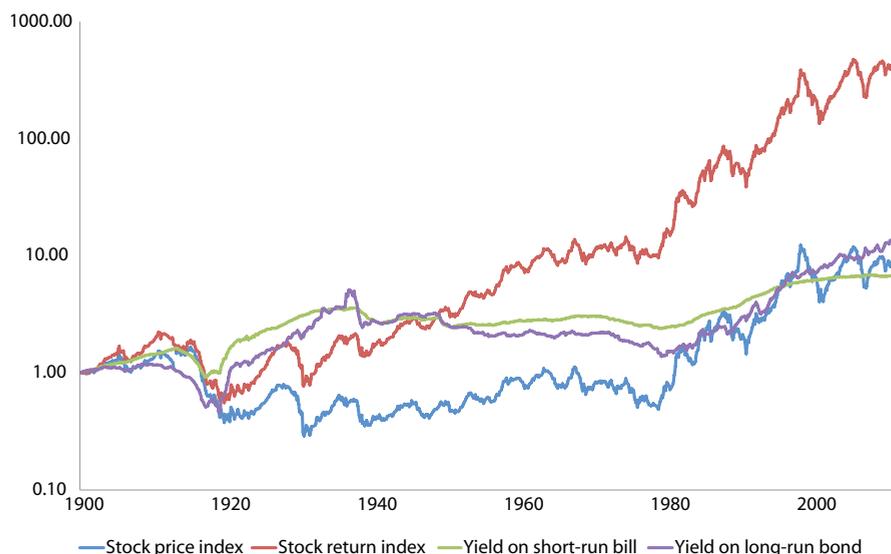
1.7. Chapter 7: Swedish money supply, 1620–2012

A copper plate coin weighing 20 kilogram minted in 1644.
Source: The Royal Coin Cabinet.

Money supply is one of the most central monetary variables. However, drawing the boundary between what is and is not money is highly problematic, since some objects could fulfil some of money's functions but not others. The chapter on money supply discusses the problem of defining money and presents a series of M0 that goes back as far as 1620, and of M3, the broadest measure of money supply that includes bank accounts, that goes back to 1819.

In 1620 money supply consisted of nothing but intrinsic value coins. Banks that could help facilitate market transactions did not exist in Sweden. As described by Edvinsson and Ögren, in the 17th century Sweden was the first country in Europe to issue paper notes, but it was not until the next century that notes replaced coins as the most important means of circulation. In the 19th century the monetization of the Swedish economy reached a new stage, with bank accounts as the most important component of M3.

1.8. Chapter 8: The Riksbank balance sheet 1668–2012

Finally, the last chapter in this volume provides a broad overview of the evolution of the Riksbank balance sheet, with an account of the sources, construction and content of the end-of-year balance sheet data for the period 1668–2012. The Riksbank has previously compiled and published historical monetary statistics. *Sveriges riksbank 1668-1918-1924: bankens tillkomst och verksamhet* (Sveriges Riksbank, 1918–1931), published between 1918 and 1931, deals with the history of the Riksbank and monetary conditions since the establishment of the Riksbank in 1668. This work was produced by the Riksbank's statistical department. Five volumes were published, altogether 2,832 pages. Fregert complements this material by extending the statistical data to 2012. The Riksbank is considered to be the world's oldest central bank. Having its balance sheets since its inception is therefore by itself a unique account of monetary history.

The description of the balance sheet's evolution over the centuries is organized with reference to the explicit, or implicit, Riksbank goals, or guidelines – policy tar-
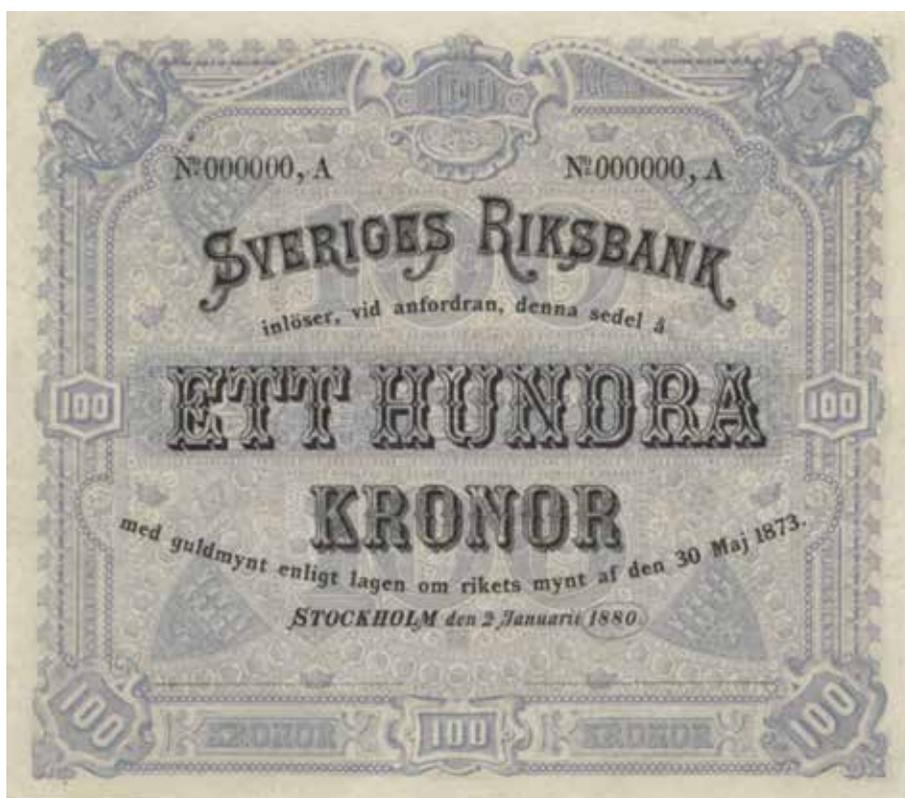
100 Swedish crowns issued as a paper note by the Riksbank. The note was convertible into gold coins weighing 40 gram.
Source: The Royal Coin Cabinet.

gets if you will – as a basis for understanding how changes in the balance sheet have come about. The explicit guidelines are and have been provided by the Swedish parliament, the Riksbank's principal, within the framework of the constitution and in the form of the Riksbank Charter and the Riksbank Act. But effects of financial sector developments in general also play a role for the balance sheet's development, not least in the recent financial turmoil of 2008–2009. Determining the assets and liabilities of a central bank according to operational targets is one thing, but having to adapt to market pressure and economic conditions in general is something else. Using modern terminology, the Riksbank policy guidelines considered by Klas Fregert are: price stability; stability of the financial system; financial intermediation; business cycle stabilization; and seigniorage. The chapter shows that the balance sheet reveals several important shifts in the Riksbank's activity over time.

1.9. A bird's-eye view of Swedish political history from the 17th century onwards

This book covers Sweden's economic history over the past four centuries. Covering such a long period, and attempting to construct various indicators to describe the period's developments is of course not without problems. Anachronisms are unavoidable when making historical generalizations.

One of the most obvious anachronisms in both this and the first volume is our use of the name "Sweden". The historical meaning of the Kingdom of Sweden has changed over time, including the redrawing of geographical borders and constitutional regime shifts that determine the right to issue currency, charter banks and so forth.

Economic history is closely connected with political history. Changing borders usually led to changes in the currency that was used in the affected areas. Establishing a common monetary system is in itself a political process; a recent example is the development of the European Union and the euro. Macroeconomic historical data, such as GDP and money supply, are often constructed for countries within present-day borders. The monetary history of Sweden is also closely connected with the monetary history of other Nordic countries; throughout history there have been several monetary and political unions between various Nordic countries.

The 17th century saw Sweden rise from being an undistinguished country to become a great European power. Due to its involvement in the Thirty Year's War, Sweden was transformed into a leader of Protestantism. Sweden's power was partly based on the expansion in mining. A monetary innovation, the copper standard, was introduced in 1624.

From around the mid-17th century up to 1776, Sweden de facto had at least five currencies, three based on silver, one on copper and one on gold. Additional currencies also existed from time to time. It was during this period of multiple currencies circulating alongside each other that the fiat standard arose in Sweden. After 1710 the use of transferred notes expanded significantly. However, the first experience of a

fiat standard, towards the end of the Great Northern War (1700–1721), did not involve paper money, but coin tokens. The quantities of all these types of means of payment are presented in Chapter 7.

The Great Northern War put an end to the Swedish empire. Estonia, Livonia, Ingria and parts of Finland were ceded to Russia. During the Age of Liberty (1718–1772), the monarchy was subject to parliamentary rule (though this was not democratic). The press became considerably more important during this period. We have rich sources for economic statistics from these years, not least the fiscal statistics described in Chapter 5 and the Riksbank balance sheet described in Chapter 8. The Age of Liberty ended with Gustav III's coup d'état in 1772. An absolute monarchy lasted until 1809, when King Gustav IV Adolf, son of Gustav III, was deposed by a new coup staged by radicalized officers, fuelled by Sweden's defeat in its war against Russia. The new Swedish constitution of 1809 was influenced by Montesquieu's ideas of a balance of power. One of Napoleon's marshals, Jean-Baptiste Bernadotte, became king of Sweden as Karl XIV Johan in 1818.

Economically, some of the trends from the 16th century continued into the 18th century. The circulation of fiat money came to dominate money supply, as described in Chapter 7. Population growth, combined with a decline in mining and the loss of incomes from previous dominions, led to stagnation of GDP per capita, as discussed in Chapter 4. Various studies of food consumption show that the calorie intake decreased between the 16th and 17th centuries, followed by little change from the 17th to the 18th century.[5]

In a major currency reform in 1776–1777; the copper standard was replaced by the riksdaler silver coin as the main currency unit in order to stabilize the monetary system. However, paper money continued to circulate, and its convertibility into silver was later withdrawn. Inflation was substantial in the period 1789–1834 but Sweden was not alone in experiencing a monetary crisis during the Napoleonic wars. For example, the Russian and Danish currencies deteriorated more than Sweden's.

Following the loss of Finland to Russia in 1809, Norway and Sweden formed a political union in 1814 which lasted until 1905, when Norway gained full political independence. The union did not involve any monetary homogenization initially. Norway established its own central bank in 1818 and issued its own currency. Later, however, the positive consequences of Sweden's linking its currency to a fixed silver rate from 1834 onwards led to plans for monetary cooperation. Following the introduction of the gold standard in 1873, the krona was introduced as the common currency unit in Scandinavia and a formal Scandinavian monetary union was formed. Throughout the periods with a silver or a gold standard, inflation in Sweden was fairly low (see Volume 1).

As discussed in Chapter 4, in the 19th century the Malthusian trap was avoided thanks to technological developments. GDP per capita started to increase despite a

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5 Morell (1986).

growing population. After 1850, GDP per capita rose more quickly and doubled in the course of the second half of the 19th century. As discussed in Chapter 7, the banking sector expanded rapidly. The Stockholm Stock Exchange was established in 1863. All this was accompanied by major political changes. The struggle between the conservative and liberal political forces came to a head at the end of 1830s and was followed by several important liberal reforms in the period 1840–1866. The guild system was abolished in 1846. Full freedom of trade was introduced in 1864.

The First World War ended the previous century's monetary stability. The gold standard was suspended in 1914, and although it was reintroduced in 1922–1931 and under Bretton Woods in 1951–1971, price stability could not be maintained. Stock returns, residential property and other types of asset experienced a negative development during the World Wars and the inter-war period, but since Sweden avoided participation in war, long-term economic growth was higher than in other Western countries. The economic crisis in the early 1930s was less severe in Sweden than in other countries, whereas the recession in the early 1990s hit Sweden much harder in an international perspective.

The rate of inflation rose to higher levels in the 1970s, 1980s and early 1990s, while the real prices of residential property and shares reached low levels in the 1970s. The 1980s and the crisis in the early 1990s marked a turning point. Stock returns were very high in the 1980s and 1990s. Since the 1990s, inflation has been very low and prices of residential property have risen unprecedentedly. Sweden experienced a sharp economic downturn in 2009 but prices of residential property have quickly rebounded. The discrepancy between the development of residential property prices and other macroeconomic variables has recently raised concerns about a housing bubble, but it is fair to say that consensus has yet to be reached on this issue. Price and macroeconomic stability is a perennial issue. What we can learn from history is that the timing of shocks and major shifts in the economic system tend to be very difficult to predict.

1.10. Acknowledgements

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2.
A price index for residential property in Göteborg, 1875–2010[*]

Jan Bohlin

2.1. Introduction

Historical time series on residential property prices are rare. The longest we know of covers the Heerengracht district in Amsterdam[1] in the period 1628–1973. Eitrheim and Erlandsen[2] have constructed residential property price indexes for four Norwegian cities (Oslo, Bergen, Trondheim, and Kristiansand), as well as a weighted index for Norway based on these cities, for the period 1829–2003. Well known is also Robert Shiller's work on historical price data[3] for the US since 1890.

For Sweden, the official statistical agency, SCB, has collected price data for residential properties since 1952.[4] From 1952 onwards, data on the average sales price appraisal ratio[5], i.e the ratio between the sales price and the appraised taxation value, were published in the periodical *Statistisk Tidskrift*, and thereafter in *Statistiska Meddelanden* and *Statistisk* Årsbok.[6] They are based on certificates of registration of ownership titles (*lagfartsbevis*); atypical observations, such as sales between close relatives and by executive auction, were excluded, since they might not reflect competitive market prices.

SCB's data contain information on the number of sales, average sales prices and

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1 Eichholtz (1997).
2 Eitrheim and Erlandsen (2003); Eitrheim and Erlandsen (2005).
3 Shiller (2000).
4 Residential property is divided here into two groups: apartment buildings (Swedish *hyreshus*) and houses (Swedish *småhus, 1- och 2-familjhus, radhus, etc.*).
5 In Swedish, *köpeskillingskoefficienten*. The term Sales Price Appraisal Ratio is adapted from Bourassas et al. (2006).
6 Hammarberg (1958); Statistisk tidskrift 1959–1962; Statistiska meddelanden R, 1963–1968; Statistiska Meddelanden P, 1969–; Statistisk Årsbok 1970–.

the sales price appraisal ratio. The data are presented separately for densely and sparsely populated areas, as well as for individual counties and regions. Moreover, the same data are presented separately for one-family houses, two-family houses, leisure houses and apartment buildings. The data are commonly also given for separate classes of appraised taxation values.

Based on sales price appraisal ratios, SCB has constructed a price index for residential properties, commencing in 1975. [7] For the period 1952–1974, Bo Sandelin has presented price data collected by SCB. Based on these data, he constructed price indexes for residential properties for 1952–1956[8] and 1957–1974.[9] Since Sandelin did not have any reliable data on the typical change in appraised taxation values between 1952 and 1957 as a result of the general appraisal of taxation values in 1957, he did not estimate the price change from 1956 to 1957.

The data provided by Sandelin and SCB can be used to construct price indexes for residential properties for the entire period from 1952 onwards. As SCB has not presented any such price data for the period before 1952, we need to collect archival data. In this paper we present a new price index for Göteborg for the period 1875–1952 based on such data.

2.2. A price index for residential property in Göteborg, 1875–1957

2.2.1. Background: population growth and residential construction in Göteborg from the mid-19th to the mid-20th century

Göteborg is Sweden's second largest city. Traditionally it has been Sweden's most important port for the importation and exportation of goods. Göteborg was, and still is, also the site for some of Sweden's most important export industries, such as shipbuilding (closed down in the late 1970s), the ball-bearing manufacturer SKF and the car manufacturer Volvo. Another important feature of industrialization and industrial growth in Göteborg in the late 19th century and the inter-war period was the growth of home-market oriented industries such as textiles and garments and food processing. The rapid growth of industries in Göteborg from the late 19th century onwards was naturally closely connected with rapid population growth.[10]

The population of Göteborg, defined as the administrative boundaries of 1974, grew from slightly more than 25,000 inhabitants in the mid-19th century to about

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7   SCB's method for constructing house price indexes on the basis of the sales price appraisal ratio is discussed in section 2.2 below.

8   For the period 1952–1956 Sandelin also presents a separate index for apartment buildings (*hyreshus* in Swedish).

9   Sandelin (1977).

10   The following paragraphs are deeply indebted to Fritz (1996, Ch. II), and Olsson (1996, Ch. III).

Map of Göteborg from 1888.
Source: Wikipedia.

370,000 a century later.[11] Net migration was the major factor initially but from the late 1880s until the early 1920s natural population growth contributed slightly more than net migration, which broadly varied with the business cycle. Population growth led to an increased demand for housing and thus an increase in residential construction.

Until the mid-19th century, settlement was concentrated to what today is the inner core of central Göteborg, inside the moats, although there were also working-class lodgings, mainly wooden houses, in Majorna and Haga. Inside the moats, residential properties were mainly built in stone or brick following the city's reconstruction after a fire in the beginning of the 19th century.

Expansion outside the moats began in the late 19th century. Stone buildings were erected in Vasastaden, Heden and Lorensberg, which today are part of central Göteborg. New apartment buildings were also erected in the typical working-class neighbourhoods, Majorna, Masthugget, Haga, Landala, and Annedal in central and western Göteborg. Initially, they were mainly two-storey wooden buildings. Taller wooden buildings were banned at first because of the perceived risk of fire. In order to make better use of the ground, contractors then started to build three-storey buildings, the ground floor in stone and the upper two storeys in wood. Buildings of this type, known as "county governor houses" (*landshövdingehus*) after the county administrative board had permitted them,[12] are typical for Göteborg. They still dominate the townscape in neighbourhoods such as Majorna and Olskroken, in western and eastern Göteborg, respectively.

In the inter-war period, population growth was again dominated by net migra-

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11 Fritz (1996, p. 24); Olsson (1996, p. 51).
12 Fritz (1996, p. 45).

tion. As before, this was closely connected with business cycles. To accommodate the growing population, construction of new residential buildings expanded geographically. This was facilitated by the development of a tram network, making it possible to live in one part of the city and work in another.[13] In the 1920s many new residential buildings were constructed in neighbourhoods such as Kungsladugård, Bagaregården, Änggården and Kålltorp; "county governor houses" were the characteristic type in the former two, while a new type of owner-occupied one- and two-family house began to appear in Änggården and Kålltorp. Expansion continued in Kungsladugård and Änggården in the 1930s, accompanied by many new residential stone buildings in Johanneberg on the outskirts of south-central Göteborg. Residential construction also expanded in northern and north-eastern Göteborg in neighbourhoods such as Lundby, and Lunden; in the 1940s also in Guldheden, south of Johanneberg (Olsson 1996, pp. 68–72).[14]

In many respects, the end of World War II and the early 1950s ushered in a new era in the history of residential construction in Göteborg. The size of dwellings and their material standard were much better than those of the inter-war period. In many former working-class neighbourhoods, such as Masthugget and Annedal, old buildings were demolished in favour of modern housing. In the 1960s, residential construction spread to new suburbs.

2.2.2. Methods

The construction of a price index for residential property raises numerous methodological problems. If the sample of properties that were bought and sold each year was uniform in terms of size and quality, it might be conceivable to base price indexes on the yearly average or the yearly median sales price. This is generally not the case, however. Residential properties that are sold and bought vary in quality, size, geographical location etc. The quality of a given property may change over time as a result of renovation and depreciation. Moreover, as a given residential property tends to be sold infrequently, the number of sales per property is small. In order to compare prices of heterogeneous objects they must obviously be related to some common standard.

One way of accounting for price differences between properties in a given period is to use hedonic price regressions, where prices are regressed on variables that indicate quality differences between properties.[15] However, data on such quality indicators are difficult to obtain for long historical periods.

In the international literature, the most common way of constructing price indexes for residential properties on the basis of historical data stretching far back in

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13 Olsson (1996, pp. 53–55).
14 Olsson (1996, pp. 68–72).
15 Kain and Quigley (1970).

time is the "repeated sales method".[16] Using repeated price quotations for the same property yields price comparisons that pertain to reasonably homogeneous objects, although it does not evade the problem with quality changes. With such price comparisons it is possible to construct a comprehensive price index by means of regression analysis. The price change for property *i* between period *t–n* and period *t* may be written:

$$\frac{P_{i,t}}{P_{i,t-n}} = b_t / b_{t-n} * e_{i,t} \tag{1}$$

where b_t stands for the non-observed price index value in year *t*, and $e_{i,t}$ is the error term. Equation (1) may be transformed into logarithmic form:

$$\log\left(\frac{P_{i,t}}{P_{i,t-n}}\right) = -\log b_{t-n} + \log b_t + \log e_{i,t} \tag{2}$$

In order to estimate the non-observed price index values, dummy variables are created and set to –1 for the first and 1 for the last time period in a pair of sales. For each pair of sales, the dummies in all other time periods are set to zero. Estimates for b_t are obtained by regressing the logarithmic price ratios against all time dummies.

The price index series is obtained after taking the antilogarithm of the estimated coefficients. Setting the series to unity in the base year normalizes the resulting index series.[17]

The repeated sales regression as stated in (2) does not contain an intercept. Goetzmann and Spiegel[18] argue, however, that an intercept is useful because it captures improvements, which typically occur before properties are offered for sale and are independent of the length of the interval between the purchase of a property and its subsequent sale. Moreover, the longer the interval between purchase and sale, the greater presumably is the likelihood of quality and other changes that affect the price. We would therefore expect a larger variance in price ratios for observations with a long interval between sales. Case and Shiller[19] therefore propose a three-step procedure to refine the method developed by Bailey et al. The first step is to run a regression according to the method of Bailey et al.; in the second, the squared residuals from this regression are then regressed against a constant and the time intervals between the sales that make up the price ratios; in the third step the log price ratios and the time dummies of the first step regression are transformed by dividing them by the square roots of the predicted values from the second step regression, after which the regression is re-estimated.

A problem with the repeated sales method is that it disregards many observations,

16 See for example Eitrheim and Erlandsen (2003); Eitrheim and Erlandsen (2005) and Eichholtz (1997).
17 Bailey et al. (1963).
18 Goetzman and Spiegel (1995).
19 Case and Shiller (1989).

since properties with only one recorded sale are not used in the construction of a price index. Another problem is that properties which come to market repeatedly might be poorer in quality than those which are sold more seldom.[20] Methods that combine repeated sales and hedonic price regressions have been developed to circumvent these problems.[21] But again, such methods are difficult to apply to historical price data because variables indicating quality differences between residential properties are usually not available.

To construct price indexes for residential properties, Statistics Sweden (*Statistiska Centralbyrån, SCB*) uses, as already mentioned, the sales price appraisal ratio method, in which the sales price of a property is divided by the property's appraised taxation value.[22] Taxation values are commonly unchanged for some years pending the setting of new values in a general reassessment.[23] Dividing the sales price in a given year by the taxation value yields an estimate of the extent to which prices have changed since the base year to which the taxation appraisal values refer.

Index numbers based on sales price appraisal ratios may be calculated as equal-weighted or value-weighted averages.[24] The equal-weighted version of the index is calculated as:

$$I_{Et} = \left\{ \left[\sum_{j=1}^{n_t} (S_{jt} / A_{j0}) / n_t \right] \middle/ \left[\sum_{j=1}^{n_{t-1}} (S_{jt-1} / A_{j0}) / n_{t-1} \right] \right\} I_{Et-1} \qquad (3)$$

where I_{Et} is the equal-weight index for period t, S_{jt} is the sales price for property j in period t and A_{j0} is the corresponding appraised taxation value at the time of appraisal. The value-weighted index is calculated according to the formula:

$$I_{Vt} = \left\{ \left[\sum_{j=1}^{n_t} S_{jt} / \sum_{j=1}^{n_t} A_{j0} \right) \right] \middle/ \left[\sum_{j=1}^{n_{t-1}} S_{jt-1} / \sum_{j=1}^{n_{t-1}} A_{j0} \right] \right\} I_{Vt-1} \qquad (4)$$

In the value-weighted index, properties with higher prices get more weight than in the equal-weighted index. Consequently, if sales price appraisal ratios in higher priced properties differ from those in properties with lower prices, the two formulas will yield different index numbers. As argued by Bourassas et al.,[25] the equal-weighted index is preferable if we want to know how prices have developed for the typical or

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20 Quigley (1995; Eichholtz (1997).
21 Case and Quigley (1991); Quigley (1995); Carter Hill et al. (1997); Englund et al. (1998).
22 This method is also used in New Zealand and Denmark, see Bourassas et al. (2006).
23 For specific properties, appraised taxation values could also be adjusted during a period of otherwise stable taxation appraisal values if the property underwent major changes.
24 Bourassas et al. (2006).
25 Bourassas et al. (2006).

Linen market at Drottningtorget in Göteborg 1907.
Source: Göteborg City Museum.

average property bought and sold, whereas the value-weighted index is a measure of
the price evolution of the housing stock. The price index for residential properties in
Göteborg, 1875–1957, presented below, has been calculated according to the equal-
weighted index formula.

The basic idea behind the sales price appraisal ratio method is that the ratio
between sales prices and taxation values is similar for different types of residential
property. The taxation value of a residential property should reflect the market price
an informed buyer would typically pay at the time of the appraisal. Supposedly it
should thus take into account various kinds of quality differences between residential
properties. In that case the evolution of the average sales price appraisal ratio indi-
cates the price movement of residential properties as long as taxation values are
unchanged. However, as general reassessments of taxation values occurred every two
to five years or so, these values do change periodically. Therefore, in order to con-
struct a price index series for a longer period we obviously also need an estimate of
how much appraised taxation values typically changed from period to period.

The sales price appraisal ratio method compares favourably with other methods
for constructing price indexes for residential properties.[26] A desirable characteristic
of such a price index is that it takes quality changes into account so that it measures
the evolution of prices for residential properties with a constant quality. Since the tax

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26   Bourassas et al. (2006).

Västra Hamngatan in central Göteborg in 1905.
Source: Göteborg City Museum.

authorities' reassessments of properties ideally take quality changes into account, the sales price appraisal ratio method allows for changes in quality. Index constructions based on repeated sales may be more biased in that the quality of a property may change between sales, especially if there is a long interval between two sales.

2.2.3. Sources

In order to construct a price index for residential properties in the city of Göteborg in the period 1875–1957 we have used archival sources. Registration of property ownership was regulated in an ordinance in 1875. Local governments were required to keep ledgers of properties (*fastighetsböcker*) that recorded each legal event concerning a specific property, such as registration of ownership titles (*lagfartsbevis*) and mortgages. This source, which is geographically ordered, does not contain information on sales prices and taxation values but provides pointers to other sources of such information. Of special interest to us is a source (*lagfartsprotokoll*) that is ordered chronologically and contains registration of ownership titles. For the period 1875–1939 we have used this source to collect information on property prices and taxation

values.[27] We have only recorded transactions that involve sales which may be assumed to reflect market prices. Accordingly, we have not included transactions involving exchanges of properties, transactions between close relatives or sales by executive auction. We planned to collect about 100 observations for each year but this could not be achieved because our sources had too few recorded transactions that met our requirements. In addition to sales prices and taxation values, we recorded the dates of sales and ownership registration as well as the names of the recorded properties.[28] The latter makes it possible to identify repeated sales of the same property.

The source containing chronologically ordered registrations of ownership titles (*lagfartsprotokoll*) ends in 1939. From that year onwards we have used a source that is geographically ordered in the same way as the ledgers of properties.[29] For each property it contains information on taxation values and sales prices if a sale of that property occurred, which was by no means always the case. This source is more laborious to work with, since in order to secure a sufficient number of observations annually one has to peruse the records of quite a number of properties, many of which were not sold.

All in all we have recorded 6,883 observations of sales transactions for Göteborg in 1874–1957. The observations are not limited to a specific district or neighbourhood, but contain information from all over Göteborg. Since the settlement of Göteborg expanded geographically over time, the geographical spread of our observations also extends over time and the types of residential property become more varied. We have calculated sales price appraisal ratios for all those observations for which information on both sales prices and taxation values were available. In most cases, sales and legal registration of ownership pertain to the same year. In cases where the sources do not record the sales date, we simply assume that sales and legal registration pertain to the same year. Given this assumption, sales and legal registration pertain to the same year in roughly two-thirds of our sample. But it is also quite common for the legal registration of a property to occur in the year after the sales transaction, or even later. For example, if a sale occurred in the late autumn it might have been legally registered in the beginning of the following year. The difference between the registration year and the sales year was greater than one in about 8 per cent of the cases. If a new general taxation of properties, with new appraisals of taxation values, did not take place between the date of sale and the date of registration, we have assumed that the taxation value given in the *lagfartsprotokoll* is correct. However, if there had been a new

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27 Göteborgs landsarkiv, Göteborgs Rådhusrätt och magistrat 1:a avdelningen före år 1900: A II a, Lagfartsprotokoll; Göteborgs Rådhusrätt och magistrat första avdelningen efter 1901: A II aa, Lagfartsprotokoll 1901–1939.

28 These are given by the district (*rote*) and/or quarter (*kvarter*) and within that district/quarter by the number of the plot of land.

29 Göteborgs Rådhusrätt och magistrat första avdelningen efter 1901: A II ad. Inskrivningsakter 1940–1967.

general reassessment, we cannot be sure that the taxation values in the *lagfartsprotokoll* did not change between the year of sale and the year of registration. In these cases we have looked up the taxation values pertaining to the year of sale in another source, *Göteborgs address- och industrikalender*, which for each year contains a register of all residential properties along with their taxation values.

In a few cases, the calculation of sales price appraisal ratios yielded extreme values. They may be due to clerical errors but the most likely reason is that the property is unrepresentative, for example because the building had been extended or otherwise changed. When calculating average sales price appraisal ratios for a given year, we have generally excluded observations if sales price appraisal ratios are smaller than 0.5 or larger than 3. We have furthermore deleted observations where sales price appraisal ratios differ from the mean in the given year by more than roughly four standard deviations. This has left us with a total of 6,352 observations to calculate average sales price appraisal ratios for the period 1875–1957, see Table A2.2 below.

Appraised taxation values were adjusted from time to time in order to allow for changes in sales prices in the preceding period. General reassessments of taxation values were made at intervals of roughly three or five years.[30] In order to use sales price appraisal ratios to construct a residential property price index for the entire period 1875–1957, we need to estimate the average change in taxation values from one general reassessment of taxation values to the next. The source we have used for this, "Address and Industry Calendar of Göteborg" (*Göteborgs adress- och industrikalender*), was published annually from 1850 until 1947. It contains taxation values for each and every registered property in Göteborg. For the period 1875–1947 we have sampled roughly 200 to 350 properties, which we follow over time in order to estimate changes in appraised taxation values. We have extended the sample over time in order to allow for the increased geographical coverage of the sample frame. Changes in the arrangement and listing of properties in *Göteborgs adress- och industrikalender* have led us to use different samples for the periods 1875–1924 and 1925–1947. For the period after 1947 we have used another printed source, *GBG-boken*, which contains the same information on taxation values of properties. Since the arrangement and listing of properties in this source differ from *Göteborgs adress- och industrikalender*, 1925–1947, we have used another sample of properties for 1952–1953.

From our data we infer that changes in appraised taxation values took place in 1876, 1879, 1882, 1884, 1887, 1890, 1893, 1896, 1898, 1903, 1908, 1913, 1918, 1922, 1928, 1933, 1938, 1945 and 1952. Our estimates of the average change in taxation values for these years are given in Table A2.1. When calculating these average changes we have deleted extreme observations, defined as a change from one period to the next that deviates from the mean by roughly more than three standard deviations.

In calculating sales appraisal ratios we have used sales prices and taxation values

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30 In each year, assessments of taxation values were also done for specific properties, for example for newly constructed buildings or existing buildings that had been extensively changed.

recorded in the *lagfartsprotokoll*. This source is chronologically ordered with new entries each week. The taxation values given in this source pertain to the date of registration; they might have changed later during the year following a general reassessment, when new taxation values were set. From our data we infer that new general taxation values were set late in the autumn. Consequently, in years of general reassessment of taxation values the bulk of our data refer to the taxation values that were valid before the reassessment at the end of the year. In our construction of residential property price index numbers we have therefore generally assumed that, following a general reassessment of taxation values, the new values were implemented the following year. This may lead to a slight error in the price index since if the sale of a property took place late in the year, the *lagfartsprotokoll* might record the new taxation value.

2.2.4. The evolution of prices for residential properties in Göteborg, 1875–1957

2.2.4.1. Price index calculated by the sales price appraisal ratio method

Table A2.2 presents our estimates of average yearly sales price appraisal ratios for Göteborg along with an index of average taxation values. We use the latter to multiply the average sales price appraisal ratios in order to obtain an index series of prices for residential properties. As can be seen from Figure 2.1, prices and taxation values developed more or less in tandem from 1875 until the interwar period, after which prices tended to rise faster than taxation values. Over the entire period 1875–1957, residential property prices rose by 1.7 per cent per annum. However, the price rise was not uniform over time. In Figure 2.1 one can distinguish several distinct periods in the evolution of residential property prices in Göteborg. These prices were pretty much unchanged from 1875 to 1895 and then rose at an annual rate of 3 per cent in the next eleven years, 1895–1906. This was followed by a price decline of 2 per cent a year in the period 1906–1914. During the First World War and its aftermath, 1914–1921, residential property prices in Göteborg rose by 7.5 per cent a year and then fell by roughly 8 per cent during the deflation in 1921–1922. In the rest of the 1920s and up to 1931, residential property prices rose by more than 3 per cent per annum, after which they fell again by slightly more than 3 per cent a year during the depression, from 1931 to 1934. From 1934 to 1939, prices recovered at an annual rate of 2.6 per cent and went on rising at an annual rate of 3.5 per cent in the following decade, from 1939 to 1949. Prices fell again from 1949 to 1954, after which they recovered.

   This evolution of nominal residential property prices in Göteborg is very different from the picture of real prices, i.e. nominal prices deflated by a consumer goods price index, as can be seen in Figure 2.2. Disregarding annual fluctuations, real prices for residential properties rose at an annual rate of 1.3 per cent in the period 1875–1906 and then fell back at a rate of –7.2 per cent from 1906 until 1918, with a particularly

Figure 2.1. *Price index and taxation value index for residential property, Göteborg 1875–1957 (1912=100)*
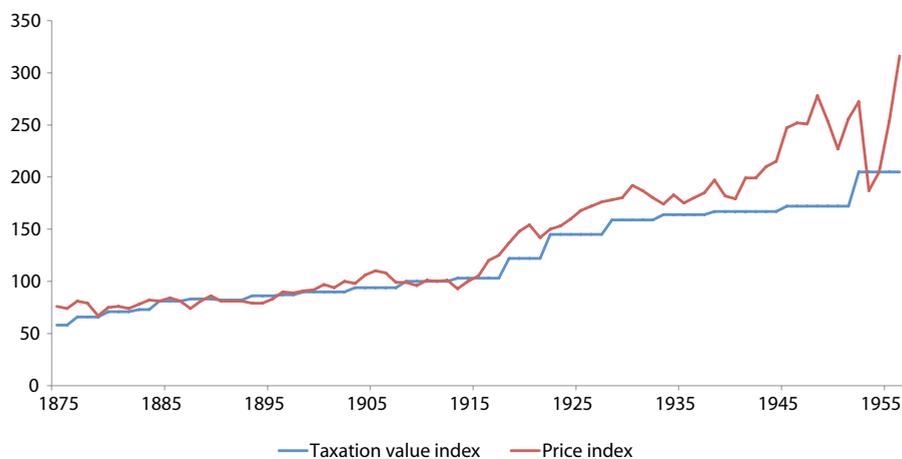
Sources. See Table A2.2.

Figure 2.2. *Real price index for residential property in Göteborg, 1875–1957 (1912=100)*
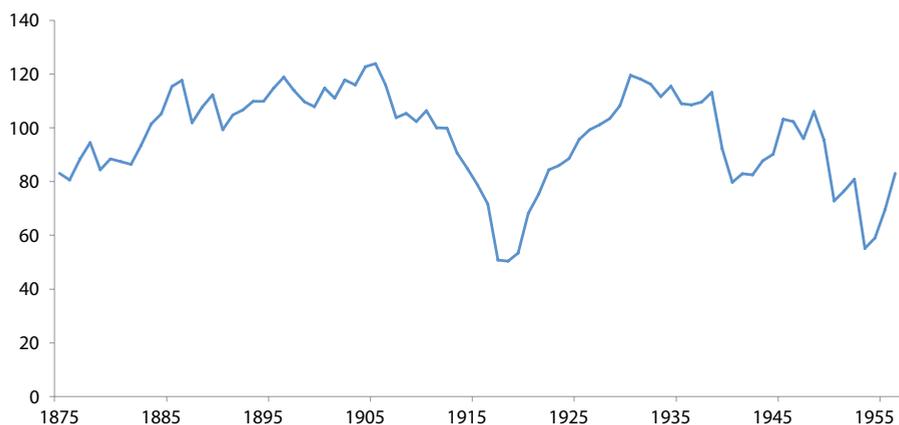
Sources: Nominal prices, see Table A2.2; consumer price index, Edvinsson and Söderberg (2010).

sharp drop during the First World War. In other words, residential property prices rose much less than prices for consumer goods during the wartime inflation. After the war, when consumer prices declined in the deflation of the 1920s and early 1930s, nominal prices for residential properties either rose or declined less, so real prices for residential properties rose at an annual rate of almost 6 per cent between 1918 and 1933. In the rest of the 1930s, real property prices tended to fall and then dropped more steeply between 1939 and 1941, after which they recovered in the rest of the 1940s.

2.2.4.2. Changing composition of residential properties and the sales price appraisal ratio index series

The data we have assembled may be regarded as a convenience sample, since we have used all the data we could assemble given the resources at our disposal. As a result, in our sample, the proportion of residential properties in different price ranges varies between time periods, as shown by Figure 2.3.

As the general level of residential property prices rose, many properties shifted from a lower to a higher price range. Accordingly, the proportion of properties in our sample that sold for less than 25,000 kronor declined from the late 19th century up to the First World War and the proportion in the upper price ranges increased. However, there also seem to be compositional changes between time periods in our sample of properties that cannot be explained by the evolution of the overall level of property prices. During the First World War, the annual average price of properties in our sample increased much more than the overall level of prices as measured by our price index. This was due to a disproportionate increase in these years in the share of properties that sold for more than 100,000 kr. The proportion in this price range in our sample is also larger in the 1950s. In the inter-war period, on the other hand, the average price in our sample fell even though the general level of residential property prices rose, because in these years the proportion in the lowest price ranges grew. A probable explanation for this is the extension of the geographical areas from which our properties are sampled. Properties outside downtown Göteborg were generally smaller. For example, in neighbourhoods such as Änggården the new properties consisted primarily of owner-occupied one- and two-family houses.

Figure 2.3. *Proportion of residential properties in different taxation classes, centred moving five-year averages, 1875–1957*

Percentage share for properties with taxation values less than 25,000 kr., 3–year centred moving average

Percentage share for properties with taxation values between 25,000 kr. and 50,000 kr., 3–year centred moving average

Percentage share for properties with taxation values between 50,000 kr. and 100,000 kr., 3–year centred moving average

Percentage share for properties with taxation values larger than 100,000 kr., 3–year centred moving average

Sources: See Table A2.2.

Does the change between periods in the composition of types of residential property affect our estimated price index? It might if the evolution of the sales price appraisal ratio differed between the various price ranges. The sales price appraisal ratio was often higher in the lower price ranges, as shown by Figure 2.4. However, what matters most for the overall price index is the rate at which sales price appraisal ratios changed in the various price ranges. To get an idea of the extent to which a changing composition of properties in the various price ranges affects our estimated overall price index, Figure 2.5 presents our equal-weighted overall sales price appraisal ratio index together with an average of the sales price appraisal ratio index series for the different ranges of taxation values depicted in Figure 2.3. In the latter, the weights of the various taxation classes in the overall index are always the same, whereas in the former the composition of taxation classes varies over time. As can be seen, there is a difference between the series but it is small before the 1950s. Prices for properties in the upper price ranges rose more slowly than in the lower price ranges. Consequently, the larger proportion of properties in the upper price ranges tends to lower our equal-weighted index for the 1950s.

Figure 2.4. *Sales price appraisal ratios for residential properties in different taxation classes, 1875–1957*
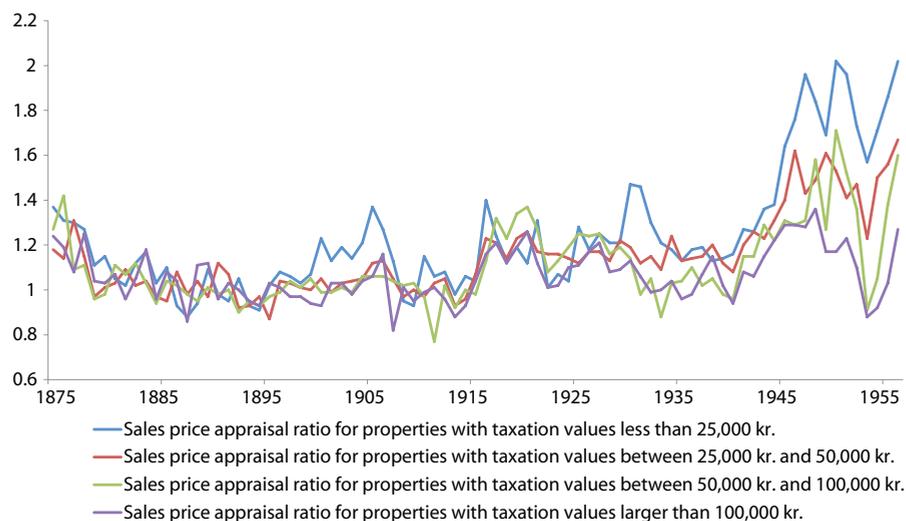
Sources: See Table A2.2.

Figure 2.5. *Price indexes for residential properties in Göteborg (1957=100), equal-weighted index and unweighted average of equal-weighted indexes for different taxation classes, 1875–1957.*

— Residential price index, unweighted average of various taxation classes
— Residential price index, equal-weighted
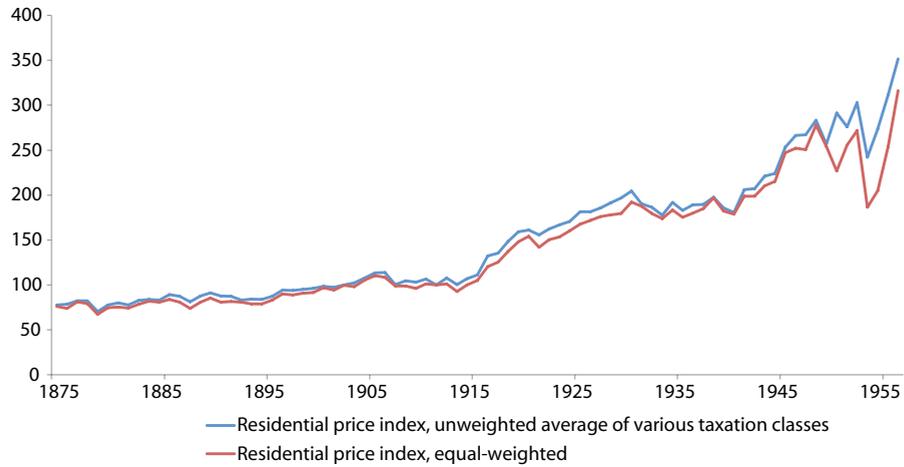
Sources: See Table A2.2.

Figure 2.6. *Price indexes for residential properties in Göteborg 1875–1952 (1912=100), calculated by different methods.*

— Price index, sales appraisal ratio method
— Price index, repeated sales method (Bailey et.al)
— Price index, repeated sales method (Case & Shiller)
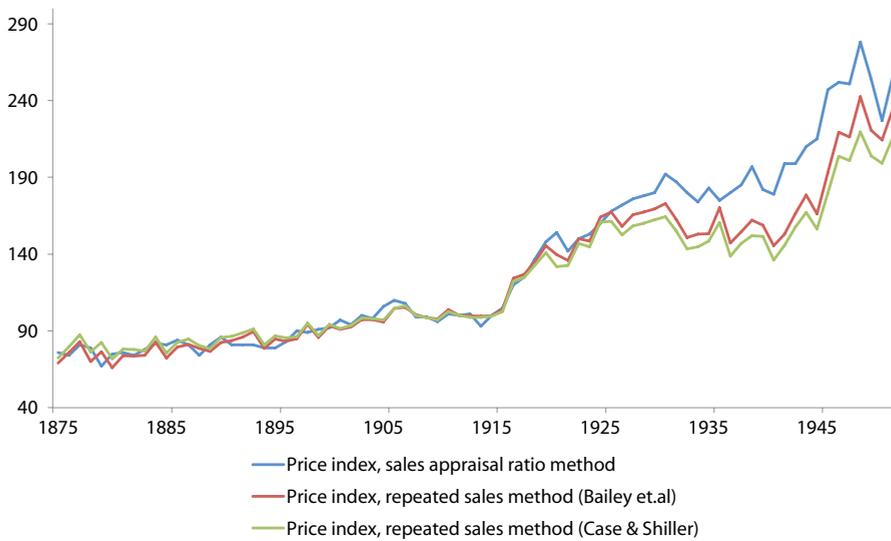
Sources: See Tables A2.2 and A2.3.

A view of Göteborg from the Liseberg amusement park.
Source: Wikipedia.

Bangatan in Majorna, Göteborg, in the mid-1930s.
Source: Göteborg City Museum.

In conclusion, the changing composition of the types of property included in the sample has some effects on the price index series. However, the overall picture does not seem to be greatly affected by compositional changes, at least before the 1950s.

2.2.4.3. Price index series calculated by the repeated sales method

Since our database includes information on the name of each property, it has been possible to identify repeated sales of the same property. Slightly more than 3,000 of the observations were repeated sales, containing sales data on roughly 1,400 properties. Since this dataset is based on identifying properties built on a particular piece of land, there is obviously room for mistakes in identifying repeated sales. It may, for example, be the case that a building had undergone extensive changes or that an entirely new building had been erected on the same piece of land between two sales, especially if many years passed between the sales. In order to minimize this risk and get rid of otherwise extreme observations, we excluded a pair of sales from the dataset if the sales price appraisal ratio is larger than 3 or smaller than 0.5. Furthermore, we excluded a pair of sales if the change in the taxation value between them was more than a three-fold increase or more than a 50 per cent decrease. Observations where the interval between two sales was longer than 25 years have also been excluded from the repeated sales dataset.

Two price index series calculated by the repeated sales regression method are presented in Table A2.3. The first is calculated according to the original method of Bailey et al., the other according to the modification of this method proposed by Case and Shiller.[31] For both series we have included an intercept in the regressions. The two series are displayed in Figure 2.6 together with the series calculated according to the sales price appraisal ratio method. First we may note that the general contour of development is similar in all three series. A difference between the series is that the price rise is slightly faster up to the First World War according to the two repeated sales series, after which the sales price appraisal ratio series catches up with them. In the 1930s, prices are more or less unchanged according to the index calculated by means of the sales price appraisal ratio method, while they decline according to the repeated sales series because of a larger fall in 1931–1933. This seems to be a sample issue, since calculating sales price appraisal ratios on the repeated sales sub-sample gives approximately the same fall in these years as in the series calculated according to the method of Bailey et al.

Another difference is that the repeated sales series gives more pronounced year-to-year fluctuations, especially from the late 1920s onwards, which may be related to the limited size of the sample used to estimate the repeated sales regressions. But it also has to do with methodological differences; the sales price appraisal ratio method yields less volatility even when calculated on the same sub-sample.

The series calculated according to Case and Shiller's method tracks the series calculated by means of the Bailey et al. method closely until the 1930s, although the

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31   Bailey et al. (1963); Case and Shiller (1989).

former method generally yields slightly lower index values. This difference widens in the 1930s and 1940s, which indicates that the intervals between sales that make up the log price ratios in the sample become longer over time.

Using different methods to calculate the price index numbers serves as a check on the series' validity. The similarity of the results, even though the series are calculated on different samples, is reassuring. We prefer the series calculated by the sales price appraisal ratio method since it is based on a larger sample. As argued by Bourassas et al.,[32] it should also be preferred for methodological reasons.

2.2.4.4. A comparison of the residential property price index for Göteborg with similar series for Norwegian cities

Norway is one of the few countries for which we have long historical price series for residential properties. It is interesting to compare the new series for Göteborg with similar series for cities in neighbouring Norway, in its own right as well as to check the validity of the new Göteborg series. Figure 2.7 presents our preferred price index for Göteborg along with price indexes for Norway's two largest cities (Oslo and Bergen) and an index for four Norwegian cities. As can be seen, the time profile of the Göteborg series is similar to the Norwegian series, especially the one for Oslo, but there are also some differences. First, during the First World War, residential property prices in Norwegian cities increased faster than in Göteborg, which can at least partially be explained by the somewhat higher rate of inflation in Norway. Secondly, in the 1920s, residential property prices in Göteborg rose steadily, whereas they stagnated or fell in large Norwegian cities. This seems reasonable in that post-war deflationary policies lasted longer in Norway.[33] Furthermore, from the early 1930s until the early 1950s, property prices rose faster in Göteborg than in large Norwegian cities except for Bergen, where their development seems to have been similar to Göteborg.

2.3. The evolution of residential property prices, 1957–2010

From 1975 onwards, a price index for houses in Göteborg and its suburbs (*Storgöteborg*) is available from SCB. To fill the gap in the period 1957–1975 we use data for Göteborg and Bohus county.[34] Unfortunately, SCB's published data cannot be used to construct a similar long-run price index series for apartment buildings in Göteborg. Data for the county of *Göteborg and Bohus* are available from 1957 to 1996 but

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32 Bourassas et al. (2006).

33 Klovland (1998)

34 For the period 1957–1971, the index is constructed from the ratio of total sales value to total taxation value and is thus a value-weighted index. SCB's house price index starting in 1975 is an equal-weighted index. Thus these index series are not strictly comparable in either geographical coverage or methodology. Further explanations are given in Söderberg, Blöndal and Edvinsson (2014) of this volume.

Figure 2.7. *Price indexes for residential properties in Göteborg and various Norwegian cities,[a] 1875–1950 (1912=100).*
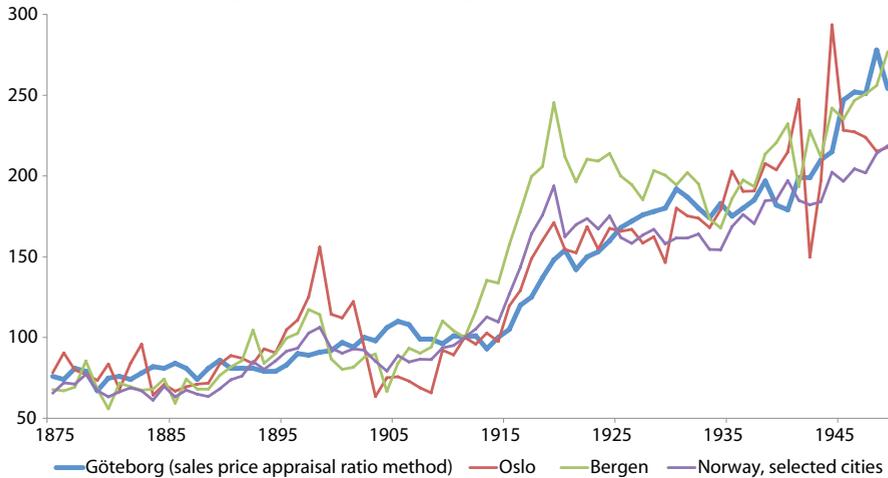
Sources: Göteborg, see Table A2.2; Norwegian series, Eitrheim and Erlandsen (2003).
[a]The series "Norway, selected cities" is a weighted average of index series from Oslo, Bergen, Trondheim and Kristiansand.

due to administrative changes, from 1996 onwards SCB has published data only for the larger *Västra Götaland* region. For the period 1995–2010 we have therefore ordered hitherto unpublished data from SCB on the evolution of prices for apartment buildings in the geographical area of the former county of *Göteborg and Bohus*. This area is not exactly the same as Göteborg and its suburbs but is heavily dominated by it. For purposes of comparison, data on Stockholm and Sweden as a whole are also included in some of the figures presented below.

2.3.1. Residential property prices, 1957–2010

The evolution of nominal prices for residential properties in the period 1957–2010 is presented in Figure 2.8 for Göteborg, Stockholm and Sweden as a whole. The prices for houses have risen faster since the late 1950s than in the previous half-century. The rate of increase was generally higher in the big cities than in Sweden as a whole. Between 1957 and 2007, house prices in Göteborg rose at an average annual rate of roughly 7.5 per cent, while the corresponding rate for Sweden as a whole was 6.7 per cent.

Figure 2.8. *Price indexes for houses and apartment buildings (1957=100), 1957–2010.*
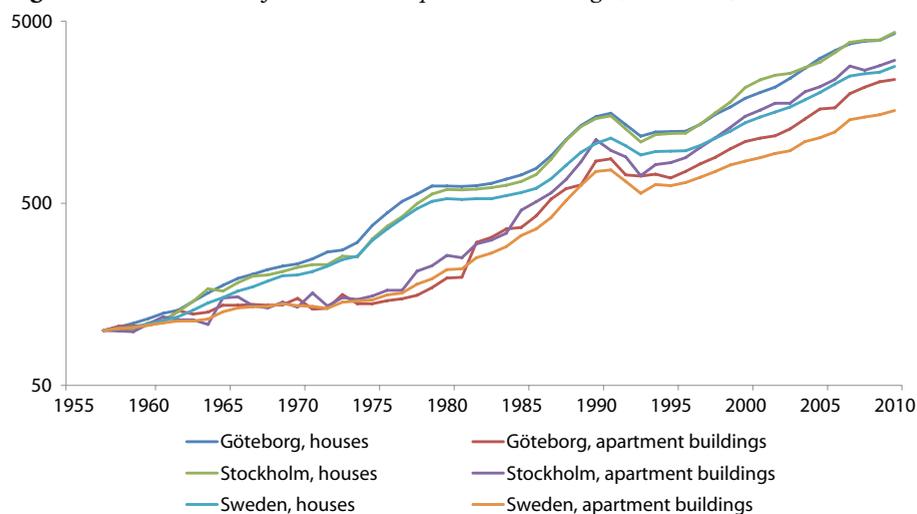
Sources: See Söderberg, Blöndal and Edvinsson (2014) of this volume.

The price rise for houses was fairly steady in most of this period but there were short intervals with largely unchanged prices, followed by periods with very rapid increases. From 1972 to 1979, house prices in Göteborg rose at an average annual rate of almost 13 per cent. This was followed by little or no increase up to 1986, when prices picked up again, rising at an annual rate of almost 20 per cent from 1986 to 1989. They then fell abruptly in the economic crisis in the early 1990s. In Göteborg they dropped more than 20 per cent from 1990 to 1993 or by roughly 8 per cent a year on average. Since then, house prices have risen strongly; in the period 1994–2007 the annual increase in Göteborg averaged 9 per cent.

The price indexes for houses differ greatly from those for apartment buildings in the post-war period. Prices for apartment buildings rose much less than house prices, especially in the 1960s and 1970s. In these decades the price increase for apartment buildings was not sufficient to compensate for higher inflation, so real prices for apartment buildings plummeted.

Why did prices for houses increase much more than prices for apartment buildings in the 1960s and 1970s? One obvious explanation is that rent regulation held back price increases for apartment buildings.[35] But, as pointed out by Sandelin and

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35 Rent regulation (*hyresreglering*) was introduced in 1942 for apartment buildings in settlements with more than 2,000 inhabitants and remained in force until the mid-1970s. Rent increases had to be approved by local tribunals (*hyresnämnder*) and were allowed only as compensation for increased operating expenses or improvements to apartments. The underlying idea was that apartment rents should reflect operating costs. The norm was set by rents in local public housing utilities (*allmännyttiga bostadsföretag*), where they were based on the "use value" principle (*bruksvärdesprincipen*). See Bladh (1991, p. 273 ff.), Lindbeck (1971, p. 106 ff.)

Södersten, many other factors affected house prices in these years.[36] Population growth and the expansion of densely-populated communities led to an increased demand for housing. Accordingly, regions with above-average increases in population growth also had above-average increases in house prices. At the same time, rising real incomes led to stronger demand for houses, as did more widespread car ownership by facilitating commuting to work. Higher overall inflation led to lower real interest rates, making it easier for private households to finance home ownership, which also stimulated demand. Moreover, interest on loans was deductible when calculating taxable income, which further stimulated demand for houses.

Supply-side factors also played a part in the much more rapid price increase for houses compared with apartment buildings. The construction of apartment buildings expanded rapidly in the 1960s and early 1970s, not least in connection with a massive investment programme.[37] The construction of houses rose so much less that the per capita supply hardly changed in these years.[38] Moreover, lower increases in productivity meant that construction costs rose more rapidly for houses.

The 1980s is the only post-war decade in which prices for apartment buildings rose more rapidly than those for houses. Property prices rose most intensely in the late 1980s for apartment buildings as well as for commercial office buildings. The price rise was particularly intense for commercial office buildings in big cities. Many of the causes of the increase for commercial office buildings, which have been discussed in the literature, should also be relevant for apartment buildings.

An essential prerequisite for the property market's evolution in the 1980s was the deregulation of financial markets. Prices for commercial office buildings and apartment buildings were deeply depressed in the early 1980s and readily available finance made properties very attractive. Deregulation in the 1980s altered the behaviour of prospective buyers. Prior to the 1980s, properties had often been valued from a "building contractor perspective"[39]: the income from tenants' rents should comfortably exceed running expenses and capital costs. In the 1980s, this gave way to a more forward-looking perspective; the value of a property was now seen as being equal to the sum of future incomes from owning it, discounted to present value by a rate of interest that represented the required rate of return. It was not uncommon to add in a future rest value of the property at the end of the horizon. Applying this perspective made many properties appear to be undervalued in the first half of the 1980s, which set the stage for the rapid price rise in the decade's second half. Banks and other financial institutes considered that loans to buyers, often specialised property companies, were secure, since prices were rising rapidly for the properties which buyers could pledge. When the price rise petered out in 1990 it became apparent that many

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36 Sandelin and Södersten (1978, ch. 2–5).

37 Known as the "million programme", a reference to the Social Democratic Party's political platform in 1964, which proclaimed the need to build a million new homes in the ensuing decade.

38 Sandelin and Södersten (1978, pp. 31–32).

39 Pettersson (1993, p. 67 ff.).

property companies were financially fragile. Prices then fell at an accelerating rate from 1990 to 1993 and many property companies could no longer service their debts. This hit the banking and financial sector and was an important ingredient in Sweden's economic crisis in the early 1990s.[40]

During the economic crisis, prices for apartment buildings fell to roughly the same extent as house prices. The former recovered in the mid-1990s and the increase in the next 15 years was also strong in real terms, though not as rapid as for houses.

2.3.2. Real prices 1957–2010

Figure 2.9 presents the evolution of real prices for residential properties in the period 1957–2010. A substantial part of the post-war increase in house prices compensated for the rise in the overall price level. In the 1960s, however, house prices rose faster than the consumer price index, so real prices increased substantially. From the 1970s to the mid-1990s, the long-run trend in real prices was flat for houses but upwards for apartment buildings, due to the depressed state of real prices for apartment buildings in the late 1970s and early 1980s. Since the mid-1990s, prices for houses as well as apartment buildings have risen considerably faster than inflation.

Figure 2.9. *Real price indexes for residential property, 1957–2010.*
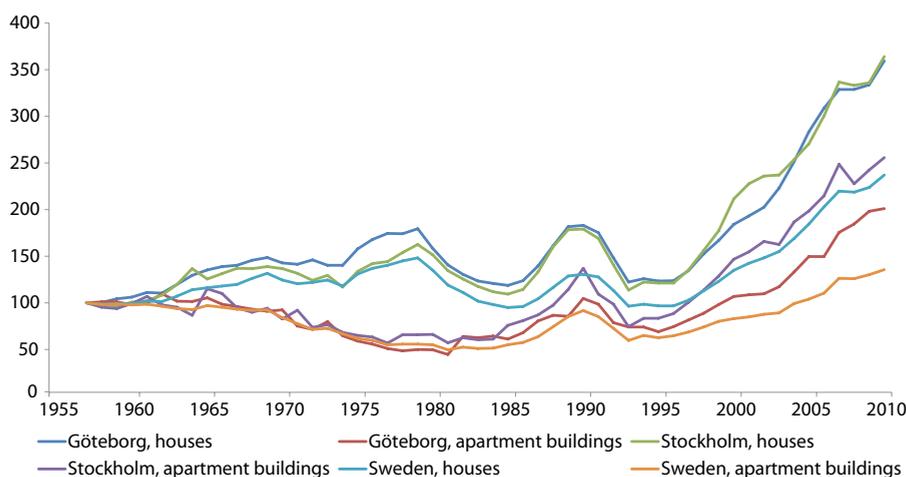
Source: See Söderberg, Blöndal and Edvinsson (2014) of this volume.

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40 Pettersson (1993, ch. 3).

2.4. Secular evolution of residential property prices

In this section, the newly constructed price index series for residential property in Göteborg for the period 1875–1957 is linked to SCB's price data for the period 1957–2010. Owner-occupied houses were uncommon in Göteborg before the 1950s; most people lived in apartment buildings. Our newly constructed price index for Göteborg should therefore probably be linked to a price index for apartment buildings rather than to one for houses. However, data on sales prices for houses become increasingly frequent in our sample for the inter-war period, which reflects the growing number of houses in some parts of Göteborg, such as Änggården, Kålltorp and Örgryte. We cannot distinguish between houses and apartment buildings in our sample but some indication of how house prices evolved compared to apartment buildings can be obtained by constructing separate price index series for properties in the lower and upper price ranges.

2.4.1. Prices for residential properties with low and high taxation values, 1922–1957

For the period 1922–1957 we have chosen to calculate separate price index series for residential properties with taxation values up to 75,000 SEK and above this figure. Many of the properties in the lower price range were probably small self-contained houses. [41] The price index series for these properties should therefore be comparable to SCB's series for houses.

From available statistics on post-war prices for residential properties we know that prices rose faster for houses than for apartment buildings. Does this hold also for the inter-war period? As can be seen in Figure 2.10, from the late 1920s to 1931, prices for properties with taxation values up to 75,000 SEK rose somewhat faster than for those with taxation values above 75,000 SEK. Otherwise, the development of prices in the inter-war period was similar in the two price ranges. From the early 1940s, however, prices in the lower range increased much faster than those in the upper range. An obvious conclusion is that this had to do with the introduction of rent regulation in 1942; by limiting landlords' freedom to increase rents, this held back prices for apartment buildings. Small owner-occupied houses were not subject to this type of regulation and their prices, set in a free market, rose much faster than for apartment buildings.

Real prices for residential properties do not display any clear trend in the period 1922–1957. However, in the period 1941–1957, price for properties with taxation

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41   In the 1940s and early 1950s, only a few properties had taxation values above 75,000 SEK in prosperous neighbourhoods, such as Änggården and Örgryte, where owner-occupied houses were common. We have also calculated price index series for properties with taxation values up to 50,000 SEK and above 100,000 SEK, respectively. The former turned out to be similar to the series with 75,000 SEK as the upper limit, while the series for values above 100,000 SEK turned out to be similar to the one for values above 75,000 SEK.

Figure 2.10. *Price indexes for residential properties in Göteborg with taxation values up to 75,000 SEK, and for properties with taxation values above 75,000 SEK, 1922–1957 (1957=100).*

Properties with taxation values up to 75,000 SEK.   ——Properties with taxation values above 75,000 SEK.
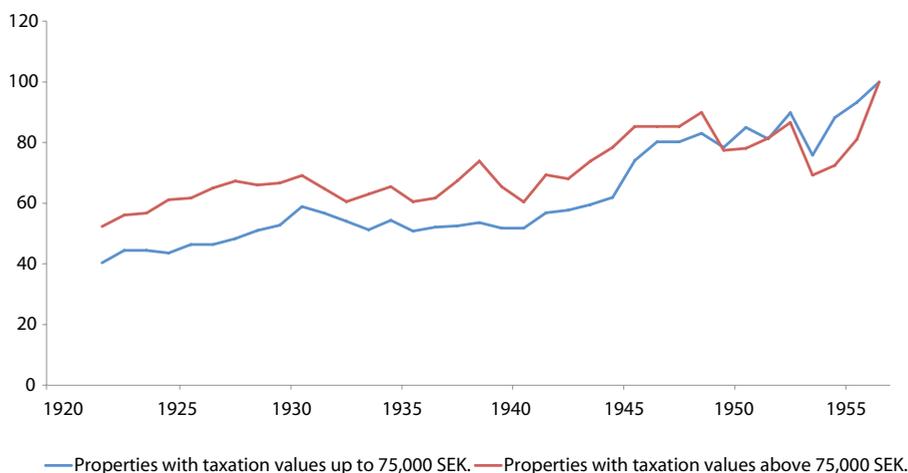
Sources: See Table A2.2.

values up to 75,000 SEK rose somewhat more than the consumer price index and increased in real terms at an average annual rate of 0.6 per cent. At the same time, real prices for properties with taxation values above 75,000 SEK fell slightly, by 0.4 per cent a year.

2.4.2. Long-run evolution of prices, 1875–2010

In Figure 2.11, our price index series for 1875–1957 is linked to SCB's series for 1957–2010. It can be seen that price increases accelerated in the post-war period. However, much of this development is explained by the increase in the general price level. In a secular perspective it is arguably of more interest to look at the evolution of real prices. Figure 2.12 shows that from the late 19th century up to 1995 there is no long-run trend in real prices for residential properties. There were periods of two or even three decades when real prices rose but they always alternated with periods when real prices fell. For example, real prices rose in the period 1875–1895 but this increase disappeared when consumer prices rose much faster than residential property prices during the First World War. Real prices for residential properties recovered in the 1920s and declined again in the 1930s. As we have seen, in the post-war period there was a similar alternation between ups and downs. Real prices rose rapidly from the mid-1950s up to the late 1970s and then fell sharply until the mid-1980s. Another strong increase followed until the economic crisis in 1990–1993

Figure 2.11. *Evolution of nominal prices for residential properties, 1875–2010 (1957=100).*

— Göteborg, 1875–1957

— Göteborg, properties with taxation values up to 75,000 kr.,1922–1957

— Göteborg, properties with taxation values above 75,000 kr., 1922–1957

— Göteborg, houses, 1957–2010

— Göteborg, apartment buildings, 1957-2010

— Sweden, houses, 1957–2010

— Sweden, apartment buildings, 1957-2010
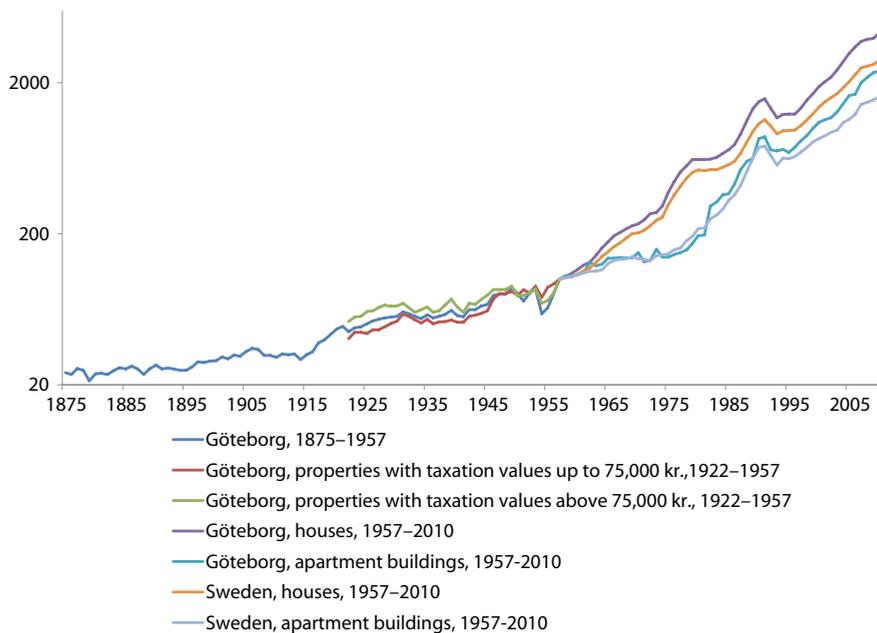
Sources: See Table A2.2 and Söderberg, Blöndal and Edvinsson (2014) of this volume.

Figure 2.12. *Evolution of real prices for residential property, 1875–2010 (1957=100).*

— Göteborg, 1875–1957

— Göteborg, houses, 1957–2010

— Göteborg, apartment buildings, 1957–2010

— Göteborg, properties with taxation values up to 75,000 kr., 1922–1957

— Göeteborg, properties with taxation values above 75,000 kr., 1922–1957
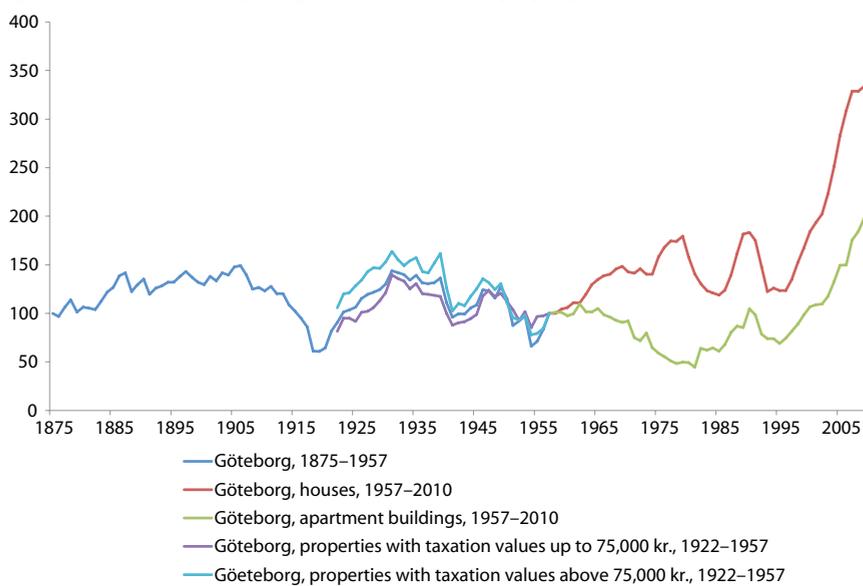
Sources: See Table A2.2, Edvinsson and Söderberg (2010), and Söderberg, Blöndal and Edvinsson (2014) of this volume.

Wiring (1907–1908) at the corner of Kyrkogatan and Korsgatan, Göteborg.
Source: Göteborg City Museum.

caused an equally sharp drop. In the mid-1990s the level of real prices was approximately the same as a century earlier.

Since the mid-1990s, nominal prices for houses have risen at much the same rate as in the 1960s and 1970s but as consumer price inflation has fallen back to low single-digit figures, house prices have risen strongly in real terms. At the time of writing, real house prices have been rising for more than 15 years to a degree that appears to be unprecedented in a historical perspective. Real prices for apartment buildings have also risen since the mid-1990s, although not as rapidly as for houses. The main difference between houses and apartment buildings is, however, the decline in real prices for apartment buildings in the 1960s and 1970s when real prices for houses rose rapidly.

2.5. Summary and conclusions

The main contribution of this chapter is a new series of price index numbers for residential property in Göteborg, 1875–1957. Constructing price indexes for residential property raises several methodological problems, mainly because the sample of properties is made up of heterogeneous objects that are sold infrequently. In order to compare prices at a point in time, different properties must obviously be related to

Käkbensgatan, Majorna, Göteborg in 1921, by Axel Harman. Many of the houses in Majorna were built in wood.
Source: Göteborg City Museum.

a common standard. Our preferred series has been constructed by means of the sales price appraisal ratio method, where sales prices are deflated by taxation values, the idea being that the latter reflect quality differences between properties. This is also the method which Sweden's central statistical agency, Statistics Sweden (SCB), uses to construct price indexes for residential properties. We have also applied another method, repeated sales regressions, to a sub-sample of our data. While the series do differ in some respects, both their overall levels and their overall patterns of development are similar.

Since the new price index series for residential property in Göteborg is based on a limited sample, it should be used with caution as a measure of annual changes in prices. We are, however, confident about the level of the series, as well as the overall pattern of development, where distinct periods are discernible.

Between 1875 and 1895 there was no clear trend in residential property prices. This was followed by an average annual increase of roughly 3 per cent until 1906 and then a decline at an annual rate of around 2 per cent until the First World War. Wartime inflation caused prices to rise for residential properties but by not nearly as much as prices in general. Prices for residential properties then fell during the post-war deflation and rose again in the 1920s. In the 1930s, residential property prices in Göteborg hardly changed. From the early 1940s until the 1950s they increased rap-

idly along with the generally higher rate of inflation. In the entire period 1875–1957, prices for residential properties rose at an average annual rate of 1.6 per cent.

In real terms, i.e. nominal residential property prices deflated by a consumer price index, the picture is very different, with no clear long-run trend between 1875 and the 1950s. In other words, prices for residential properties increased at much the same rate as the overall price level. But even in real terms there are distinct periods. Real prices for residential properties followed a rising trend from 1875 to 1906 and then fell steeply up to the end of the First World War. After an upward development in the 1920s, most of the fall in 1906–1918 had been recovered by the beginning of the 1930s. Real prices for residential properties then fell slightly during the 1930s and sharply when inflation increased during the Second World War and its aftermath. A general pattern seems to be that in the period 1875–1957, residential property prices fluctuated less than consumer prices and therefore rose in real terms during periods of deflation and fell during periods of inflation.

From 1957 onwards the new price index for Göteborg is linked to data from SCB. Since the 1950s, the long-term increase in nominal prices for residential properties has been stronger than before. Generally, prices have risen more rapidly in the major cities, Stockholm and Göteborg, than in Sweden as a whole. Except in the 1980s, prices have also risen more rapidly for houses than for apartment buildings. Data from Göteborg also suggest that at least since the beginning of the 1940s, prices for properties with low taxation values, many of which were no doubt owner-occupied houses, have risen more rapidly than for those with high taxation values. The fact that prices for apartment buildings have risen more slowly than for houses is probably related to the system of rent regulation (*hyresreglering*) that was in place in Sweden from 1942.

Of interest when studying the evolution of prices for residential properties is how they compare with the evolution of the general price level. Since the 1950s, nominal residential property prices have risen faster than prices overall, which gives an increase in real terms. Most of this increase has occurred since the mid-1990s. From 1875 until the mid-1990s there is no clear long-term trend in real prices for residential properties and the sharp increase in the past two decades is historically unprecedented.

Appendix

Table A2.1. *Ratio of average taxation values in years of general taxation assessments to the values in the previous period.*

Year of general taxation assessment	Average	Standard deviation	Max	Min	N
1876	1.13	0.15	1.76	0.65	174
1879	1.08	0.14	1.75	0.74	186
1882	1.02	0.11	1.80	0.60	197
1884	1.12	0.17	1.91	0.81	170
1887	1.02	0.15	1.70	0.54	177
1890	0.99	0.07	1.24	0.75	176
1893	1.04	0.10	1.65	0.80	196
1896	1.02	0.06	1.38	0.78	197
1898	1.03	0.09	1.54	0.93	192
1903	1.05	0.12	1.50	0.55	190
1908	1.06	0.12	1.50	0.67	184
1913	1.03	0.08	1.38	0.67	342
1918	1.18	0.19	1.98	0.42	344
1922	1.19	0.16	1.79	0.79	333
1928	1.10	0.13	1.51	0.70	276
1933	1.03	0.08	1.45	0.67	230
1938	1.02	0.09	1.45	0.67	209
1945	1.03	0.07	1.48	0.86	222
1952	1.19	0.12	2.23	1.00	191

Sources: Göteborgs address- och industrikalender, 1875–1947; GBG-boken 1952–1953.

Table A2.2. *Yearly average sales price ratios and index series for taxation assessment values and prices of residential properties, 1875–1952 (1912=100).*

	Average sales price appraisal ratio	Standard deviation	Min	Max	N	Index of taxation values, residential properties	Price index, residential properties
1875	1.32	0.29	0.73	2.10	81	58	76
1876	1.28	0.29	0.72	2.00	57	58	74
1877	1.24	0.26	0.71	1.90	44	66	81
1878	1.21	0.30	0.58	1.85	37	66	79
1879	1.03	0.23	0.57	1.60	40	66	67
1880	1.06	0.22	0.57	1.77	53	71	75
1881	1.07	0.17	0.54	1.55	64	71	76
1882	1.05	0.22	0.60	1.63	52	71	74
1883	1.09	0.27	0.54	2.14	75	73	78
1884	1.14	0.32	0.75	2.22	61	73	82
1885	1.00	0.18	0.60	1.49	82	81	81
1886	1.04	0.26	0.50	1.94	69	81	84
1887	1.00	0.23	0.61	1.88	73	81	81
1888	0.90	0.17	0.52	1.53	83	83	74
1889	0.98	0.24	0.53	1.82	75	83	81
1890	1.04	0.30	0.53	1.89	80	83	86
1891	0.99	0.19	0.58	1.67	87	82	81
1892	1.00	0.19	0.62	1.61	66	82	81
1893	0.99	0.22	0.56	1.65	63	82	81
1894	0.93	1.22	0.53	1.70	91	86	79
1895	0.93	0.14	0.65	1.27	76	86	79
1896	0.98	0.22	0.52	1.75	62	86	83
1897	1.04	0.21	0.58	1.79	88	87	90
1898	1.03	0.20	0.59	1.75	110	87	89
1899	1.02	0.18	0.57	1.56	72	90	91
1900	1.03	0.19	0.74	1.76	80	90	92
1901	1.09	0.27	0.50	2.10	89	90	97
1902	1.06	0.26	0.51	1.95	95	90	94
1903	1.12	0.28	0.74	2.15	71	90	100
1904	1.05	0.24	0.60	1.92	76	94	98
1905	1.13	0.28	0.62	2.19	95	94	106
1906	1.18	0.32	0.55	2.29	99	94	110
1907	1.16	0.24	0.76	2.0	72	94	108
1908	1.06	0.31	0.50	2.06	48	94	99
1909	1.00	0.21	0.57	1.79	79	100	99
1910	0.97	0.22	0.54	1.83	65	100	96

Table A2.2 (cont.). *Yearly average sales price ratios and index series for taxation assessment values and prices of residential properties, 1875–1952 (1912=100).*

	Average sales price appraisal ratio	Standard deviation	Min	Max	N	Index of taxation values, residential properties	Price index, residential properties
1911	1.02	0.23	0.58	1.86	62	100	101
1912	1.01	0.20	0.63	1.65	69	100	100
1913	1.02	0.18	0.72	1.67	83	100	101
1914	0.91	0.12	0.59	1.14	61	103	93
1915	0.98	0.18	0.64	1.63	57	103	100
1916	1.03	0.12	0.71	1.39	77	103	105
1917	1.18	0.25	0.67	2.06	79	103	120
1918	1.23	0.3	0.76	2.34	131	103	125
1919	1.14	0.19	0.88	1.67	97	122	137
1920	1.23	0.21	0.86	2.00	116	122	148
1921	1.28	0.29	0.87	2.15	53	122	154
1922	1.18	0.22	0.56	2.03	83	122	142
1923	1.05	0.16	0.52	1.59	92	145	150
1924	1.07	0.17	0.58	1.55	80	145	153
1925	1.12	0.16	0.74	1.60	86	145	160
1926	1.17	0.19	0.63	1.62	83	145	168
1927	1.2	0.17	0.81	1.79	78	145	172
1928	1.23	0.18	0.91	1.75	57	145	176
1929	1.13	0.19	0.72	1.80	74	159	178
1930	1.14	0.21	0.57	1.83	79	159	180
1931	1.22	0.23	0.86	2.07	48	159	192
1932	1.19	0.32	0.56	2.38	58	159	187
1933	1.14	0.25	0.66	1.90	83	159	180
1934	1.07	0.24	0.52	1.88	70	164	174
1935	1.13	0.26	0.61	2.07	82	164	183
1936	1.08	0.19	0.58	1.67	79	164	175
1937	1.11	0.22	0.66	1.67	98	164	180
1938	1.14	0.26	0.61	2.14	92	164	185
1939	1.19	0.29	0.50	2.33	124	167	197
1940	1.10	0.16	0.69	1.44	47	167	182
1941	1.08	0.21	0.50	1.36	64	167	179
1942	1.20	0.24	0.63	2.21	75	167	199
1943	1.20	0.24	0.50	1.94	82	167	199
1944	1.27	0.28	0.64	2.22	90	167	210
1945	1.30	0.29	0.52	2.4	100	167	215
1946	1.45	0.38	0.55	2.58	85	172	247

Table A2.2 (cont.). *Yearly average sales price ratios and index series for taxation assessment values and prices of residential properties, 1875–1952 (1912=100).*

	Average sales price appraisal ratio	Standard deviation	Min	Max	N	Index of taxation values, residential properties	Price index, residential properties
1947	1.48	0.34	1.00	2.81	57	172	252
1948	1.47	0.4	0.95	2.78	39	172	251
1949	1.63	0.41	1.00	2.32	30	172	278
1950	1.49	0.39	0.91	2.36	43	172	254
1951	1.33	0.48	0.60	2.57	65	172	227
1952	1.50	0.56	0.50	2.86	48	172	256
1953	1.34	0.4	0.55	2.50	44	205	272
1954	0.92	0.23	0.52	1.83	268	205	187
1955	1.01	0.37	0.51	2.08	156	205	205
1956	1.25	0.54	0.53	2.98	89	205	254
1957	1.56	0.52	0.83	2.73	29	205	316

Sources: Göteborgs address- och industrikalender, 1875–1947; Göteborgs landsarkiv. Göteborgs Rådhusrätt och magistrat 1:a avdelningen före år 1900, A II a Lagfartsprotokoll; Göteborgs landsarkiv, Göteborgs Rådhusrätt och magistrat 1:a avdelningen efter 1901, A II aa Lagfartsprotokoll 1901–1939, A II ad Inskrivningsakter 1940–1967.

Table A2.3. *Price indexes for residential property in Göteborg 1874–1957, calculated by means of the repeated sales method.*

	Bailey et al.'s method	Case & Shiller's method
1875	100	100
1876	110	110
1877	120	121
1878	101	106
1879	111	114
1880	96	99
1881	107	108
1882	107	108
1883	107	106
1884	120	119
1885	105	105
1886	115	114
1887	118	117
1888	114	111
1889	111	108
1890	120	119
1891	121	120
1892	125	123
1893	130	126
1894	114	112
1895	123	120
1896	120	118
1897	123	119
1898	136	132
1899	124	120
1900	135	130
1901	132	126
1902	134	129
1903	141	136
1904	141	136
1905	139	134
1906	152	145
1907	153	147
1908	146	138

Table A2.3 (cont.). *Price indexes for residential property in Göteborg 1874–1957, calculated by means of the repeated sales method.*

	Bailey et al.'s method	Case & Shiller's method
1909	143	136
1910	142	135
1911	151	142
1912	145	138
1913	145	137
1914	144	136
1915	145	138
1916	151	142
1917	180	169
1918	184	173
1919	196	184
1920	211	195
1921	203	182
1922	197	183
1923	217	203
1924	215	200
1925	238	223
1926	242	223
1927	229	211
1928	240	219
1929	243	221
1930	246	225
1931	251	227
1932	236	214
1933	218	198
1934	222	200
1935	222	205
1936	246	222
1937	213	192
1938	224	203
1939	235	210
1940	230	210
1941	211	188
1942	222	201
1943	241	218

Table A2.3 (cont.). *Price indexes for residential property in Göteborg 1874–1957, calculated by means of the repeated sales method.*

	Bailey et al.'s method	Case & Shiller's method
1944	259	231
1945	241	216
1946	280	249
1947	318	282
1948	314	278
1949	351	304
1950	320	282
1951	310	275
1952	340	299
1953	368	322
1954	303	270
1955	378	333
1956	350	315
1957	370	320

Sources: Göteborgs landsarkiv, Göteborgs Rådhusrätt och magistrat 1:a avdelningen före år 1900. A II a Lagfartsprotokoll; Göteborgs landsarkiv, Göteborgs Rådhusrätt och magistrat 1:a avdelningen efter 1901, A II aa Lagfartsprotokoll 1901–1939, A II ad Inskrivningsakter 1940–1967.

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3.
A price index for residential property in Stockholm, 1875–2012[1]

Johan Söderberg, Sölvi Blöndal, and Rodney Edvinsson

3.1. Introduction

This chapter presents a new series of real prices for residential properties in Stockholm from 1875 up to 2012.[2] For the period up to 1957, the study is based on a sample of 13,812 prices of sold residential properties and also uses official statistics. Sources and methods are described in section 3.2 below. Various phases in housing prices and business cycles are discussed in section 3.3. Price volatility is briefly studied in section 3.4, where some comparisons are made with other European cities. The relationship between sold properties and total stock is discussed in section 3.5. Section 3.6 reports the results of a repeated sales analysis. A concluding discussion follows.

3.2. Sources and method

Official statistics on prices of residential properties in Sweden have been published since 1952. These series use the average sales price ratio, defined as the ratio between purchasing prices and local authorities' assessment values for taxation purposes. In order to construct a comparable price index for the period before 1952, it is necessary to find data on actual sales prices as well as tax assessment values for a number of properties.

The property tax valuations used in this study have been drawn from the annual

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2   Residential property is divided here into two groups: apartment buildings (Swedish *hyreshus*) and houses (Swedish *småhus, 1- och 2-familjshus, radhus, etc.*).

One of the sources used in this study is Stockholms adresskalender, which from 1931 includes information on the most recent sales price and the year in which this purchase was made.

publication *Stockholms adresskalender*.[3] The purchase prices, on the other hand, stem from the register of certificates of title to properties in the archive of the Stockholm magistrates' court.[4] This register is chronologically ordered and gives information on the property's official name, the names of the seller and buyer, and the purchase price. For this study, systematic samples of about 200 property sales per year have been drawn from the register (see Appendix, Table A3.2). The sales price ratio has been calculated by dividing the sales price by the tax assessment value.

Beginning in 1931, *Stockholms adresskalender* includes information on the most recent sales price and the year of that purchase. This means that data on tax assessment values and sales prices can be found in the same volume, which saved a great deal of time for this study. Data on about 150–200 transactions a year have been drawn for the period 1930–38. From 1939 onwards the number of transactions decreased, sometimes to only about 30; for most of these years all purchases have been included.

A drawback with the register of certificates of title is that it does not state the date of purchase, only the date of issue of the title. The legal framework requires that the request for title is to reach the magistrate within three months of the purchase. However, this was not always adhered to. In 1939, for example, 79 per cent of the bills of sale were dated in the same year as the issue of title; in the next two years the figure had dropped to 61 and 66 per cent, respectively, which reflected the lower activity in the property market after the outbreak of war.[5] In the present study no correction has been made for the fact that some of the purchases were made in the year before the issue of title.

The administrative borders of the City of Stockholm changed during the period of investigation. Several suburban areas (Brännkyrka, Bromma, Enskede, and Spånga) were incorporated during the early 20th century; these incorporations are disregarded in the present study, which is confined to the inner city. Property values were much lower in the incorporated areas. In 1930, for example, the average tax assessment value was 426,000 SEK in the inner city but only 23,000 SEK in Brännkyrka and 36,000 SEK in Bromma.[6] Confining the study to the inner city throughout the period makes for better comparability over time.

We have spliced the price series constructed in this study to Statistics Sweden's statistics on property prices. The latter have been published since 1952 but for the first five years, 1952–56, only as summary statistics for this period as a whole.[7] It

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3   For the period 1882–1926, *Stockholms adresskalender* has been scanned and can be downloaded as pdf files from Stockholmskällan (http://www.stockholmskallan.se). They are partly searchable.
4   Diarium över beviljade lagfarter, Stockholms rådhusrätts första avdelnings arkiv, Stockholms stadsarkiv.
5   "Lagfarna fastighetsköp 1939–1941" (1941–1942)*,* p. 13.
6   *Statistisk årsbok för Stockholms stad* 1932, p. 156.
7   Hammarberg (1958).

should be noted that Statistics Sweden's published statistics refer to the whole of Stockholm City, not just the inner city.

In the first half of the 20th century, general tax assessments of residential properties were carried out approximately every fifth year in Stockholm. In the last decades of the 19th century, such tax assessments were done at shorter intervals, about every third year.[8]

According to the instructions, a tax assessment value should be set in accordance with the property's value in the area in question. This general sales value (*allmänna saluvärdet*) was defined as "the amount a sensible buyer would be assumed to pay for the property, if it was sold within the circle of clients that would be expected for such a property, and bought for a suitable use with regard to the character of the estate".[9] There was no automatic link to the most recent purchase price. On the contrary, it was emphasized that the most recent price would not necessarily represent the general sales value since it was liable to be affected by temporary circumstances such as kinship, abnormal business activity, imperative reasons, imprudent agreement, etc.

The methodology for the construction of a price index for residential property for Stockholm is the same as the one described in Bohlin's (2014) study of Göteborg in this volume. Thus, information on sales prices as well as tax assessment values are used in the calculation of the index according to the so-called 'sales price ratio method' (*köpeskillingskoefficientmetoden*). The price index for residential property is calculated as the average sales price ratio multiplied by an index of tax assessment values. The sales price ratios and the index of tax assessment values are reported in the Appendix, Tables A3.2 and A3.4.

Information on the average change in taxation values from one assessment to the next has been obtained from a sample of between 190 and 346 properties that have been followed during at least two assessment years in the period 1876–1957. Altogether, this has given nearly 5,000 observations on changes in taxation values.

The effects of the tax assessments are discernible in Figure 3.1. Years with tax reassessments often stand out as local maxima in the curve. Between the reassessments, taxation values tend to lag behind sales prices.

Statistics Sweden's price index is published on their website for different types of property, extending back to 1975.[10] Information on property prices for houses and

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8   In the period 1875–1960, general property tax reassessments were carried out in Stockholm in 1876, 1879, 1882, 1884, 1887, 1890, 1893, 1896, 1898, 1903, 1908, 1913, 1918, 1922, 1928, 1933, 1938, 1945, 1952 and 1957.

9   The quote is from the law on the 1928 property assessment; Baehrendz (1927), p. 17. The same norm was used for a long time in subsequent reassessments; see Aldén (1921), p. 6; Sköld and Vanner (1937), pp. 10, 52, and Geijer, Rosenqvist and Sterner (1969). A new principle was introduced in the general assessment of 1975: the taxation value should henceforth be set to 75 per cent of the property's market value; *Allmän fastighetstaxering 1975, del 1* (1975), p. 16.

10   Statistics Sweden, Statistikdatabasen.

A View of Slussen. Painted by Carl August Tholander in 1898.
Source: Stockholm City Museum.

apartment buildings has, however, been processed since 1952, and since 1932 for agricultural property.[11]

Statistics Sweden uses various methods to calculate the development of property prices.[12] There is no international standard in this field.

In the first place, Statistics Sweden's information is based on the Real Estate Price Index (FASTPI), which is calculated with the aid of the property stock's composition and information on prices of sold properties, where the primary material is land registration statistics.

Another method used by Statistics Sweden is based on the purchase price coefficient, calculated as the ratio of the purchase price (i.e. the property's market price) to the tax assessment value. This is a measure of how much prices have changed in relation to the level at the time of the tax assessment. This index has more to do with the entire stock of properties, whereas the Real Estate Price Index (FASTPI) reflects the price trend for properties that have been sold. As general assessments for tax purposes are adjusted every few years, the latter method is probably more suitable for constructing historical series.

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11   Statistics Sweden (2006), p.144; Hammarberg (1958).
12   *Statistiska meddelanden*, BO 41 SM 1201.

Neither of the two methods used by Statistics Sweden corrects for the effect of buildings becoming older.

In his doctoral dissertation, Bo Sandelin (1977) used Statistics Sweden's earlier material as a basis for calculating the annual development of property prices in the periods 1952–56 and 1957–74. For this he adopted the purchase price coefficients published by Statistics Sweden. For the period 1952–56 he used the excess price percentage value (*överprisprocenten*), which states how much the selling price exceeded the tax assessment value and can be converted into a purchasing price coefficient. Since, according to Sandelin, no usable information is available on changes in tax assessment values in 1957, one cannot construct a price index that runs continuously from 1952 onwards. As calculations based on the purchase price coefficient do not allow for aging and other changes in the quality of properties, Sandelin made certain adjustments for such effects.

Statistics Sweden's material makes it possible to construct indexes for different parts of the country as well as for different types of property. However, it is not possible to construct an index that is completely in line with the present project's indexes for Stockholm and Göteborg. Another problem is how to judge various changes in taxation values that occurred in connection with the reassessments. Moreover, the geographic boundaries changed over time. Statistics Sweden's price indexes for residential properties are limited to houses; data on apartment buildings and commercial real estate exist only in raw form.

In the present study an index is presented at the national level, and for the Stockholm and Göteborg areas to achieve comparability with the series up to 1957. Two different types of index are presented, one for houses and the other for apartment buildings. The index for houses has risen much more than the apartment buildings index. This has to do with the regulation of rents, which have held rents down compared to a free market. Therefore, it is the index for houses that probably best reflects the market price. Since virtually all residential property in the inner city of Stockholm consisted of apartment buildings, the index up to 1957 is comparable to the index of apartment buildings from 1957 onwards.

For houses, the present study uses the weighted ratios of sales prices to taxed values up to 1975, while FASTPI is used from 1975. However, this is problematic for apartment buildings, because only a few were sold each year, and the ratios could therefore be biased towards a few large properties. Therefore, the unweighted ratios are used for apartment buildings when such information is available.

For the Stockholm region, the present study uses an index based on the urban area of the City of Stockholm up to 1969, the urban area of Stockholm County 1969–70, and Stockholm County from 1970.

For Göteborg, the present study uses an index based on the urban area of Göteborg & Bohus County for the period up to 1970, and on Göteborg & Bohus County for 1970–75. For houses, after 1975 the Göteborg index is based on Greater Göteborg. For apartment buildings, the index is based on Göteborg & Bohus County

(the material after 1996 is unpublished and has been bought from Statistics Sweden).[13]

3.3. Phases in property prices

Figure 3.1 describes the evolution of sales prices and taxation assessments in current prices in Stockholm 1875–1957. Figure 3.2 presents the same data in constant prices, where Statistics Sweden's CPI is used as deflator. The deflation aims at eliminating the effects of inflation (or deflation, which was quite marked in the early 1920s) on property prices. For the period up to World War I the deflation procedure has little effect since inflation was low. The following discussion focuses on the development in constant prices.

Five phases can be discerned in Stockholm property prices at constant values up to 1957:

Prices rise 1875–1909

Prices fall 1909–1918

Prices rise 1918–1931

Prices fall 1931–1943

An uneven development 1943–57, with rising prices up to 1947 and falling prices after that.

The first and longest phase, from 1875 up to 1909, is characterized by growth in real property values. In this period the real price per sold property more than doubled. The annual increases averaged 2.4 per cent.

This phase has attracted a good deal of attention from historians. The notable overall increase conceals a number of marked fluctuations.

In the first half of the 1880s, trade in building sites was lively and housing construction was intense. Large residential areas were developed in the outer parts of the city. This expansive phase ended in a crisis of overproduction in the autumn of 1885. Many building contractors went bankrupt and the number of compulsory auctions rocketed. The crisis continued until 1893 but some recovery occurred in the latter half of the 1880s. Residential construction was still fairly extensive and a large number of apartments lacked tenants.[14]

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13 'Prisstatistik för Hyreshus – Göteborg och Bohuslän', unpublished Excel-file.
14 Hammarström (1979), pp. 40–41; Jacobsson (1996), pp. 66–70.

Figure 3.1: *The sales price index and the index of taxation values in current prices in Stock-holm, 1875–1957 (1912 = 100).*
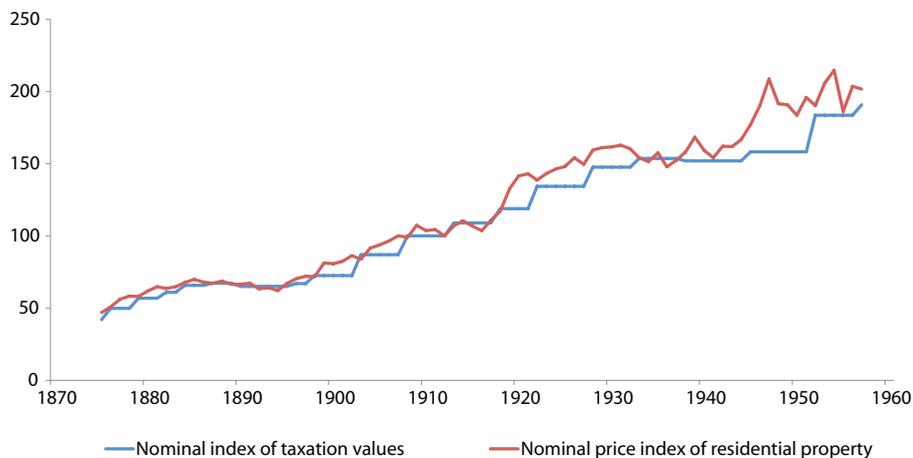
Sources: Diarium över beviljade lagfarter, Stockholms rådhusrätts första avdelnings arkiv; *Stockholms adresskalender; Stockholms fastighetskalender: Register över fastighetsbeståndet i Stockholm med uppgifter om ägare, värden, areal m.m.* (1932); *Fastighetskalender för Stockholms stad 1938* (1938).

Figure 3.2: *The sales price index and the index of taxation values in constant prices in Stockholm, 1875–1957 (1912 = 100).*
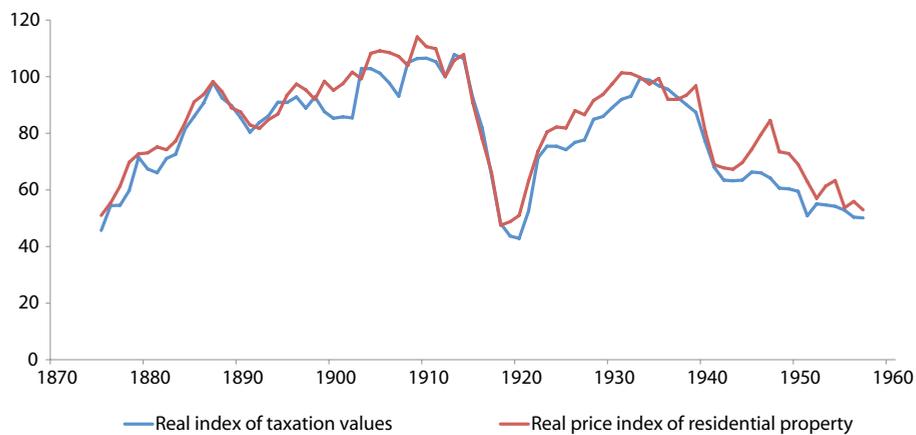
Sources: See Figure 3.1. CPI: Edvinsson and Söderberg (2010).

Residential construction was stimulated by the disposal of sites owned by Stockholm City, which dominated this market. The aim was to make a profit and use the proceeds to repay large loans and finance heavy investment in infrastructure, such as water conduits, sewers, gas and electricity.[15] An example is the Rörstrand property, which occupied about 330,000 square meters and had been bought by the City in 1883. When the street system had been put in order, parts of the property were sold in 1885. By the end of that year the City had sold a seventh of the plot at a price which more than covered what the entire property had cost to buy.[16]

In the present study, a boom in real prices for Stockholm properties is evident around 1885, followed by depressed prices between 1889 and 1892. This gives the impression that the problems in the residential market were concentrated to a few years. One explanation may be that overproduction was largely confined to the exclusive, palatial buildings in north-eastern Stockholm (Östermalm). Demand had shifted to smaller apartments and these residences became hard to let out.[17]

These observations indicate that the real property prices in this study are not a direct indicator of problems in the residential market. There are no doubt other indicators which are more sensitive to cyclical fluctuations, for example the volume of residential construction and the extent of compulsory sales of residential property.

In late winter 1907, the business boom in Sweden came to an end due to a financial crisis that had started in the United States. In spring 1908, residential construction in Stockholm declined, partly due to a series of strikes and lockouts that brought all construction activity in the capital to a halt. As interest rates rose, many building contractors became unable to complete work in progress and went bankrupt.[18] Compulsory sales of real property in Stockholm rose sharply in 1907 and went on increasing in the next two years.[19] At the national level, building and construction slackened substantially in the three years 1907–09.[20] The index presented in this study only partially conforms to these fluctuations, as the average real price per property dropped markedly in 1908 but rose strongly in 1909.

During World War I, real property prices in Stockholm turned downwards. The drop in 1918, by 28.0 per cent, was the largest for a single year in this study. By this time, the real price of residential property had more than halved since the peak year of 1909, an average decline of 9.3 per cent a year. Whereas national accounts show a sharp dip in building and construction in 1914[21], the price index in this study did not drop until the subsequent year.

The war drove up the cost of building material and fuel, and interest rates for

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15 Forsell (2003), pp. 165–169; Sheiban (2002), pp. 68–87.
16 Sheiban (2002), p. 73.
17 Sheiban (2002), pp. 256, 262.
18 See also Waldenström (2014).
19 Perlinge (2012), pp. 15–43; Fritz (1994), pp. 291–305.
20 Edvinsson (2005), p. 319.
21 Edvinsson (2005), p. 319.

mortgage loans also rose. Residential construction came to a virtual standstill. Rent controls were introduced in 1917: the law permitted landlords to raise rents to cover increased costs for fuel, interest rates, amortization and repairs but imposed a ceiling on profits.[22] The law was opposed by property owners, who maintained that higher rents were needed to stimulate the production of housing. One of the critics was the economist Gustav Cassel, who argued that higher rents would lead to out-migration from the City, which he regarded as both economically and demographically sound.[23]

After World War I, prices began to rise again. From the low in 1918 to the peak in 1931, real property prices rose at an average annual rate of 6 per cent. However, prices in 1931 were lower than before World War I. Rent control was formally abolished in 1923 but had already become of little importance. Residential construction was extensive during much of this period, in particular the years 1924–30, with the emphasis on small and medium-sized apartments.[24] People migrated from large, outmoded apartments to small, modern units even though access to bathrooms and central heating entailed a sizeable increase in rents. Demand for housing was affected by an unusually large net migration to Stockholm.[25]

In 1932, real property prices in Stockholm began to drop again. The international depression had reached Sweden. In the national statistics, the downturn started a year earlier.[26] Compulsory auctions rose strongly in 1932 and remained at a high level up to 1937.[27] Average real property prices fell in 1931–43 at an average annual rate of 3.4 per cent. Despite upward tendencies in certain years and low interest rates, there was no recovery in the rest of the 1930s and prices fell by a further large amount during the war years 1940–43.

In the period 1943–46, real property prices rose at an annual average of as much as 5.7 per cent. Housing demand was boosted by a high level of marriages and births.[28] The introduction of rent controls in 1942 did not check the price rise in this period.

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22 Jacobsson (1996), pp. 40–41, 138–142.
23 Forsell (2003), pp. 286–295.
24 See statistics on residential construction in *Statistisk årsbok för Stockholms stad*.
25 Jacobsson (1996), pp. 170–175, 179.
26 Edvinsson (2005), p. 320.
27 Statistics on total real property sales, with compulsory sales specified, were published on a regular basis in *Statistisk årsbok för Stockholms stad*. These statistics refer to Stockholm as a whole, not only the inner city.
28 Data on births and marriages can be found in every issue of *Statistisk årsbok för Stockholms stad*.

Figure 3.3: *Average sales price ratio in Stockholm and Göteborg, 1875–1957.*
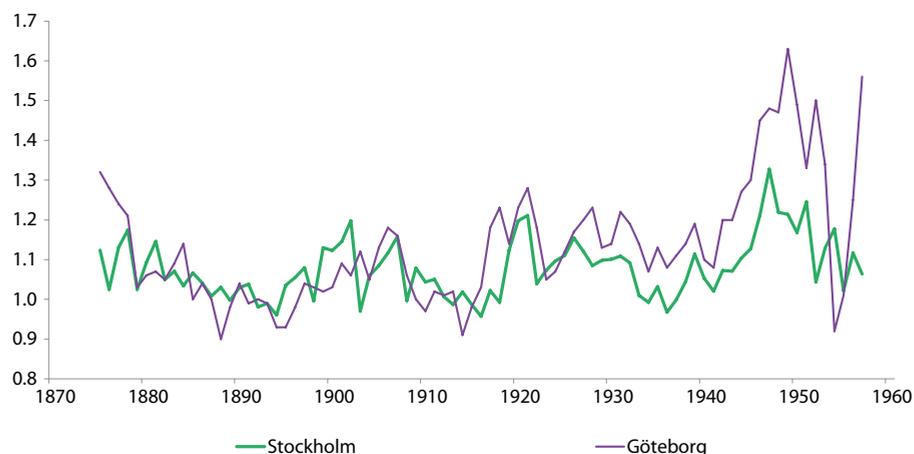
Source: Stockholm: Table A3.2; Göteborg: Bohlin (2014).

The average sales price ratio in Stockholm was similar to that of Göteborg up to the mid-1920s (Figure 3.3). After that, the Göteborg sales price ratio was generally higher than in the capital, particularly after 1940. In both cities, the sales price ratio tended to rise during the last decades of the period studied.

The evolution of property prices in Stockholm and Göteborg shows, as seen in Figure 3.4, striking resemblances with the series that have been published for the Norwegians towns of Oslo, Trondheim, Bergen, and Kristiansand.[29] In real terms, prices rose during the last decades of the 19th century. The upsurge was stronger in the Norwegian towns than in Stockholm. The upward tendency stopped already around 1900 in Norway, whereas it continued in Stockholm. In Stockholm as well as in Norway, real prices were reduced to a very low level around 1920. The subsequent upturn up to the 1930s' depression was a common trait, as was the falling trend after about 1935. Norwegian real prices reached a bottom level in 1954, which Eitrheim and Erlandsen explain by the strict rent control which was applied up to that year. The price level was then even somewhat below notations around 1920. The covariation of Norwegian and Stockholm prices was weak around the turn of the century 1900, but was clearly amplified from World War I onwards.

A series of property prices for USA, constructed by Robert J. Shiller, shows no evident long-run covariation with Stockholm prices.[30]

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29 Eitrheim and Erlandsen (2004), p. 363.
30 www.irrationalexuberance.com/Fig2.1Shiller.xls.

Figure 3.4: *Real property price in Stockholm and Norway 1875–1957, index 1912 = 100.*
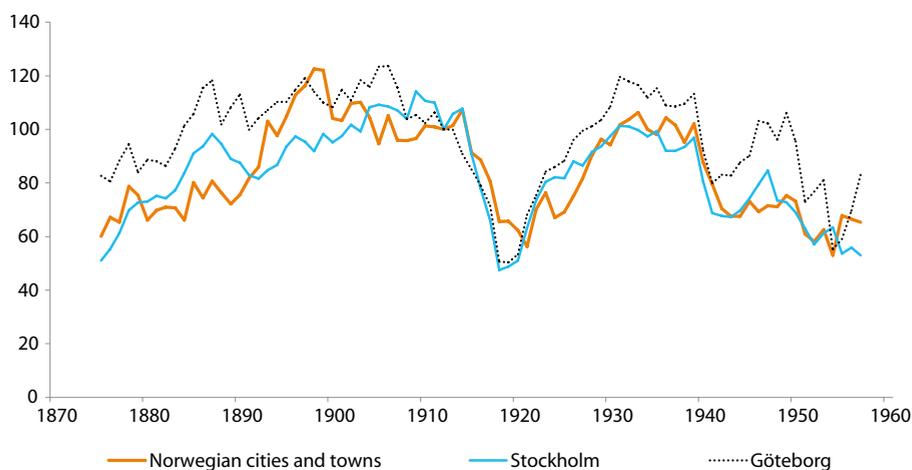
Sources: Stockholm: see Table A3.4. Norway: Eitrheim och Erlandsen (2004), pp. 373–375 (nominal prices); Grytten (2004), p. 93 (consumer price index). Göteborg: Bohlin (2014).

Figure 3.5 presents the development of the price indexes for residential property in Stockholm, Göteborg and at the national level, deflated by the Consumer Price Index from 1957 onwards. It shows that the price of 1- and 2-family houses increased much faster than that of apartment buildings. This is an effect of the regulation of rents, which was initially implemented in the early 1940s. At the national level the real price of apartment buildings was halved between 1957 and the early 1980s, followed by a rebound so that the level in 2012 was slightly above the level in 1957.

The development of the real price of apartment buildings in Stockholm was more positive than in the rest of the county. The real price of houses was basically flat between 1957 and the mid-1990s, although development was slightly more positive in Stockholm and Göteborg. The upturn since then is unprecedented, especially in Stockholm and Göteborg, where real prices around 2010 were more than 250 per cent above the level in 1957. The period 1995–2010 could, therefore, be viewed as unique from a historical perspective. It should also be emphasized that it is the price of houses that represents market conditions.

Figure 3.5: *The development of price indices for different types of residential property, deflated by the Consumer Price Index, 1957–2012 (1957=100).*
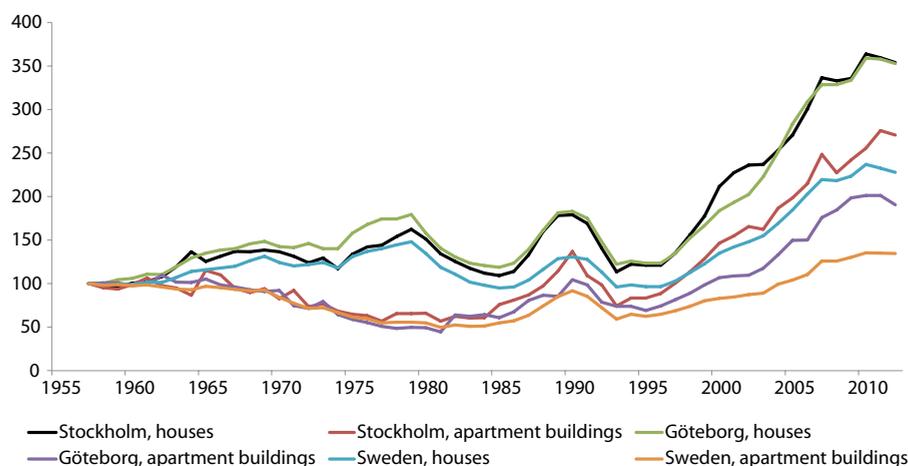
Source: Table A3.5.

Figure 3.6 presents price indexes for apartment buildings together with indexes for houses to illustrate the divergent development of the two types of market. It shows that the fall in the relative price of apartment buildings roughly occurred between 1960 and 1980. There was then a recovery during the 1980s, but since then the level has stagnated. The relative price of apartment buildings in Göteborg has developed more negatively than in Stockholm.

To what extent the price of apartment buildings declined relative to houses before 1957 is not possible to determine at this stage of research. A decline seems likely in that rent regulation began in the 1940s but the data presented by Hammarberg (1958) for 1952–56 show that at national level the two price categories developed similarly during those four years.

Figure 3.6: *The ratio of price indexes for apartment buildings to indexes for houses in various areas, 1957–2012 (1957=1).*
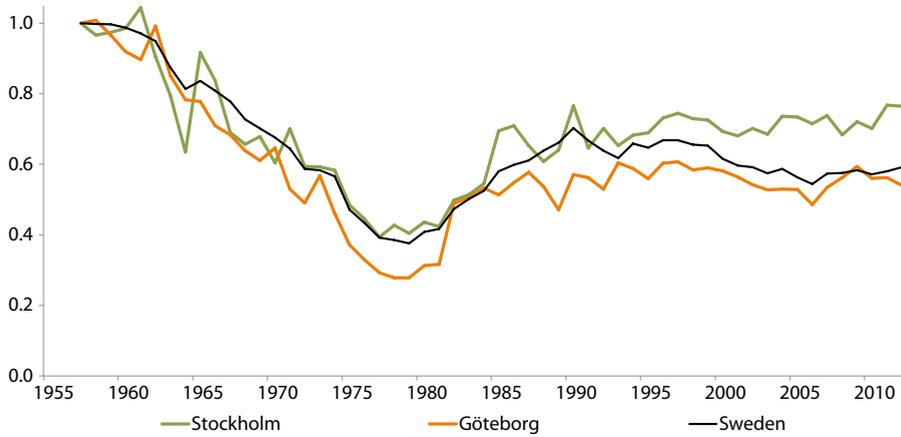
Source: Table A3.5.

Figure 3.7: *Real prices of apartment buildings and houses in Stockholm, 1875–2012 (index 1957 = 100).*
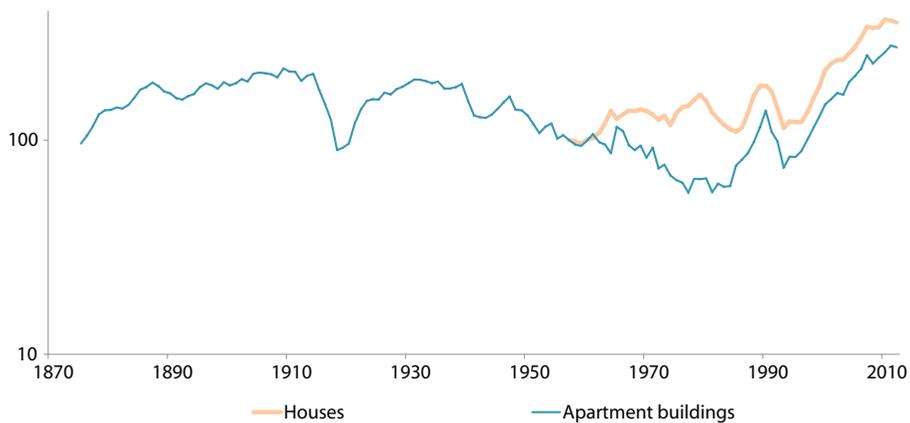
Source: Table A3.5.

Figure 3.7 gives a somewhat simplified view of the course of real property prices in Stockholm in the very long run, from 1875 up to 2012. Data before 1957 refer to the inner city, where apartment buildings were a much more important sector of the market than houses. Prices before that year are therefore assumed to reflect those for apartment buildings. This series can then be compared to the series for apartment buildings in the strict sense from 1957 onwards.

The real price of apartment buildings in the long run forms a rather flat curve, with a positive trend up to 1914 and a negative trend from about 1930 to 1980. This is in contrast to house prices, which show a predominantly upward curve from 1957 up to 2012. Rent regulation no doubt played a major role in the diverging trend of apartment buildings versus houses during the 1960s and 1970s. The gap between these series culminated around 1980, which probably gives an idea of the effects of rent regulation. After the mid-1980s, on the other hand, the movement of apartment building prices is very similar to that of houses. Rent regulation has been gradually dismantled, and in recent decades real rents have been allowed to increase at a much steeper rate than before.

3.5. Volatility in property prices

The volatility of prices can give information about turbulence in the property market. Volatility can be measured in several ways. A study of Herengracht in Amsterdam uses the standard deviation of the yearly percentage change in price.[31] This price index is available on a biannual basis only. The higher the standard deviation, the greater are the short-run fluctuations from one year to the next. Volatility in real property prices in Stockholm, the Norwegian towns, and Herengracht is presented in Table 3.1.

Volatility in real prices turns out to have been far greater in Herengracht than in Stockholm in four out of five periods in Table 3.1. The volatility in Stockholm was somewhat lower than in Norway. Only in one period, 1909–1918, did volatility in real prices in Stockholm exceed that of Norway. The Herengracht index was particularly volatile in the mid-1930s, when the change from one two-year period to the next exceeded 40 per cent on two occasions.

Table 3.1: *Volatility in real property prices in Stockholm, the Norwegian towns, and Herengracht, Amsterdam, 1875–1957.*

Period	Stockholm	Norway	Herengracht
1875–1909	5.0	8.8	19.1
1909–1918	11.1	8.2	11.7
1918–1931	11.0	11.1	18.0
1931–1957	7.1	9.2	37.8
1875–1957	8.0	9.2	40.4

Sources: Stockholm: see Table A3.4. Norway: Eitrheim and Erlandsen (2004), pp. 373–375 (nominal prices); Grytten (2004), p. 93 (CPI); Herengracht: Eichholtz (1996), Appendix.

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31 Eichholtz (1997).

3.6. The relationship between sold properties and total stock

In his study of prices of residential property, Bo Sandelin remarks that the properties sold were not a random sample of the total stock of property. In estimating the price changes, however, he disregards this potential source of error and assumes that the price trends of properties sold were the same as for properties that did not change owner.[32]

For Stockholm it is to some extent possible to clarify this issue on the basis of published statistics. For many years, *Statistisk årsbok för Stockholms stad* reported aggregated statistics on taxation values relating to the total stock of properties. This information can be used for assessing to what extent taxation values of properties sold departed from those of the total stock. Table 3.2 shows the distribution of the total stock of properties by taxation value for every tenth year from 1880 up to 1930.[33]

The differential between the sample drawn for this study and the total stock of properties was largest in 1920. The properties in our sample that were *sold* in that year (N = 227) had an average taxation value of 368,000 SEK. The corresponding figure for the *total* stock of properties was 277,000 SEK (N = 6,514). In other words the average of the taxation value of properties sold was 33 per cent higher than the average of the total stock. The unusually large discrepancy in this particular year seems to indicate that the taxation values of 1920 (which had been set in 1918) did not keep up with the strong inflation at the end of World War I, whereas prices of sold properties did so to a larger extent. In the other years examined, the differential ranges from 6 per cent (1890) up to 19 per cent (1900). Generally, then, the properties sold should not be considered as a random sample of the total stock, but exhibit a shift towards higher taxation values.

Table 3.2 also reports the average taxation value per property, deflated by the CPI. The results confirm the view of the 1920s as a period of strongly rising property prices. Data for the period 1880–1910 also indicate substantially rising property prices, which is well in line with the results from the sample drawn for this study.

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32 Sandelin (1977), p. 89.

33 This information is available for all intervening years as well. Data are presented at the parish level, which makes it possible to separate the inner city of Stockholm.

Table 3.2: *Number of properties in Stockholm's inner city by taxation value, 1880–1930.*

Taxation value, 1,000 SEK	1880	1890	1900	1910	1920	1930
<1	47	44	73	45	68	5
1–5	349	262	265	184	171	54
5–10	358	343	301	219	174	65
10–25	709	663	560	376	415	240
25–50	736	702	676	524	477	446
50–100	879	1,257	1,239	756	672	562
100–200	621	1,223	1,472	1,436	1,284	1,069
200–300	172	369	514	1,074	1,168	1,043
300–400	51	91	169	593	806	965
400–500	20	47	57	290	430	724
>500	17	52	116	461	849	2,108
Exempted from taxation	183	270	269	445	763	324
Sum	4,142	5,323	5,711	6,403	7,277	7,605
Sum, excluding exempted	3,959	5,053	5,442	5,958	6,514	7,281
Sum of taxation value, million SEK	262	473	663	1,265	1,803	3,100
Taxation value per property	66	94	122	212	277	426
Taxation value per property in this study	75	99	145	227	368	480
Ratio of taxation value per property in sample to total stock	1.13	1.06	1.19	1.07	1.33	1.13
Taxation value per property / CPI, 1900 = 100	55	86	100	158	70	179

Source: *Statistisk årsbok för Stockholms stad* 1882, p. 170 f; 1892, p. 182 f; 1902, p. 214 f; 1912, p. 360; 1922, pp. 134–136; 1932, p. 156. CPI: Edvinsson and Söderberg (2010).

Building site from central Stockholm, 1964.
Source: Stockholm City Museum.

3.7. A repeated sales analysis

Designing a price index for housing is complicated not least by the qualitative change being very difficult to measure. A price index shall preferably be based on constant qualities (which various hedonic price indexes attempt to take into consideration). Eitrheim and Erlandsen's (2003) series for Norway are based on comparing the price in sales of the same property, but at different times (a "repeated sales house price index"). This is one way of keeping quality constant. However, the method poses a number of problems. All sales are given the same weight, whereas a price index should give greater weight to a more expensive property. Moreover, the quality of the same property changes over time and increase the property's value (urban growth

Stockholm panorama. Lithograph by Carl Johan Billmark 1868.
Source: Wikimedia.

also leads to a small-town property becoming a property in a larger town, which can also be regarded as an increase in quality, while a price index that assumes constant quality should keep the town's population constant). Also the property grows older, which reduces its value.[34]

Eitrheim and Erlandsen hope that one effect cancels out the other. This assumption could be questioned and it might have been more appropriate to focus on some benchmarks for a more in-depth analysis of the change in quality for properties sold during the period. However, there is no simple solution to the problem.

The repeated sales method was first proposed by Bailey, Muth and Nourse (1963). As the name indicates, the method utilizes information on identical properties which have been sold more than once. Because only matched models are used, there is no change in the quality mix to control for. In its basic form, the only information required is the price, sales date and address of the property. So this method is much less data-intensive than hedonic methods. Also, the repeated sales method automatically controls for micro location, something which hedonic methods are unable to do.

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34 See, for instance, Englund, Quigley and Redfearn (1999) for a broader discussion of different models for the construction of a real estate price index.

The simplest way to explain the repeated sales regression method in its basic form is to start from the time dummy hedonic model. Thus, it is assumed that the characteristics parameters are fixed over time. Since identical houses are compared, there is a second restriction involved: the characteristics of the properties are also assumed to be constant. In any given set of sample, individual properties are followed through time, so changes in the index occur only in response to changes in prices of individual properties sold. This approach solves the issue of varying composition that mean and median indices suffer from.

Here we construct a repeated sale index for the period 1875–1957, which is compared to the index based on the sale price ratio method. The repeated sales method has many useful characteristics. First, the method is based on sale prices of standard existing houses, not new construction, and thus tracks the investment value of houses over time. Second, the method successfully avoids the potential pitfalls of increased quality in housing over long periods of time.

The methodology applied here is based on Bailey, Muth and Nourse's (1963) concept of repeated sales. Let there be $T + 1$ time periods where sale can occur from $0,1,\dots T$ and t be the subscript for time. For a pair of sales of a given house i, prices and indices are related by the following expression:

$$\frac{P_{it1}}{P_{it}} = \frac{B_{t1}}{B_t} U_{itt1} \tag{1}$$

where P_{it} is the sale price of the ith house at the tth time period. Let t be the time at the first sale and $t1$ the time at the second ($t1 > t$) and let B denote the general house price index at time t. Finally, U_{itt1} is the error term and is assumed to have a log normal distribution: $\log U_{itt1} iid N(0, s_u^2)$ where iid denotes independent and identically distributed. The model is then fitted on the logarithmic scale:

$$p_{it1} - p_{it} = b_{t1} - b_t + u_{itt1} \tag{2}$$

where p, b and u are simply logarithmic versions of equation (1). Essentially, the expected difference in log prices between two sales of a house is thought to equal the difference in the corresponding log indices. The varying gap between sales is considered irrelevant and as a result the error terms are assumed to be homoskedastic.

Assuming the errors have an expected value of 0 and constant variance, the estimation of the repeated sales model is straightforward. Dwelling units that are sold very frequently, and those that are not resold for long periods have sometimes been excluded from the regressions in practical applications because such transactions might be 'unusual' and can bias the resulting price index. Reproducibility may be regarded as one of the strengths of the repeated sales method, but if the method for excluding observations differs from time to time, reproducibility might be endangered.

Figure 3.8: *Real property price in Stockholm 1875–1957 according to three methods, index 1875 = 100.*
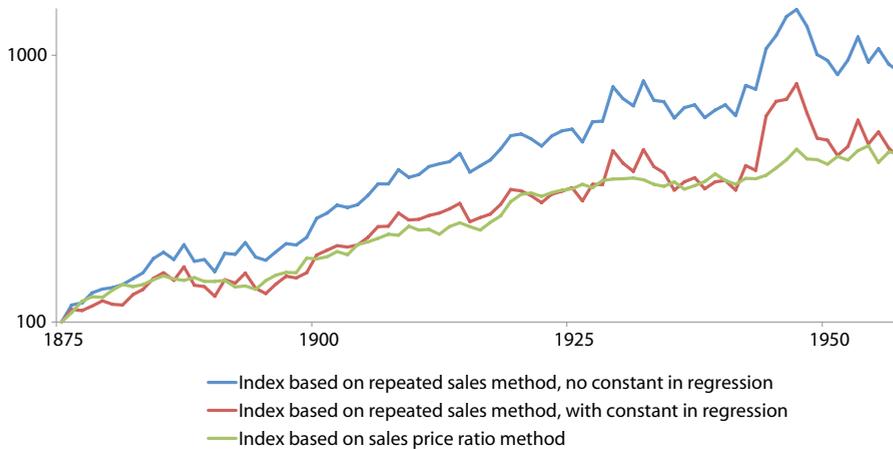
In this study, over 5,000 cases of Stockholm property transactions are available for analysis with this method. The regression can be performed in two ways, with or without a constant. In this dataset, the regression with a constant appears to give more realistic results (a rise from index 100 in 1875 to 414 in 1957, compared to a rise to 870 for the same period when the model is estimated without a constant). The former result implies a similar price rise in the long run as the index reported above based on the sales price ratio method, where the index in 1957 stood at 430. All three indices are shown in Figure 3.8.

One problem with the repeated sales estimate is that the constant term is as large as 0.212. This means that each new property transaction adds a value of 24 per cent independently of the price during the preceding years. Possibly this could be an expression of short-run profits or of quality improvements to the property in question.

The preliminary conclusion is that the sales price ratio method seems to be preferable, at least until the results from the repeated sales analysis have been studied in more detail. A closer look at the results would involve an examination of different time periods and different parts of Stockholm.

3.8. Concluding discussion

A series of prices of residential properties in Stockholm, 1875–2012, has been presented above. The study draws on a sample of nearly 14,000 prices of sold properties and also relies on published official statistics. Five phases can be discerned in the evolution of real prices:

1. Prices rise 1875–1909
2. Prices fall 1909–1918
3. Prices rise 1918–1931
4. Prices fall 1931–1981
5. Prices rise 1981–2012, though this period includes the bubble around 1990 when a sharp upturn in property prices was followed by a substantial fall.

These phases have been discussed against the background of the characteristics of the construction business and various macroeconomic conditions. Prices of residential property in Stockholm generally reacted with a certain lag to downturns in the macroeconomic environment. Such lags have been noted in connection with the problems of the latter half of the 1880s, the crisis of 1907–08, the beginning of World War I, and the depression of 1931.

The ratio of sales prices to taxation values has been calculated on an annual basis. During the period 1875–1945, this ratio averaged 1.06 (standard deviation 0.06). In other words, taxation values were in general not much below the market prices of real property. After World War II the ratio tended to be higher, with an average of 1.16 (standard deviation 0.09). For many decades, then, taxation values tended to be fairly realistic as indicators of market prices of real property, though this was not the case towards the end of the period studied here.

For the period 1880–1930, the relationship between the sample drawn and the total stock of properties was discussed. The properties sold cannot in general be regarded as a random sample of the existing stock, since they tend to exhibit higher taxation values. This is notable above all in 1920, when the average taxation value of our sample of sold properties exceeded the corresponding value of the total stock by 33 per cent. For several other years, though, this differential was substantially smaller, from 6 to 13 per cent.

A comparison with Norwegian towns and Göteborg shows large similarities in the evolution of property prices compared to Stockholm.

Volatility in real property prices in Stockholm was substantially lower than in Herengracht in Amsterdam, and somewhat below that of the Norwegian towns. None of the three volatility series show any marked tendency over time to rise or fall.

For the construction of a long-term property price index for Stockholm, the sales price ratio method appears to give more stable and realistic results than does the repeated sales method.

A view of the corner of Götgatan and Ölandsgatan, Södermalm, Stockholm. Painted by Victor Forssell (1846–1931) in 1891.
Source: Stockholm City Museum.

The House of Bourgoise Widows, Interior. The room was divided with a folding screen to be utilized for many different activities. Painted by Josabeth Sjöberg before 1879.
Source: Stockholm City Museum.

Appendix

Table A3.1: *Ratio of average taxation assessment values in years of general taxation assessments to the same value in the previous period.*

Year	Average	Standard deviation	Max	Min	N
1876	1.19	0.21	1.83	0.73	249
1879	1.14	0.18	1.90	0.80	251
1882	1.07	0.15	1.77	0.65	261
1884	1.08	0.10	1.64	0.58	301
1887	1.02	0.17	1.88	0.56	286
1890	0.97	0.13	1.80	0.55	312
1893	1.00	0.14	1.79	0.67	334
1896	1.03	0.10	1.56	0.52	337
1898	1.08	0.14	1.88	0.75	344
1903	1.20	0.18	1.85	0.74	302
1908	1.15	0.18	1.88	0.82	271
1913	1.09	0.17	1.89	0.66	269
1918	1.09	0.15	1.86	0.56	252
1922	1.13	0.17	1.88	0.73	229
1928	1.10	0.16	1.65	0.64	224
1933	1.04	0.12	1.54	0.60	206
1938	0.99	0.14	1.87	0.61	196
1945	1.04	0.14	1.89	0.80	191
1952	1.16	0.13	1.67	0.84	190
1957	1.04	0.04	1.18	1.00	88

Table A3.2: *Yearly averages of sales price ratios in Stockholm, 1875–1957, unweighted and weighted by purchasing price, respectively.*

Year	Average sales price ratio unweighted	Standard deviation unweighted	Average sales price ratio weighted	Standard deviation weighted	Min	Max	N
1875	1.12	0.26	1.20	0.24	0.50	1.82	174
1876	1.03	0.24	1.05	0.20	0.50	1.93	226
1877	1.13	0.27	1.15	0.24	0.50	1.90	175
1878	1.17	0.29	1.17	0.27	0.55	1.90	95
1879	1.02	0.27	1.02	0.27	0.50	1.88	140
1880	1.09	0.29	1.09	0.30	0.50	1.88	144
1881	1.15	0.28	1.15	0.26	0.60	1.87	146
1882	1.05	0.24	1.07	0.22	0.50	1.92	156
1883	1.07	0.26	1.06	0.23	0.55	1.99	148
1884	1.03	0.24	1.04	0.20	0.55	1.92	138
1885	1.07	0.25	1.07	0.24	0.57	1.87	132
1886	1.04	0.33	1.02	0.29	0.55	1.97	182
1887	1.01	0.27	1.03	0.24	0.55	1.96	186
1888	1.03	0.29	1.07	0.25	0.50	1.92	175
1889	1.00	0.26	1.02	0.21	0.50	1.88	157
1890	1.03	0.23	1.04	0.20	0.50	1.75	176
1891	1.04	0.28	1.05	0.27	0.50	1.96	204
1892	0.98	0.26	1.00	0.24	0.50	1.88	185
1893	0.99	0.24	1.02	0.21	0.51	1.75	199
1894	0.96	0.21	1.00	0.18	0.54	1.80	206
1895	1.04	0.26	1.09	0.25	0.50	1.97	173
1896	1.05	0.23	1.06	0.20	0.56	1.97	203
1897	1.08	0.24	1.12	0.23	0.56	1.92	181
1898	1.00	0.13	1.00	0.10	0.60	1.85	247
1899	1.13	0.23	1.14	0.22	0.60	1.97	227
1900	1.12	0.20	1.13	0.18	0.60	1.93	205
1901	1.14	0.23	1.15	0.19	0.50	1.89	177
1902	1.20	0.26	1.16	0.24	0.52	1.96	201
1903	0.97	0.18	0.98	0.17	0.54	1.93	210
1904	1.06	0.22	1.07	0.19	0.50	1.75	203
1905	1.09	0.22	1.10	0.22	0.57	1.86	196
1906	1.12	0.23	1.14	0.21	0.50	1.92	171

Table A3.2 (cont.): *Yearly averages of sales price ratios in Stockholm, 1875–1957, unweighted and weighted by purchasing price, respectively.*

Year	Average sales price ratio unweighted	Standard deviation unweighted	Average sales price ratio weighted	Standard deviation weighted	Min	Max	N
1907	1.16	0.23	1.17	0.22	0.58	1.93	195
1908	1.00	0.21	1.02	0.21	0.54	1.91	230
1909	1.08	0.24	1.09	0.23	0.62	1.96	221
1910	1.04	0.24	1.05	0.21	0.50	1.98	206
1911	1.05	0.23	1.04	0.20	0.56	1.81	191
1912	1.01	0.24	1.00	0.19	0.50	1.87	194
1913	0.99	0.22	1.00	0.19	0.50	1.92	196
1914	1.02	0.22	1.00	0.16	0.54	1.93	193
1915	0.99	0.24	0.96	0.18	0.50	1.97	165
1916	0.96	0.20	1.01	0.26	0.53	1.85	209
1917	1.02	0.19	1.03	0.15	0.53	1.88	226
1918	0.99	0.17	1.00	0.18	0.60	1.85	233
1919	1.12	0.22	1.18	0.24	0.62	1.89	232
1920	1.20	0.21	1.26	0.23	0.74	1.99	227
1921	1.21	0.23	1.22	0.22	0.57	1.98	209
1922	1.04	0.19	1.06	0.18	0.62	1.79	213
1923	1.07	0.21	1.14	0.24	0.50	1.94	191
1924	1.10	0.21	1.09	0.16	0.53	1.97	190
1925	1.11	0.22	1.10	0.19	0.52	1.92	210
1926	1.15	0.24	1.13	0.21	0.52	1.86	209
1927	1.12	0.20	1.11	0.18	0.58	1.94	205
1928	1.09	0.23	1.07	0.20	0.50	1.93	204
1929	1.10	0.21	1.07	0.19	0.51	1.90	190
1930	1.10	0.14	1.09	0.12	0.80	1.75	204
1931	1.11	0.17	1.11	0.16	0.68	1.86	200
1932	1.09	0.17	1.07	0.17	0.63	1.58	175
1933	1.01	0.13	1.01	0.12	0.51	1.50	169
1934	0.99	0.16	1.01	0.20	0.55	1.92	205
1935	1.03	0.23	1.02	0.19	0.52	1.83	173
1936	0.97	0.16	0.97	0.13	0.52	1.95	140
1937	1.00	0.13	1.01	0.10	0.56	1.63	200
1938	1.04	0.15	1.07	0.15	0.55	1.61	145

Table A3.2 (cont.): *Yearly averages of sales price ratios in Stockholm, 1875–1957, unweighted and weighted by purchasing price, respectively.*

Year	Average sales price ratio unweighted	Standard deviation unweighted	Average sales price ratio weighted	Standard deviation weighted	Min	Max	N
1939	1.11	0.18	1.11	0.17	0.54	1.72	109
1940	1.05	0.17	1.07	0.19	0.52	1.73	86
1941	1.02	0.14	1.04	0.12	0.50	1.48	135
1942	1.07	0.13	1.06	0.10	0.77	1.77	152
1943	1.07	0.20	1.05	0.18	0.56	1.77	98
1944	1.10	0.16	1.09	0.15	0.83	1.72	140
1945	1.13	0.18	1.13	0.17	0.73	1.90	83
1946	1.21	0.22	1.26	0.26	0.91	1.82	45
1947	1.33	0.28	1.45	0.30	1.00	1.95	31
1948	1.22	0.21	1.26	0.22	0.57	1.62	52
1949	1.21	0.21	1.21	0.22	0.92	1.94	105
1950	1.17	0.23	1.25	0.33	0.74	1.88	83
1951	1.25	0.28	1.21	0.24	0.99	1.91	37
1952	1.04	0.21	1.05	0.21	0.65	1.79	121
1953	1.13	0.22	1.13	0.21	0.83	1.90	76
1954	1.18	0.22	1.17	0.20	0.73	1.89	63
1955	1.02	0.24	1.02	0.23	0.54	1.62	96
1956	1.12	0.28	1.18	0.30	0.65	1.93	129
1957	1.06	0.23	1.05	0.23	0.60	1.92	83

Sources: Diarium över beviljade lagfarter, Stockholms rådhusrätts första avdelnings arkiv; *Stockholms adresskalender; Stockholms fastighetskalender: Register över fastighetsbeståndet i Stockholm med uppgifter om ägare, värden, areal m.m.* (1932); *Fastighetskalender för Stockholms stad 1938* (1938).

Table A3.3: *Medians, geometric means, and 5 % trimmed means of sales price ratios in Stockholm, 1875–1957.*

Year	Median	Geometric mean	5 % trimmed mean
1875	1.09	1.09	1.12
1876	1.00	1.00	1.01
1877	1.10	1.10	1.12
1878	1.13	1.14	1.16
1879	1.00	0.99	1.01
1880	1.03	1.05	1.08
1881	1.04	1.11	1.13
1882	1.00	1.03	1.03
1883	1.02	1.04	1.06
1884	1.00	1.01	1.01
1885	1.00	1.04	1.05
1886	0.98	0.99	1.02
1887	1.00	0.98	0.98
1888	1.00	0.99	1.01
1889	1.00	0.97	0.99
1890	1.00	1.00	1.02
1891	1.00	1.01	1.01
1892	0.93	0.95	0.96
1893	0.99	0.96	0.98
1894	0.98	0.94	0.95
1895	1.00	1.00	1.02
1896	1.00	1.03	1.04
1897	1.03	1.06	1.07
1898	1.00	0.99	0.99
1899	1.07	1.11	1.11
1900	1.08	1.11	1.11
1901	1.12	1.12	1.14
1902	1.16	1.17	1.19
1903	0.99	0.96	0.96
1904	1.00	1.04	1.05
1905	1.05	1.07	1.07
1906	1.09	1.09	1.11
1907	1.12	1.14	1.15

Table A3.3 (cont.): *Medians, geometric means, and 5 % trimmed means of sales price ratios in Stockholm, 1875–1957.*

Year	Median	Geometric mean	5 % trimmed mean
1908	1.00	0.98	0.99
1909	1.04	1.06	1.06
1910	1.00	1.02	1.02
1911	1.01	1.03	1.04
1912	0.99	0.98	0.99
1913	0.99	0.96	0.98
1914	1.00	1.00	1.00
1915	0.97	0.96	0.97
1916	0.95	0.94	0.94
1917	1.00	1.01	1.01
1918	0.99	0.98	0.98
1919	1.08	1.10	1.11
1920	1.16	1.18	1.19
1921	1.17	1.19	1.20
1922	1.02	1.02	1.03
1923	1.05	1.05	1.06
1924	1.06	1.08	1.09
1925	1.09	1.09	1.10
1926	1.14	1.13	1.16
1927	1.11	1.10	1.12
1928	1.04	1.06	1.07
1929	1.06	1.08	1.09
1930	1.07	1.09	1.09
1931	1.07	1.10	1.10
1932	1.07	1.08	1.09
1933	1.00	1.00	1.01
1934	1.00	0.98	0.98
1935	1.00	1.01	1.02
1936	0.98	0.95	0.97
1937	1.00	0.99	1.00
1938	1.03	1.03	1.04
1939	1.07	1.10	1.10
1940	1.03	1.04	1.05

Table A3.3 (cont.): *Medians, geometric means, and 5 % trimmed means of sales price ratios in Stockholm, 1875–1957.*

Year	Median	Geometric mean	5 % trimmed mean
1941	1.01	1.01	1.02
1942	1.05	1.07	1.06
1943	1.02	1.05	1.06
1944	1.07	1.09	1.09
1945	1.11	1.11	1.11
1946	1.15	1.19	1.19
1947	1.23	1.30	1.33
1948	1.20	1.20	1.26
1949	1.17	1.20	1.22
1950	1.05	1.15	1.25
1951	1.19	1.22	1.22
1952	1.00	1.02	1.03
1953	1.07	1.11	1.11
1954	1.11	1.16	1.17
1955	0.95	1.00	1.01
1956	1.05	1.09	1.10
1957	1.01	1.04	1.05

Sources: See Table A3.2.

Table A3.4: *Index series for nominal taxation assessment values of residential properties, nominal and real prices of residential property, and CPI, Stockholm 1875–1957 (1912 = 100).*

Year	Index of taxation values	Nominal price index residential property	Real price index residential property	Repeated sales index	CPI
1875	42.0	46.9	51.0	39.1	91.9
1876	50.0	50.9	55.4	43.5	91.9
1877	50.0	56.2	61.3	43.1	91.7
1878	50.0	58.3	69.7	44.9	83.6
1879	57.0	58.0	72.8	46.9	79.8
1880	57.0	61.8	73.1	45.6	84.5
1881	57.0	64.9	75.2	45.3	86.3
1882	61.0	63.6	74.2	49.5	85.7
1883	61.0	64.9	77.3	51.8	83.9
1884	65.8	67.7	83.7	57.0	80.8
1885	65.8	69.8	91.1	59.7	76.6
1886	65.8	68.1	93.7	56.0	72.7
1887	67.2	67.3	98.3	62.8	68.5
1888	67.2	68.8	94.7	53.7	72.7
1889	67.2	66.6	89.0	53.0	74.9
1890	65.1	66.7	87.5	48.8	76.1
1891	65.1	67.2	82.9	56.4	81.1
1892	65.1	63.5	81.7	54.7	77.7
1893	65.1	64.1	84.8	59.6	75.6
1894	65.1	62.2	86.8	52.3	71.6
1895	65.1	67.0	93.5	49.9	71.7
1896	67.1	70.4	97.3	54.1	72.3
1897	67.1	72.0	95.4	58.0	75.5
1898	72.5	71.7	91.9	57.2	78.0
1899	72.5	81.4	98.3	59.7	82.7
1900	72.5	80.9	95.2	69.8	85.0
1901	72.5	82.4	97.5	72.7	84.5
1902	72.5	86.3	101.7	75.6	84.9
1903	87.0	83.8	99.2	74.6	84.5
1904	87.0	91.5	108.3	76.1	84.5
1905	87.0	93.8	109.1	81.3	85.9
1906	87.0	96.5	108.5	89.2	88.9

Table A3.4 (cont.): *Index series for nominal taxation assessment values of residential prop-erties, nominal and real prices of residential property, and CPI, Stockholm 1875–1957 (1912 = 100).*

Year	Index of taxation values	Nominal price index residential property	Real price index residential property	Repeated sales index	CPI
1907	87.0	100.1	107.1	89.2	93.5
1908	100.0	99.1	103.9	100.2	95.3
1909	100.0	107.2	114.1	94.4	94.0
1910	100.0	103.8	110.6	94.7	93.8
1911	100.0	104.4	109.9	98.1	95.0
1912	100.0	100.0	100.0	100.0	100.0
1913	109.0	107.0	105.8	103.7	101.1
1914	109.0	110.4	107.8	108.7	102.4
1915	109.0	106.9	90.9	92.9	117.7
1916	109.0	103.7	78.0	96.3	133.0
1917	109.0	110.8	66.0	99.1	167.8
1918	118.8	117.2	47.5	107.9	246.6
1919	118.8	132.7	48.8	122.6	272.2
1920	118.8	141.5	51.0	121.1	277.3
1921	118.8	143.0	63.2	116.3	226.2
1922	134.3	138.7	73.6	109.5	188.3
1923	134.3	143.3	80.5	117.7	178.1
1924	134.3	146.3	82.2	120.8	178.1
1925	134.3	148.2	81.8	124.4	181.1
1926	134.3	154.0	88.0	111.1	175.0
1927	134.3	149.6	86.5	128.4	172.9
1928	147.7	159.3	91.6	127.8	174.0
1929	147.7	161.1	93.7	171.5	171.9
1930	147.7	161.6	97.5	154.2	165.8
1931	147.7	162.7	101.3	143.4	160.7
1932	147.7	160.3	101.1	172.9	158.6
1933	153.6	154.2	99.8	149.5	154.5
1934	153.6	151.4	97.4	141.7	155.5
1935	153.6	157.6	99.3	122.1	158.6
1936	153.6	147.8	92.0	131.1	160.7
1937	153.6	152.5	92.0	135.7	165.8
1938	152.1	157.9	93.5	123.3	168.9

Table A3.4 (cont.): *Index series for nominal taxation assessment values of residential properties, nominal and real prices of residential property, and CPI, Stockholm 1875–1957 (1912 = 100).*

Year	Index of taxation values	Nominal price index residential property	Real price index residential property	Repeated sales index	CPI
1939	152.1	168.4	96.8	130.9	174.0
1940	152.1	159.2	80.6	132.6	197.5
1941	152.1	154.2	68.8	121.9	224.1
1942	152.1	162.1	67.7	151.0	239.5
1943	152.1	161.8	67.3	144.5	240.5
1944	152.1	166.8	69.6	231.2	239.5
1945	158.1	177.1	74.3	262.7	238.4
1946	158.1	190.4	79.5	267.0	239.5
1947	158.1	208.6	84.6	305.9	246.6
1948	158.1	191.6	73.4	237.5	261.0
1949	158.1	190.7	72.8	191.1	262.0
1950	158.1	183.5	69.0	187.8	266.1
1951	158.1	195.8	62.9	164.5	311.1
1952	183.4	190.2	57.0	178.1	333.6
1953	183.4	205.8	61.3	223.7	335.7
1954	183.4	214.6	63.4	181.8	338.7
1955	183.4	186.2	53.7	202.0	346.9
1956	183.4	203.5	55.9	175.1	364.3
1957	190.8	201.8	53.0	161.5	380.7

Sources: See Table A3.2. CPI: Edvinsson and Söderberg (2010).

Table A3.5. *Indices of residential property prices in Stockholm, Göteborg and Sweden, 1957–2012 (1957 = 100).*

Year	Stockholm, houses	Stockholm, apartment buildings	Göteborg, houses	Göteborg, apartment buildings	Sweden, houses	Sweden, apartment buildings
1957	100	100	100	100	100	100
1958	103	99	104	105	103	102
1959	101	99	110	106	104	104
1960	110	108	116	107	108	107
1961	114	119	124	111	114	110
1962	127	115	130	129	119	113
1963	144	115	144	123	129	113
1964	170	108	161	126	142	116
1965	164	151	177	138	152	127
1966	183	153	194	137	164	133
1967	199	137	204	139	174	135
1968	202	133	216	138	187	136
1969	211	143	226	138	200	141
1970	222	134	232	150	202	137
1971	230	161	247	131	211	136
1972	230	137	271	133	226	133
1973	256	151	277	157	245	143
1974	254	148	304	140	256	145
1975	319	155	377	140	312	147
1976	374	166	442	146	361	157
1977	422	166	511	150	411	161
1978	497	212	562	156	467	180
1979	562	227	621	173	512	192
1980	595	259	621	194	530	216
1981	592	251	619	196	524	219
1982	600	299	624	305	531	251
1983	612	315	643	325	531	266
1984	629	343	680	362	552	289
1985	659	458	717	368	573	332
1986	718	509	778	426	604	362
1987	873	570	914	528	683	417
1988	1,110	675	1,118	601	809	516

Table A3.5 (cont.). *Indices of residential property prices in Stockholm, Göteborg and Swe-den, 1957–2012 (1957 = 100).*

Year	Stockholm, houses	Stockholm, apartment buildings	Göteborg, houses	Göteborg, apartment buildings	Sweden, houses	Sweden, apartment buildings
1989	1,318	845	1,341	632	951	629
1990	1,461	1,118	1,495	854	1,066	749
1991	1,508	974	1,563	879	1,140	761
1992	1,283	899	1,353	717	1,035	661
1993	1,087	710	1,168	706	919	568
1994	1,193	814	1,230	723	961	633
1995	1,211	834	1,236	692	967	625
1996	1,217	890	1,242	749	972	650
1997	1,366	1,017	1,359	826	1,040	695
1998	1,573	1,148	1,538	898	1,140	748
1999	1,799	1,305	1,693	998	1,245	813
2000	2,167	1,502	1,884	1,095	1,382	851
2001	2,387	1,623	2,027	1,143	1,492	890
2002	2,529	1,775	2,169	1,176	1,587	939
2003	2,589	1,775	2,434	1,284	1,692	973
2004	2,779	2,046	2,756	1,459	1,855	1,089
2005	2,981	2,187	3,120	1,649	2,033	1,145
2006	3,355	2,399	3,448	1,674	2,264	1,233
2007	3,842	2,837	3,750	2,006	2,506	1,437
2008	3,931	2,685	3,880	2,180	2,579	1,486
2009	3,954	2,852	3,930	2,334	2,632	1,534
2010	4,340	3,047	4,282	2,400	2,826	1,615
2011	4,400	3,377	4,381	2,461	2,847	1,653
2012	4,370	3,340	4,356	2,351	2,811	1,663

Sources: Statistics Sweden (1963–2012); Statistics Sweden (1950–1967); 'Prisstatistik för Hyreshus – Göteborg och Bohuslän', unpublished Excel-file; Sandelin (1977); Statistics Sweden, Statistik-databasen.

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4.
The Gross Domestic Product of Sweden within present borders, 1620–2012

Rodney Edvinsson

4.1. Introduction[1]

This chapter presents estimates of the Gross Domestic Product (GDP) in Sweden within present borders back to 1800, and a new series for the period 1620–1800. An alternative GDP series is provided by Schön and Krantz (2012). There is also an ongoing project whereby Krantz, Schön and the present author will merge the two series.

Ingvar Ohlsson, in his classic work *On national accounting*, describes national accounting as "the rendering of systematic, statistical statements about the economic activity of a nation (on the basis of certain working hypotheses)".[2] National accounting is about production, as well as distribution, consumption and capital formation. Principles of national accounts and classifications have changed over time. The most recent international systematisation,[3] replacing *System of National Accounts 1993* (1993 SNA), is *System of National Accounts 2008* (2008 SNA).[4]

The most central economic variable in national accounting is the Gross Domestic Product (GDP), which is also an important monetary variable, being part of the quantity equation.

Sweden is a small country but does provide an interesting historical example of an

2   Ohlsson (1961, p. 8).
3   United Nations et. al. (2009).
4   Inter-Secretariat Working Group on National Accounts (1993).

Threshing. Painted in 1906 by Carl Larsson (1853–1919).
Source: Wikipaintings.

area on Europe's periphery with high-quality statistical data. While *Swedish Industrial Statistics* has been published annually since 1858, the British *Census of Production* first appeared in 1907 and is published only every other year.[5] Sweden's annual official agricultural statistics go back to 1802, and annual population data have been gathered since 1749. Even for USA, the years before 1839 have been labelled a "statistical dark age" since 1839 was the first year for which a comprehensive census of agriculture and manufacture collected economic data.[6] Swedish historical national accounts are among the most detailed in the world.

Statistics Sweden switched to the 1993 SNA in the mid-1990s.[7] The guidelines for 2008 SNA were published recently but their difference from 1993 SNA is not as great as the change in 1993. Since Statistics Sweden has not applied the new methods and calculations to earlier periods at a more disaggregated level, and since earlier historical accounts are based on a somewhat different methodology, a mixture of methods (of both the 1993/2008 SNA and earlier principles) has been used in the present investigation in order to arrive at consistent long-term time series.

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5   Prado (2008, p. 89).
6   Rhode and Sutch (2006).
7   For a discussion of the methodology behind the construction of national accounts in Sweden, see Edvinsson (2005).

Swedish historical national accounts have been developed over a longer period.[8] The first work in this field, *National Income of Sweden 1861–1930*, was published in 1937.[9] The project *Swedish Historical National Accounts* (SHNA) has been ongoing since the early 1980s and the main aggregated series was presented by Krantz and Schön (2007). Two years earlier, Edvinsson (2005) published aggregated series based on SHNA that strove to harmonize the Swedish historical national accounts with modern guidelines and included more activities than in previous studies. During the work on the present revisions, Schön and Krantz (2012) have also produced new revisions of the Swedish GDP series for 1800–2000, and published a GDP series back to 1560.

In terms of historical national accounts, co-ordination among researchers and comparisons between countries are still not fully developed. Angus Maddison (2010b) has published series for all countries but only at an aggregated level. In a Nordic project from 1994–2003, economic historians and statisticians from the Nordic countries tried to establish common definitions and deflation methods whereby different countries' series would be comparable. The purpose was to apply the most recent SNA's modern definitions, for example, where to put the production boundary.[10] The present study has a similar purpose.

Recent attempts, initiated by Angus Maddison, have been made to extend the GDP series backwards to the whole Early Modern Period and the Middle Ages.[11] However, with the exceptions of Holland and England, most of these approximations are not based on direct empirical evidence concerning the actual output of various activities. For example, Malanima (2009) presents annual estimates for Italy back to 1300 and Álvarez-Nogal and Prados de la Escosura (2011) for Spain back to 1270; in both cases, the so-called demand approach is used to calculate agricultural output, while other activities are approximated from the rate of urbanisation. The demand approach was originally developed by Allen (2001, p. 13), based on positing a demand curve for agricultural products. Consumer theory requires that own price, income, and cross-price elasticities of demand add up to zero. Agricultural production is accordingly calculated from the development of real wages and real prices of agricultural and non-agricultural products. The demand approach is also applied by Schön and Krantz (2012) for Sweden for the early modern period. In their GDP series for Holland 1500–1800, van Leeuwen and van Zanden (2009) use rent as an indicator of annual movements in agricultural production, even though they present direct evidence of the annual movements of other activities. The two series that exist for England/Britain, by Clark (2010) and Broadberry, Campbell, Klein, Overton,

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8   Edvinsson (2005); Krantz and Schön (2007).
9   Lindahl, Dahlgren and Kock (1937).
10   Christensen, Hjerppe, Krantz, and Nilsson (1995); Lindmark and Vikström (2001); Grytten (1999).
11   Broadberry and Gupta (2009); Broadberry, Campbell, Klein, Overton, and van Leeuwen (2010); Bassino, Broadberry, Fukao, Gupta, and Takashima (2011); Broadberry, Guan, and Li (2012).

and van Leeuwen (2010), use direct empirical data on production and income, but differ substantially. GDP per capita in the period before 1650 is much higher in Clark than in Broadberry et al.

The present study further improves the Swedish historical national accounts and extends the series back to 1620. These revisions have been published earlier: the estimates of Swedish GDP 1620–1800 in *Cliometrica*[12] and the data for 1800–2010 in *The Economic History Review*.[13] This chapter mainly provides a more detailed account of the empirical material and method. The analysis of long-term economic growth, comparisons with other countries and estimates of reliability are dealt with in the two articles.

The main revisions after 1800 concern agriculture, manufacturing, real estate, and construction. Recent research shows that harvests have been substantially underestimated.[14] Another dilemma is the exclusion of many activities. Jan Bohlin points out that "only factory production and the output of registered craftsmen is estimated" and that "a good part of this proto-industrial production is not accounted for in the new series of manufacturing and mining output", which entails an overestimation of economic growth in the 19th century.[15] Calculating the value of real estate, mainly services of dwellings, has posed significant problems in earlier studies, and various series differ greatly from each other.

4.2. Method

Krantz and Schön (2007, 2012) apply classifications and methods from the period before System of National Accounts. They use the post-1950 data from Statistics Sweden for forward extrapolation of the pre-1950 series. In contrast, Edvinsson (2005) extrapolates Statistics Sweden's series backwards, which is also the method in this chapter. The revisions in this study are made to Edvinsson (2005).

The present study strives to present reliable estimates of both long-term trends and annual fluctuations. Although linear interpolations are sometimes used, the aim has been to use indicators that are reasonably reliable when it comes to annual volatility. Generally the individual series of quantities are less reliable than the volume series at a more aggregated level.

GDP can be calculated in three different ways: by economic activity (or from the production side), by expenditure and by income. GDP by activity is directly computed as the sum of all economic activtities' gross values added. The gross value added of each activity is computed in turn as gross output less intermediate consumption. Gross output is the total value of goods and services produced without

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12 Edvinsson (2013a). Minor adjustments are made in the present study, mainly concerning population growth and a downward revision of paid domestic services.

13 Edvinsson (2013b).

14 Gadd, Morell, and Myrdal (2011, p. 288).

15 Bohlin (2003, p. 85).

deducting intermediate consumption. Intermediate consumption consists of the goods and services used up in the production process, except for consumption of fixed capital, which represents the depreciation of the value of fixed assets used in production. Gross value added thus includes consumption of fixed capital, whereas in net value added it is deducted. GDP by expenditure is calculated as the sum of different uses: private final consumption, government final consumption, investment and net export (export less import). GDP by income is the sum of wages and salaries including social benefits, operating surplus, mixed income, and consumption of fixed capital.

Because of various taxes, the different items of national accounts (as value added) can be measured in different types of prices and values. Unfortunately, the definition of the different prices has changed over time. The main types of prices used by Statistic Sweden are: factor, basic and purchasers' prices. The relation between these measures can be summarised as follows:

> Gross output at factor prices
> + non-commodity-related indirect taxes less non-commodity-related subsidies
> = Gross output at basic prices
> + commodity-related indirect taxes less commodity-related subsidies
> + transport and trade margin
> = Gross output at purchasers' prices

The main GDP series in this study is estimated by activity in basic prices. GDP by expenditure in purchasers' prices disaggregated between different uses is also estimated back to 1800, with private consumption calculated as a residual. A series of GDP by expenditure and its components is also presented in accordance with the latest data by Statistics Sweden for the period 1800–2012.[16] For the period 1620–1800, only aggregated series of GDP by activity in basic prices and by expenditure in purchasers' prices are computed.

One of the greatest problems in national accounting is how to compute volume values, i.e. to eliminate the inflation component from the nominal values. There are various deflation techniques that are applicable and yield somewhat different results. The most commonly used volume indices are those named after Laspeyres and Paasche.[17]

The Laspeyres volume index expresses the change in the quantities of a bunch of items in the *prices of the base year* (if the accounting period is one year). Mathematically, this is written as:

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16 Statistics Sweden (2013).
17 The description of the deflation method is based on Edvinsson (2005).

$$V_{b,t}^{\mathrm{L}} = \frac{\sum_i p_{b,i} q_{t,i}}{\sum_i p_{b,i} q_{b,i}}$$

where b stands for the base year, t for the comparison year, p for price, q for quantity and i for item. $p_{b,i} q_{t,i}$ is thus the value of items i in year t expressed in the prices of the base year, and $p_{b,i} q_{b,i}$ the value of items i in the base year expressed in the prices of the base year.

The Paasche volume index expresses the change in the quantities of a bunch of items in the *prices of the compared year*, t. Algebraically:

$$V_{b,t}^{\mathrm{P}} = \frac{\sum_i p_{t,i} q_{t,i}}{\sum_1 p_{t,i} q_{b,i}}$$

Usually, the two volume indices roughly correspond. However, they tend to diverge when relative prices change dramatically. If relative prices were the same over time, deflation would not be a problem. In practice, relative prices usually change significantly during the investigated period, especially when this is very long.

There is also a systematic difference between the two volume indices. Over longer periods, a Laspeyres volume index tends to show a higher growth rate than a Paasche volume index (if the base year is located earlier in time than the compared year, i.e. if $t>b$), the so-called Gerschenkron effect.[18]

The Gerschenkron effect arises when activities whose relative prices are falling tend to increase their volume shares of total production and vice versa.[19] This is what happened during the industrial revolution; manufacturing expanded its volume share of GDP at the same time as relative prices for manufactured goods decreased (due to faster increases in productivity than for other sectors).

The Fisher volume index is a geometric average of the Laspeyres and Paasche indices:

$$V_{b,t}^{\mathrm{F}} = \sqrt{V_{b,t}^{\mathrm{L}} V_{b,t}^{\mathrm{P}}}$$

The Fisher volume index is more difficult to interpret than the Laspeyres and Paasche volume indices but has the advantage of being more stable; it represents a middle ground between the other two.

A price index, or deflator, is a measure of the level of prices in the compared year in relation to the level of prices in the base year. The volume index is derived by dividing the ratio between nominal values in two years with the price index, a proce-

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18   Jonas and Sardy (1970, p. 83); Gerschenkron (1947).
19   Schön (1979, p. 91).

dure termed "deflation". The price indices can also be constructed in different ways, depending on how the individual prices are to be weighted. The Laspeyres price index is a measure of the level of prices in year *t* in relation to year *b* expressed in the *quantities of the base year*. The Paasche price index is a measure of the level of prices in year *t* in relation to year *b* expressed in the *quantities of the compared year*. The Laspeyres volume index can be derived by dividing the ratio between nominal values in two years with the Paasche price index (*not* with the Laspeyres price index). Similarly, the Paasche volume index can be derived by dividing the ratio between nominal values in two years with the Laspeyres price index.

Previous Swedish historical national accounts have applied the method of using deflation periods of 20-25 years. This method was also advocated in the Nordic Historical National Accounts.[20] It involves using Paasche price indices to arrive at Laspeyres volume indices. For the whole deflation period, the volume values are measured in the same prices, of the base period, and the base period is changed only for the next deflation period. Before the switch to the 1993 SNA, Statistics Sweden also used deflation periods.[21]

An alternative deflation technique is to compute an annual chain index, for which only two consecutive years are compared. The base year is changed (so-called re-basing) for every year. A volume index for a longer period is then calculated by linking the volume indices between consecutive years together to form a chain index.[22]

The use of deflation periods has several advantages, especially when constructing historical national accounts. Choosing a Laspeyres volume index rather than a Paasche volume index, and deflation periods instead of a chain index, has the advantage that the same prices are used for the whole deflation period. When expressed in one base year's prices, production for each year is additive (i.e. the aggregate figure equals the sum of its components), which is mostly not the case when the base year is changing. It is also less time-consuming than calculating a chain index, but this advantage has been eroded by the rapid increase in computer power.

However, deflation periods do entail the problem of the Gerschenkron effect. The further away from the base year or base period, the larger, normally, is the effect. An annual chain index is preferable if the purpose is to analyse short-term fluctuations in the economy.

In this study, following Edvinsson (2005), annual chain indices of a Fisher type are constructed for the period after 1800. For the period before 1800, the volume values are estimated in the reference prices of just one year, 1800, which could be described as a Laspeyres type of volume index. Since relative prices did not change much in the long-term before 1800, it may be assumed that the Gerschenkron effect was not as great then as after the industrial breakthrough.

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20 Grytten (1999, pp. 221–224).
21 Statistics Sweden (1979, pp. 16–19).
22 For a further discussion of the use of chain indices, see Al, Balk, de Boer and Bakker (1986), and Forsyth and Fowler (1981).

Since GDP and value added by activity are computed from two other variables, as gross output less intermediate consumption, the deflation techniques described above cannot be used straightforwardly. In general, there are several methods for deflating GDP and value added by activity:

1. The simplest method is to apply the deflator of gross output to value added as well.[23] The problem with this method is that the price index of intermediate consumption can fluctuate significantly compared to the price index of gross output, which means that the calculation can yield huge growth or contraction rates that simply reflect sharp fluctuations in relative prices.

2. Another method is to apply the deflator of gross output to value added and at the same time hold the share of value added in gross output constant for the whole deflation period, and set it equal to the share in the base period.[24] The estimate of volume growth is then not affected by fluctuations in the prices of intermediate consumption relative to the prices of gross output. The method is often preferred in historical national accounts, since data on intermediate consumption are mostly missing. The problem with this method is that an increase or decrease in the share of value added may actually reflect a real change – for instance, if a company outsources part of its production so that what formerly was counted as part of value added becomes part of intermediate consumption. Especially, in that the share of value added in gross output can increase or decrease significantly over time, the method can give a wrong impression of long-term growth.

3. So-called "double inflation" entails the construction of two deflators, one for gross output and the other for intermediate consumption. Volume value added is then calculated as the value of gross output deflated by the first deflator less the value of intermediate consumption deflated by the second.[25] With this method, the real relationship between intermediate consumption and gross output affects the volume growth of value added. From a theoretical point of view, this is probably the preferred method. But especially for older material, there is a lack of information about price changes of intermediate consumption. Another problem with double deflation is that the estimates of value added in constant prices can be zero or even negative, even if value added is positive in nominal prices (this cannot happen with the other two methods for deflating value added). That can be the case especially for activities where value added is rather small in relation to gross output.[26]

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23 Cassing (1996, p. 197).

24 Schön (1988, p. 199).

25 Cassing (1996, pp. 197–198).

26 See also an example provided by Durand (1994, pp. 304–305). A so-called double deflation Divisia index, which is a continuous time number formula, cannot result in a negative volume value added as long as nominal value added is non-negative (see Cassing, 1996, p. 199).

The double deflation method is recommended in international guidelines and used by Statistics Sweden, although at aggregate level Statistics Sweden deflates GDP only from the expenditure side.[27] One advantage of using double deflation is that it can be applied to compute volume GDP by activity as well as by expenditure and yield the same result in both cases, whereas the second method can only be used to calculate volume GDP by activity.

In this study, for the period after 1800 a mixture of methods is used for deflation of GDP and value added by activity. In a first step, the deflation technique assumes constant shares of value added (i.e. the second method) and annual chain indices of both Laspeyres and Paasche type are constructed for the gross value added of each type of activity and for GDP as a whole. As mentioned above, this means that changes in the share of value added in gross output are not taken into account. Therefore, a correction factor is estimated for the volume growth rate of the gross value added of each type of activity, based on the annual change in a weighted 10-year moving average of the ratio of value added to gross output. A Fisher volume index of GDP is then calculated from these corrected volume relatives. Further details are provided in Edvinsson (2005).

4.3. Revising agricultural production 1800–1950

Agriculture is divided into arable, animal and horticultural production. Ancillaries include forestry, hunting and fishing. International research into historical economic growth has focussed a great deal on manufacturing. For example, Joseph Davis thinks that GDP is less trustworthy and uses industrial production to establish a business cycle chronology for the USA back to 1790.[28] However, in an agrarian economy, economic activity is dominated by harvests, directly as well as indirectly. Judging annual fluctuations in the aggregate economy before the 20th century calls for reliable estimates of agriculture – especially arable output. Unfortunately, for this period, most countries do not have official statistics on national harvest fluctuations. For example, even the very detailed Dutch historical national accounts have to rely on a few regions and farms to interpolate annual harvests in the first half of the 19th century.[29]

Previous estimates of agricultural production in 1800–1950 are based on Lennart Schön's study.[30] The present study uses a completely new recalculation that is independent of Schön's data.

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27   Statens Offentliga Utredningar (2002, pp. 142–143).

28   Davis (2006).

29   Horlings et al. (2000, pp. 27).

30   Schön (1995).

Plowing. Painted by the Swedish artist Carl Larsson (1853–1919).
Source: Wikipaintings.

4.3.1. Arable output

For arable production, the present study makes four main changes to earlier Swedish historical national accounts: 1) harvests are registered for the year of production; 2) the estimated level of forage is reduced for the earlier years; 3) harvest fluctuations before 1865 are calculated from direct observations of yield ratios; 4) additional plants are included. The included crops are wheat, rye, barley, oats, dredge, peas, beans, vetch, potatoes, sugar beets, oil plants, textile plants and tobacco. The contribution from other types of crop is negligible.

Schön registers arable output in the year of consumption, instead of the year of the harvest (i.e. the preceding year), since this avoids the complication of consumption and production being separated by a year. The same method is followed by Edvinsson (2005). The application of this method in previous Swedish historical national accounts means that a bad or good harvest in one year has a negative or positive effect on GDP per capita in the subsequent year, which is also the year that was mostly affected by the bad or good harvest. This method is not necessarily wrong but in Statistics Sweden's GDP series from 1950 onwards, harvests are registered instead in the year of production. Thus, two different methods have hitherto been applied in Swedish historical national accounts, one for the period up to 1950 and the other for the period after that.

Published data on harvest (yield ratios) of different grains for all Swedish counties in 1831.
Source: *Post- och Inrikes tidningar*. Photo by Rodney Edvinsson.

Internationally, agricultural production has been registered for the production year and this is also recommended in the international guidelines. The principle in modern national accounts is always to register production in the time period in which the activity was actually conducted (unfinished products can be recorded as increases in inventories).[31] In the present study, a recalculation has therefore been made where all crops are registered for the year of production instead of the year of consumption (animal produce is, however, registered for the same year as in previous historical national accounts).

Official statistics on Swedish agricultural production started to be collected in 1802.[32] Clergymen were obliged to provide data on agricultural production, cultivated area, the planting of seeds, and livestock. Getting accurate data was very hard for the clergymen because farmers feared it would lead to heavier tax burdens. The reported figures on production, cultivated area and the planting of seeds are esti-

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31   United Nations et. al. (2009, p. 112).

32   Official statistics can be found in Lindahl, Dahlgren and Kock (1937, part two, pp. 28–54), Statistics Sweden, *N) Jordbruk* (1867-1912), and Statistics Sweden (1959, pp. 45–52).

mated to have been roughly half of the proper amounts.[33] The statistics were gradually improved but the underestimation was not eliminated until around 1900.[34] Lennart Schön upgraded arable output for his series, which was a major improvement on previous studies. Even so, in several preliminary studies on Sweden's agricultural production in the 19th century, Carl-Johan Gadd shows that Schön still underestimates the net production of crops in the first half of the 19th century, mainly because forage (fodder) – which is deducted from gross harvests – is overestimated.[35] For example, *National Income of Sweden* basically assumes that a constant share of harvests was used for forage, an assumption that Schön reproduces.[36]

An official investigation into conditions in agriculture in 1858 shows that the share of forage in gross harvests was quite low,[37] only 23 per cent of the total supply of grains (seeds deducted). The present study makes rough downward adjustments compared to *National Income*: for 1803–20 it assumes that, on average, 2.6 per cent of the total supply of wheat was used as forage, 2.7 per cent of rye, 21 per cent of barley, 39 per cent of oats, 66 per cent of dredge, 29 per cent of peas and 29 per cent of potatoes. The shares are gradually increased for later periods, especially after 1861, which by 1911 roughly correspond to the assumptions in Lindahl, Dahlgren and Kock (1937). To estimate the net product (harvests less forage and seeds), the next year's forage and seeds are deducted from the current year's harvest, since it is the current year's harvest that is used as forage and seeds the next year.

In addition, the upgrading of arable output in the 19th century is adjusted somewhat compared to Schön, by taking into account that it varied between grains. Previous research shows that the underestimation of oats and potatoes was most likely greater,[38] and these grains are, therefore, upgraded by a higher ratio in the present study. For 1865, official data on seeds of grains are upgraded by 23 per cent (oats by 29 per cent, other grains by 19 per cent) and potatoes by 55 per cent. By 1911, no upgrading is applied to the seeds of various grains, while potatoes are upgraded by 26 per cent.[39] In official statistics,[40] there is a discrepancy between the increase in total cultivated area and the area of reclaimed land. The former also reflects statistical improvements; the latter, which is at a much lower level, probably gives a better picture of the actual increase in the cultivated area. To estimate how much seeds should be upgraded between 1865 and 1911, this discrepancy is used as an indicator for interpolation. For the period before 1865, a further gradual increase is made to the official data on seeds; for 1802–20, seeds of wheat are upgraded by 66 per cent, rye

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33   Hannerberg (1971, pp. 29–31).

34   Gadd (2000, pp. 331–333).

35   Gadd (2000); Gadd (2007); Gadd (2009).

36   Lindahl, Dahlgren and Kock (1937, part two, pp. 17–23).

37   Finanskomiteń (1863, table XXXI).

38   Gadd (1983, p. 324).

39   See Lindahl, Dahlgren and Kock (1937, part two, p. 22).

40   See Statistics Sweden, *N) Jordbruk* (1867–1912).

by 64 per cent, barley by 52 per cent, peas by 60 per cent, oats by 95 per cent, dredge by 78 per cent, and potatoes by 207 per cent.

Figure 4.1 compares the nominal value ratios of forage to the supply of arable output in Sweden and Holland in the period 1807–1913. Two estimates are provided for Sweden: the present study and *National Income of Sweden*. They indicate that the assumed reduction of forage seems to be reasonable when compared to such an advanced country as Holland. For the period before 1890s, the Swedish ratio is even somewhat higher than the corresponding ratio for Holland. Considering the large change in Holland, the previous assumption in Swedish historical national accounts of a long-term stable trend for this ratio for the 19th century, seems unrealistic. The reduction of fodder for cattle results in a significant increase in the estimated level of net arable production (harvests less seeds and forage) in the early 19th century.

Figure 4.1: *The value ratio of forage to the supply of arables (excluding seeds) in 1803–1930 in Holland and Sweden according to various estimates.*
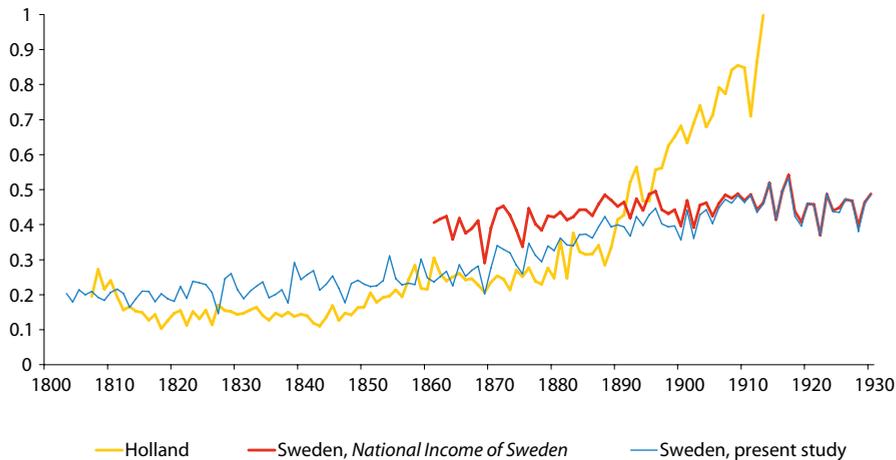
Sources: The present study; Lindahl, Dahlgren and Kock (1937); Horlings et al. (2000, pp. 121–123).

The most time-consuming revision of agricultural production concerns yield ratios (the ratio of total harvests to seeds used). Schön uses fluctuations in real wages as an indicator of harvest fluctuations, with adjustments for long-term trends.[41] This is problematic, since changes in real wages did not necessarily follow those in harvests, even though there was some correlation. Instead, to construct a new series, the present study uses 24 county governors' hand-written accounts of yield ratios for various grains (including potatoes) in the period 1820–65;[42] local clergymen's reports of

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41 Schön (1995).

42 The National Archives (Riksarkivet), Magasinet till Kungl. Maj:t; The National Archives (Riksarkivet), Statskontoret, kansliet, E3N, Vol. 1–15. Summaries of some of these reports have also been published in various forms (mainly in *Post- och Inrikes Tidningar*).

annual fluctuations in yield ratios are used for the period 1802–20.[43] Even if the latter underestimate absolute levels, the annual fluctuations should be fairly reasonable. Approximating the development of seeds before 1865 is more difficult, but the annual fluctuations were not as sharp as for yield ratios.

The new series of crops also includes oil, textile and tobacco plants, which were previously excluded in historical national accounts.[44] These plants accounted for only around four per cent of net arable production in the 1860s and less than one per cent in the 1930s. During the 1940s, however, oil plants increased dramatically, accounting for 29 per cent of the total value of arable production in 1950. This implies that previous historical national accounts underestimated the growth of agriculture in the 1940s, especially during the decade's second half.

In his computation of crops, Schön argues that his use of new price data from Lennart Jörberg (up to 1914) improved the calculation compared to *National Income of Sweden*.[45] The new price data reduced the nominal value by 5 per cent in 1860. However, Jörberg's data are prices per unit of volume, while the prices in *National Income of Sweden* are per unit of weight. Taking this into account, Jörberg's and *National Income of Sweden's* grain prices are almost identical. As the weight of grains per volume unit increased between the 1860s and 1910s, the price per volume unit increased faster than the price per unit of weight. The present study follows *National Income of Sweden* and uses the price per unit of weight, which further increases the nominal value of grains compared to Schön for the 1860s.

The new series on horticulture roughly follows previous estimates for long-term trends. However, since annual fluctuations in previous estimates are based on fluctuations in arable output, the new series on the latter also alters the estimated value of horticulture in individual years.

4.3.2. Animal produce

For animal produce, a completely new series is calculated for 1800–1950, which affects long-term trends as well as short-term fluctuations. The following animal products are included: meat from cows, bulls, oxen, calves, sheep, goats, horses, pigs, reindeer and fowl, and milk, eggs and wool. Previous historical national accounts are largely based on *National Income of Sweden* for 1861–1930. Compared to the previous estimates, the most important changes are as follows:

1. In previous historical national accounts, production per animal (mainly meat per slaughtered animal) was assumed to be constant in some periods. In the present

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43 For the period 1800–1802, Edvinsson (2009) is used.

44 Based on Statistics Sweden (1959), Statistics Sweden, N) Jordbruk (1867–1912), and Statistics Sweden (1930–1955). For 1824–1866, the estimates in Schön (1979, p. 205) on linen production are used for backward extrapolation of textile plants. When no other information exists, harvests of oil, textile and tobacco plants are assumed to follow the grain harvests.

45 Schön (1995, p. 60).

Yard near Hötorget in Stockholm. Painted by Olof Arborelius in the 1880s.
Source: Stockholm City Museum.

The Beatiful Girl from Dalecarlia Selling Milk at Stortorget. Painted by Erik Wahlbergson in the 1830s.
Source: Stockholm City Museum.

study, adjustments in this respect have been made for the period before 1913 by following various indicators, mainly prices of livestock relative to prices of animal produce.[46] The present study assumes that the carcass weight of cows increased from 70 kg in 1805 to 197 kg in 1913 (interpolation between those years is based on the price ratio of cows to milk), of bulls, oxen and horses in proportion to cows, and of calves as a linear increase from 20 kg in 1805 to 28 kg in 1913.[47] The carcass weight of pigs is assumed to follow the price ratio of pigs to pork (smoothed series), which increased by 147 per cent between 1805 and 1913. The carcass weight of sheep and goats (including lambs and kids) is assumed to be constant up to 1861, and then to have followed the price ratio of sheep to beef, which increased by 24 per cent between 1861 and 1913. As the price ratio of hens to eggs is unchanged in the period 1861–1913, no adjustment is made to the productivity of hens. Production per animal has been adjusted downwards for earlier periods, although the milk per cow estimate in *National Income of Sweden* is unchanged.[48]

2. From a comparison of estate inventories with official agricultural statistics during the 19th century, Carl-Johan Gadd concludes that the latter significantly underestimate livestock. This has previously not been taken into account in historical national accounts. The adjustment partly offsets the adjustment of assumed production per animal. The upward adjustments are smaller for cattle and horses, and larger for smaller animals. According to data collected by Gadd[49] for Skaraborg County, estate inventories give a 22 per cent higher number of horses and cattle than official statistics in 1805, and 13 per cent higher in 1861. According to Carin Israelsson, official statistics probably overestimated the number of cows in large agricultural units and underestimated them in small units.[50] The official statistics show a significant increase in the number of horses, cows and young cattle and calves between 1911 and 1913, which could be considered an improvement in measurement. While the estimates of milk production based on the number of cows is upgraded by 12 per cent in Lindahl, Dahlgren and Kock (1937, p. 63), this is not implemented for production of livestock (slaughter, net export and changes in livestock). In this study, the *National Income* data on production of horses, cows and young cattle and calves are increased by 12 per cent for the whole period 1861–1912.

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46   Price data are based on Jörberg (1972).

47   Gadd (1983, p.138); Lindahl, Dahlgren and Kock (1937, part two, p. 82).

48   Lindahl, Dahlgren and Kock (1937, part two, pp. 118–124), estimate the quantity of milk per cow to 1800 kg in 1913 and 830 kg in 1861. Staffansson (1995, pp. 43–82) claims that milk per cow in the 1860s is overestimated in Lindahl, Dahlgren and Kock (1937). Schön (1995, p. 60) argues convincingly against this view. Schön's view is confirmed by the long-term movements in the price ratio of cows to milk, which follows the assumption of Lindahl, Dahlgren and Kock (1937) rather than that of Staffansson. The definition of a cow used here follows the one in official statistics from 1913, which includes only heifers that have calved. See also Morell (2001, p. 355), for an overview of the Swedish debate.

49   Gadd (1983, pp. 335–337).

50   Israelsson (2005, p. 87).

For 1805, the official statistics on horses and cattle are increased by 15 per cent. The ratio of sheep and goats to cows and horses and the ratio of pigs to cows and horses, respectively, are increased by the same amount in 1805 as in 1861. Various studies on estate inventories in 1810–80[51] give ratios of the number of sheep, goats and pigs to the number of cows and horses that are anything from nil to more than 100 per cent above the official statistics. Against this background, compared to official statistics in 1805 and 1861, the present study increases the ratio of sheep and goats to cows and horses by 25 per cent and the ratio of pigs to cows and horses by 50 per cent (which is slightly below the average of various studies compared to official data). This increase is reduced linearly up to 1930, when official data on sheep, goats, and pigs are assumed to have reflected actual conditions. Fowl production is increased by the same amount as pig production in 1861–1930.

3. Wool production is included, whereas it was excluded in previous historical national accounts. Wool production accounted for around five per cent of total animal produce in the 1860s; by the 1940s it had fallen to less than a half per cent. Wool production per adult sheep at the beginning of the year is set to 4 kg per year from 1913; before that year it is assumed to follow the price ratio of sheep to wool. This implies that wool production per adult sheep is assumed to have been 1.17 kg in 1840. The actual number of sheep, including lambs, could be substantially higher during the year, in which case the actual assumed production per sheep would be less. In comparison, Gunilla Peterson shows that in 1822–65 wool production varied from 0.5 to 3.4 kg per sheep and year.[52] Lennart Schön (1979) puts average wool production per sheep and year in 1820–70 at 1.06 kg. Dutch historical national accounts assume that the annual wool yield averaged 2 kg per sheep in the early 19th century,[53] while for Denmark, Hansen estimates productivity per sheep in 1819 to 1 kg.[54]

4. Between 1805 and 1861 the calculated increase in animal produce is based on the official data on stocks of animals, adjusted for the underestimation in these official sources and the approximated growth of production per animal between the two years. Milk per cow increased significantly before 1861 which the present study assumes it followed the price ratio of cows to milk, which increased by 34 per cent between 1805 and 1861. This implies an average production of 621 kg milk per cow in 1805, which accords quite well with previous research.[55] Fowl production is assumed to have followed milk production from 1805 to 1861. Hens were unusual before the 1860s but geese were common in the early 19th century and hens replaced

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51 Gadd (1983, pp. 334–335); Larsson (2009, pp. 169–176); Dahlström (2006, p. 309); Peterson (1989, pp. 65–82); Jonsson (1980, p. 123); Isacson (1979, pp. 55, 129, 154–156).
52 Peterson (1989, pp. 92–93).
53 Horlings et al. (2000, p. 33).
54 Hansen (1974, p. 303).
55 See Gadd (1983, p. 137).

them as the century proceeded.[56] For interpolation between the two years, the growth of forage is used as an indicator (and gross harvests for extrapolation back to 1800). This is similar to the method used by Schön but since forage is estimated from new data on harvests, annual fluctuations differ substantially.

5. A consequence of the adjustments in the present study is a change in the price deflator of animal produce. While *National Income of Sweden* and Schön use the price per animal to calculate deflators, the present study uses the price per weight unit. The present study's price index of animal produce gives slower growth. While the volume growth of animal produce in 1861–1930 is about the same as in previous studies, the nominal value in the 1860s and earlier is upgraded substantially.

6. A new series of animal production is also calculated for the period 1930–1950, based on the number of livestock.[57]

4.3.3. Trends and fluctuations in agriculture

The development of per capita harvests for various crops in 1800–1954 is presented in Figure 4.2, which clearly shows that the long-term trend and volatility were fairly stable over time, while composition changed.

Figure 4.2: *Net harvest (harvest less forage and seeds) of various crops in kcal per day and inhabitant 1800–1954.*
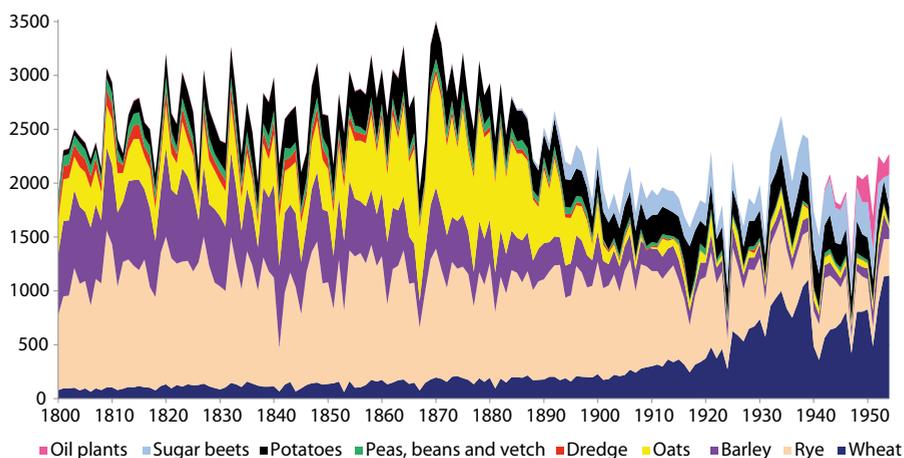
Sources: See the main text.

Figure 4.3 summarises the development of per capita agricultural production (excluding ancillaries) in the reference prices of 1800. It shows that the level per capita was basically unchanged up to the mid-19th century. However, even though agri-

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56   Peterson (1989, pp. 83–85); Morell (2001, p. 256).
57   Statistics Sweden (1959).

culture in the first half of the 19th century is substantially upgraded, the present study still assumes significant per capita growth in 1850–1950. In this period, it was animal production and horticulture that expanded, while per capita arable production even declined somewhat.

Figure 4.3: *Per capita gross production of agriculture (excluding forage and seeds) in 1800–1950 in the reference prices of 1800 (SEK).*
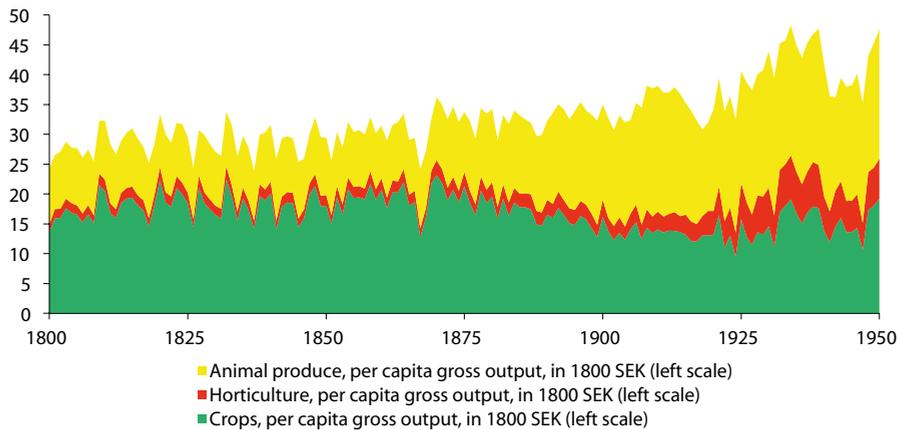
Sources: See the main text.

A new series of agricultural production was presented recently by Schön and Krantz (2012). It involves an upgrading for the early 19th century but not as much as in the present study. Their upgrading is due to agricultural production being extended to include the consumption of forage by horses used in transports, which was not the case in their previous publication. Krantz and Schön also upgrade agricultural production by including textiles and skins for the leather industry.[58] The present study adds textiles to agricultural production, while leather products are estimated for manufacturing (see below).

4.4. Adding home-based manufacturing to Swedish GDP before 1950

The most important change to manufacturing in this study is the addition of home-based manufacturing, here defined as manufacturing outside factory production and handicrafts, both for own consumption and for sale. The calculation of manufacturing in recent Swedish historical national accounts goes back to a study by Lennart Schön.[59] He does deal with home-based manufacturing but hitherto it has not been included in GDP. In their most recent revision of Swedish historical national

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58 Krantz and Schön (2012, p. 14).
59 Schön (1988).

accounts, Schön and Krantz (2012) choose not to include manufacturing activities outside factory production and handicrafts.

According to modern international national accounts guidelines, 2008 SNA, services (except for dwelling services) produced for own use by households are excluded from GDP but all goods produced for own use should be included, which is of particular importance for developing countries. Previous Swedish historical national accounts are, therefore, not in line with modern guidelines. 2008 SNA states:[60]

"The following types of production by households are included whether intended for own final consumption or not:

a. The production of agricultural products and their subsequent storage; the gathering of berries or other uncultivated crops; forestry; wood-cutting and the collection of firewood; hunting and fishing;

b. The production of other primary products such as mining salt, cutting peat, etc.;

c. The processing of agricultural products; the production of grain by threshing; the production of flour by milling; the curing of skins and the production of leather; the production and preservation of meat and fish products; the preservation of fruit by drying, bottling, etc.; the production of dairy products such as butter or cheese; the production of beer, wine, or spirits; the production of baskets or mats; etc.;

d. Other kinds of processing such as weaving cloth; dress making and tailoring; the production of footwear; the production of pottery, utensils or durables; making furniture or furnishings; etc.;

e. The supply of water is also considered a goodsproducing activity in this context. In principle, supplying water is a similar kind of activity to extracting and piping crude oil.

It is not feasible to draw up a complete, exhaustive list of all possible productive activities but the above list covers the most common types. When the amount of a good produced within households is believed to be quantitatively important in relation to the total supply of that good in a country, its production should be recorded. Otherwise, it may not be worthwhile trying to estimate it in practice."

Internationally, historical national accounts often approximate the size of manufacturing in the 19th century by following the intermediate consumption of raw materials, which indirectly implies the inclusion of manufacturing outside factory production and handicrafts (or, at least, the growth rate is not distorted by the relative decline of home-based manufacturing).[61] The low rate of urbanisation in Sweden before 1850 is, to some extent, explained by climatic factors. In Sweden, home-based manufacturing was more important than in other European countries to the south, not least because the rural population could not pursue agriculture during the long winter season.[62]

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60   United Nations et al. (2009, p. 99).

61   See, for example, Bourguignon and Lévy-Leboyer (1990, p. 266) for France, Grytten (2004, p. 249) for Norway, and Horlings et al. (2000 pp. 37–45) for Netherlands.

62   Hemslöjdskommittén (1918, pp. 15-16).

Schön makes a preliminary estimate of the share of output outside factory production and handicrafts for textile- and metal industries from the 1820s to the 1860s, based on the input of raw materials.[63] Guesstimating the size of woodcraft and leather processing,[64] he concludes that activities outside factory production and handicrafts accounted for around one third of manufacturing output during the 1820s as recorded by the Swedish historical national accounts, but for only one sixth during the 1860s. This guesstimate, however, excludes home production of food items. Notwithstanding these calculations, his final series of manufacturing and handicrafts does not include home-based manucturing. Schön argues that parts of home-based manufacturing are included in the series of unpaid domestic labour. However, since that series is not included in GDP, home-based manufacturing is also absent in the final estimate of economic growth in the SHNA project.

This study follows Schön's method for estimating the contribution of home-based manufacturing from the intermediate consumption of raw materials, which can be calculated from outputs of agriculture and mining, and international trade.

4.4.1. Food industries

This study presents a new series for food industries, mainly based on the total supply of crops (gross output less intermediate consumption in agriculture, plus import less export) and animal products, disaggregated between activities.[65] Volume and nominal growth in the slaughter and meat processing industry follow production and prices of slaughter animals. This does not take into account that slaughter and animal produce are not identical, since production also includes changes in the animal stock. However, these two series should be highly correlated with each other.

Volume and nominal growth in mills and bakeries are set equal to volume and price changes in the intermediate consumption of grains in milling. The intermediate consumption of grains for milling in year t is calculated as (where the subscript denotes the year):

Gross output$_{t-1}$ – Export$_t$ + Import$_t$ – Seeds$_t$ – Forage$_t$ – Input breweries$_t$ – Input spirit industries$_t$

Milling of grains is assumed to be related to the previous year's harvest.[66]

Previous historical national accounts exclude the production of butter and cheese outside the industrial statistics. The present study assumes that for 1913–48, total cheese and butter production followed milk production. The difference between total and factory cheese and butter production is then added to the dairy production

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63   See also Schön (1979, 1987).
64   Schön (1988, p. 14).
65   The deflators are mostly based on Jörberg (1972), Lindahl, Dahlgren and Kock (1937), and Ljungberg (1988, 1990).
66   Input in breweries is based on Schön (1988) and input in spirit industries on Key-Åberg (1913).

Baking Bread. Painted in 1889 by Anders Zorn (1860–1920).
Source: Wikipaintings.

series according to Schön.[67] For the period before 1913, milk production is used as an indicator of total dairy production. The changes to other food industries after 1861 are very minor.[68] To interpolate the output of various food industries for the period before 1861, the supplies of animal products and grains are used as indicators. For simplicity, the value added shares of various food industries are assumed to be constant during the whole period 1800–1950.

4.4.2. Home crafts

One of the few direct studies of home craft covers the year 1911.[69] Recorded home craft consisted of roughly equal shares for market sales and own use. The recorded value of gross output of home craft for market sales was 0.9 per cent of the value in manufacturing and handicrafts (excluding food industries) and for own use it was 0.8 per cent.[70] Textile production stood for 64 per cent of home craft, wood products for 20 per cent, metal products for 11 per cent and leather products for 5 per cent. Even so, the investigation of 1911 emphasises that while the estimated value of home craft

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67 See Board of Trade (Sweden), Industri (1913–1952).
68 Based on Ljungberg (1988), and Board of Trade (Sweden), *D) Fabriker* (1859–1912).
69 Hemslöjdskommittén (1918, pp. 16–19).
70 Compared to Schön (1988).
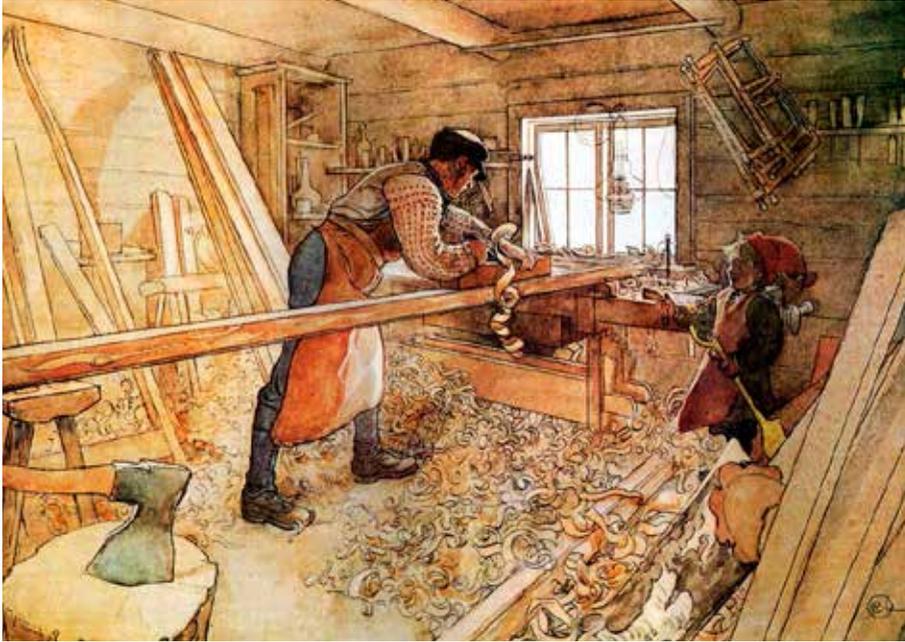
In the carpenter's shop. Painted in 1905 by Carl Larsson (1853–1919).
Source: Wikipaintings.

for market sales is probably realistic, the value of home crafts for own use is most likely greatly underestimated. The same conclusion is drawn in the present study.

There are also accounts of how time was spent in rural areas during various months of the year. One such study for northern Sweden presents the seasonal work cycle for two areas in the 18th century.[71] It shows that women devoted from one fourth to one third of their working time to textile production and men spent around one tenth of their working time on various crafts. Since the time spent in household services is usually not accounted for, the ratio of the times women and men devoted to homecraft was probably somewhat lower.

The present study derives production in home crafts mainly from the input of raw materials,[72] which is calculated as the total supply of raw materials less their input in factories and handicrafts. The total supply is set equal to the gross output plus import less export.

To value home-based textile activities, the present study applies a method compa-

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71 Medelius (1968, pp. 16-17). See also Krantz (1987, pp. 52–53).
72 Foreign trade is based on Statistics Sweden (1972), Board of Trade (Sweden), *F) Utrikes handel och sjöfart* (1859–1895), Board of Trade (Sweden), *F) Handel* (1896–1912), and Board of Trade (Sweden), *Handel* (1913–1951).

rable to Schön's in his study covering the period 1826–71.[73] Official statistics provide data on the quantities of factory production of wool, linen and cotton products.[74] Intermediate consumption of raw materials in weaving (in tons) is computed by deducting intermediate consumption in factories (estimated from the assumed input per output based on later industrial statistics) from the total supply of raw materials. This, in turn, provides a rough approximation of home-based textile production. In addition, the present study adds home spinning, using a methodology similar to that for weaving.

Since spinning and weaving were negligible in handicrafts, their impact can be disregarded. Textile handicrafts concentrated mainly on clothing.

According to Schön, a 10 per cent loss of raw materials occurred in the production process.[75] The estimated ratio of the input of wool and linen to the output of wool and linen yarn is based on data on inputs and outputs in industrial statistics for 1935–39, which also allow for losses of raw materials in the production process. The weight of wool garn is greater than the weight of wool input, since other types of product are included in the production of wool garn. Following Schön, no home production of cotton yarn is assumed from 1838 onwards. Moreover, in the present study it is assumed that a 5 per cent weight loss occurred in the transformation of yarn into textiles. The estimated production of yarn is assumed to consume half of the preceding year's supply of inputs and half of the present year's. The home production of wool yarn is assumed to be nil from 1914 onwards, of linen yarn nil from 1916 onwards, and of linen and wool textures nil from 1941 onwards.

For the period 1800–27, the total production of textiles is first assumed to follow the total supply of wool, linen and cotton. Deducting production in manufacturing and handicrafts yields a residual. The volume value of home production is finally calculated as the average of the present and preceding year's residual (to take into account that inputs to home-based manufacturing were not immediately consumed in the production process).

Since the present study uprates the output of wool and linen, home-based textile production is upgraded compared to Schön (1979). For example, home weaving in 1838–40 is estimated to have been 33 per cent higher than according to Schön (1979), while including home spinning, the estimate for textile home crafts is 110 per cent above Schön's. To calculate nominal values, an index constructed on the basis of prices of cotton, and wool and linen yarns, is used to reflate the volume

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73　Schön (1979).

74　Based on Schön (1979), Board of Trade (Sweden), *D) Fabriker* (1859–1912), Board of Trade (Sweden), *Industri* (1913–1952). Weaving is presented in tons only from 1896. To estimate the weight of textiles, 1896 is used as a benchmark year, and the annual changes in the volume values (nominal values deflated by a price index of textiles) are used for backward extrapolation. The spinning of wool by wool cloth factories is not recorded in the industrial statistics up to 1895 (Board of Trade (Sweden), *D) Fabriker* (1898, p. v). The spinning of these factories up to 1895 is estimated, based on the data for 1896.

75　Schön (1979, p. 26).

series.[76] Although home-produced textiles were of lower quality, their price included a trade margin, which means that their price per unit of weight was probably higher than the corresponding price of factory textiles (which were more of wholesale prices).[77] The value added shares are estimated separately for home spinning and home weaving of cotton, wool and linen textiles, and assumed to be constant for the whole period of investigation.[78]

Other types of textile production are divided into (what during the period of investigation were considered to be) male (mainly production of baskets and nets) and female (mainly clothing) activities. For the period before 1911, the volume of other types of female textile production is assumed to follow weaving and spinning.

The estimated level of the total output of weaving and spinning is 171 per cent higher than according to the survey of 1911. Home production of other textiles, and of leather, metal and wood goods, is upgraded by the same amount. The year 1911 is used as a benchmark. The value added shares are calculated for each of the activities in 1911, and assumed to be constant during the whole period of investigation. For other textiles, leathers and metal products, the volume value of home-based manufacturing is assumed to be constant in 1911–50.

Estimating the size of intermediate consumption of raw materials in woodcrafts and other male textile activities is particularly problematic. A benchmark is constructed for these two types of activity for the year 1825, based on the average time men spent on these activities according to the account of the work cycle in northern Sweden in the 18th century (around four per cent for woodcrafts and three per cent for other male textile activities), the average wage of male agricultural workers,[79] and the size of the rural male labour force.[80] For other years, the volume value is estimated with various techniques of inter- and extrapolation. For the period 1825 to 1911, the volume value of other male textile activities is assumed to have decreased linearly, while before 1825 it is assumed to follow the population. For wood industries, the

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76 Based on Jörberg (1972), Ljungberg (1990), and Schön (1988, pp. 203–204). The prices in Jörberg (1972) are used as a benchmark. Yarn prices are used to estimate the prices of home textiles, based on the geometric average price ratios of textiles to yarns per unit of weight according to industrial statistics in 1896–1914.

77 On average, in 1896–1914 the price of linen garn is reported in Jörberg (1972) at a 42 per cent higher level and the price of wool garn at a 25 per cent higher level compared to the industrial statistics. However, compared to the prices presented in Jörberg (1972), in the present study the value per ton of home production is assumed to be 10 per cent lower for wool products, and 23 per cent lower for linen products, mainly because home production used raw materials of lower quality (see Schön, 1979, pp. 29-30).

78 The value added share in home spinning is assumed to be 56 per cent, in accordance with Hemslöjdskommittén (1918, p. 18). The value added shares in home weaving are based on the value ratio per unit of weight between textiles and yarns of wool, linen and cotton, respectively, in factory production, with an assumed loss of five per cent.

79 Based on Jörberg (1972).

80 Based on Statistics Sweden (1949, p. 122).

consumption of wood by households according to Schön[81] is used as an indicator. For the two benchmark years 1825 and 1911, the input of wood can be calculated from the assumed value added share, which implies that the input of home woodcraft was equivalent to 18 per cent of household wood consumption in 1825, and five per cent in 1911. For the period between 1825 and 1911, this ratio is assumed to have decreased linearly. Prior to 1825 the ratio is assumed to have been the same as in 1825; after 1911 it is assumed to remain the same as in 1911. Half of the current year's input is assumed to be used in that year, the other half in the coming year.

Up to 1911, the home production of leather and metal industries, respectively, is calculated similarly to that of textile products, by estimating the total size of leather and bar iron supply (production plus net import), respectively, and the intermediate consumption of leather[82] and bar iron[83], respectively, in factories and handicrafts. Home production's value added share of these products is set equal to the estimate in the survey of 1911, which was 39 per cent for leather products and 58 per cent for metal products. The estimated series implies that for 1911, the value of home-based leather production was only three per cent of total gross output of leather products in factory production and handicrafts, but 22 per cent in 1900 and 315 per cent in 1800, which is a much higher level than Schön's earlier guesstimate. However, the estimated size of metal products is about the same as Schön's conjectures.[84]

Part of home-based manufacturing was used as intermediate consumption in agriculture and ancillaries, implying a somewhat lower value added in agriculture. The assumption in this study is that 40 per cent of the home production of baskets, nets, etc was used as intermediate consumption in agriculture, 10 per cent of leather products, 20 per cent of wood products and 25 per cent of metal products. [85] Further-

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81 Schön (1995, pp. 95–99).

82 Compared to Schön (1988), rubber industries are deducted from leather production and reclassified into chemical, petroleum, rubber and plastic product industries, in accordance with later national accounts (Edvinsson, 2005, p. 81). The total production of unprocessed hides is estimated based on the total slaughter weight of sheep and goats, cattle, calves, and horses, the net import of unprocessed hides, and the relation between the supply of unprocessed hides (production plus net import) and their input in 1935–55 according to industrial statistics. The weight of produced leather is estimated at 45 per cent of the weight of unprocessed hides, which was the average in 1935–40 according to official industrial statistics (the ratio was lower from 1941). The value of the input of leather in leather factories except tanneries (mostly shoe production) is estimated at 28 per cent of gross output (based on industrial statistics for 1950), while the corresponding ratio for home industries is set to 61 per cent (gross output less value added), and for handicrafts to 38 per cent (calculated residual for 1911).

83 The production of bar iron is based on Schön (1988), Board of Trade (Sweden), *C) Bergshandteringen*, (1859–1912), and Board of Trade (Sweden), *Bergshantering* (1912–1913), while foreign trade is from Board of Trade (Sweden), *F) Utrikes handel och sjöfart* (1859–1895), and Board of Trade (Sweden), *F) Handel* (1896–1912). For the period before 1911, the input of bar iron in factories and handicrafts is assumed to follow the volume value of its gross output.

84 Schön (1987).

85 See also Schön (1988, pp. 179–185).

more, since Swedish historical national accounts estimate the size of forestry by its various uses,[86] the inclusion of home woodcraft somewhat enlarges forestry. For the period 1800–90, the total input in home woodcraft is added to forestry, while by 1950 it is assumed that it was already included in previous estimates of forestry. Between 1890 and 1950 it is assumed that the share of the input that has been excluded in previous estimates of forestry decreased linearly.

4.4.3. Trends and upgrading

Figure 4.4 presents the per capita volume value for four types of home crafts in 1800–1911. It shows that most home crafts did not start to decline in volume terms until around 1890. In relative terms, however, the decline started earlier as factory production expanded.

Figure 4.4: *Per capita volume value of home-based manufacturing 1800–1911 (reference prices of 1800, SEK), previously excluded in Swedish historical national accounts.*
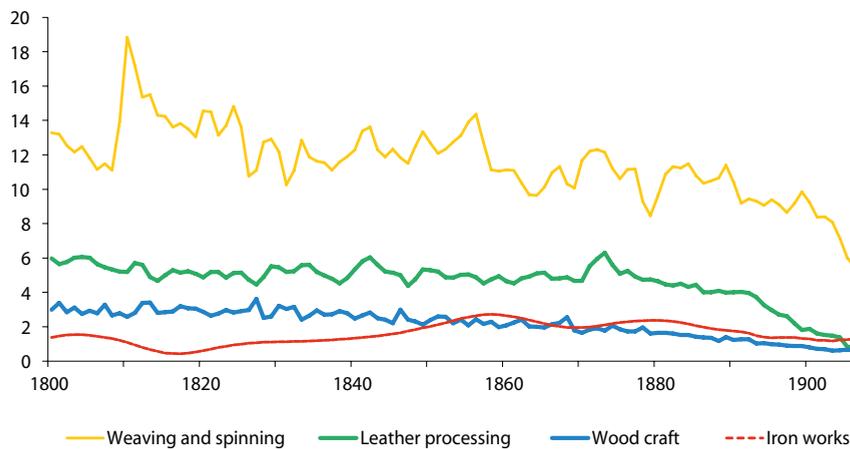
Sources: See the main text.

The further back in time, the larger was home-based production's share of total manufacturing output. For textile and leather products, home production stood for around 80 per cent of gross output up to the 1830s, while the rest was mostly produced by handicrafts. It was during the second half of the 19th century that home-based manufacturing's share decreased.

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86   Schön (1995, pp. 64–69).

4.5. Changes to real estate and other activities

The most important revision of services concerns real estate, which is one of the most problematic activities to value. Various attempts have been made in the context of Swedish historical national accounts, with unsatisfactory results. Part of the problem lies in deficiencies in Statistics Sweden's official estimates for the period 1950–70. The revision to services of dwellings – real estate's main component – that is presented in this study also involves a recalculation of building and construction for the period before 1938.

Official estimates of services of dwellings have underestimated both their volume growth and the development of the rent index in the decades before 1970. For example, according to earlier national accounts, the volume value of services of dwellings increased by a factor of 2.22 between 1945 and 1970.[87] Considering that the number of rooms, according to housing censuses, increased by a factor of 1.81 between those two years, this implies that quality per room increased by only 22 per cent. Yet this was in a period of rapid improvements in the quality of dwellings. For the period before 1950, some of the earlier historical national accounts roughly follow the number of rooms as an indicator of volume growth. This applies also to the study by Krantz (1991). The number of rooms is a quantity but is not to be confused with volume value, which should include qualitative improvements to rooms.

Another method is suggested in Edvinsson (2005), namely to calculate services of dwellings from the net capital stocks of residential buildings, which in turn are derived from past residential investments. This partly takes into account the qualitative improvements per room produced, since it can be presumed that room quality is related to the volume value of residential buildings per room. Following Edvinsson (2005), this method is applied by Krantz and Schön (2007).[88] For various reasons, the estimated increase in the volume of residential buildings is not completely satisfactory in either of these studies, and it is only in the period before 1950 that the method is applied consistently. In a revision of the series of services of dwellings, Schön and Krantz (2012) choose to use the series of Krantz (1991) up to 1912, and thereafter the series of Krantz and Schön (2007). However, these two series use methods that are inconsistent with one another, and therefore reproduce the weaknesses of both.

The present study assumes that the volume value of services of dwellings followed the net capital stock of residential buildings for the whole period up to 1970. The volume and nominal value of residential investment in 1861–1950 are based on Östen Johansson's study.[89] For the period 1861–1938, an adjustment is made to Johansson's assumption of quality improvements, which somewhat decreases its

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87   Based on Krantz and Nilsson (1975, pp. 173–174).

88   Krantz and Schön (2007) calculate the value of investment in private services based on Pettersson (1987) up to 1860, but they use Östen Johansson's (1967) values from 1861, which implies that the values up to 1860 are not consistent with those from 1861.

89   Johansson (1958).

growth. Certain qualitative improvements are also assumed to have occurred in the period 1840–61.

Östen Johansson assumes that the cost of producing one room (including kitchen) increased from 216 SEK in 1861 to 3759 SEK in 1938. In comparison, the cost-of-building index increased by a factor of only 4.46 in the same time period. Johansson concludes that the difference can be explained by a 3.74-fold increase in quality per room. However, his estimated cost of a room in 1861 is probably too low. Using two estimates of actual building costs gives a figure of 269 SEK; this is based on costs of building three extra rooms in Stockholm in 1806[90] and a two-room cottage on Gotland in 1863.[91] The cost in 1861 is calculated by taking differences in price levels into account.[92] This gives a 3-fold instead of a 3.7-fold increase in the quality of a room in the period 1861–1938.

Another problem is Östen Johansson's interpolation of the cost-per-room index between 1861 and 1938. As he explains (my translation from Swedish): "*The cost-of-building index has, therefore, been corrected by lowering the index number … for the year 1861 to around 6 (1938=100), i.e. by 73 per cent. The per cent deduction for later years has been lowered linearly to zero for the year 1938; thus the quality improvement of apartments has been assumed to occur at a constant rate during the whole period.*"[93]

He then uses the new index to reflate the quantity series of the number of rooms to arrive at nominal values, but then applies the old cost-of-living index to deflate the nominal values into a volume series (which takes into account the improvement in the quality of rooms). Although the latter procedure is reasonable, his method of linear interpolation to calculate costs per room is unsatisfactory, since it is not the growth rate that is interpolated but the percentage relative to the level in 1938. Consequently it does not assume a constant growth rate for quality per room. Instead, it basically implies that quality increased by more than three per cent per annum in the beginning of the period (early 1860s), but by less than one per cent per annum at the end (mid 1930s). In reality, quality is more likely to have improved either at a constant rate throughout the period or somewhat faster in the 20th century. Instead, to interpolate the growth of quality improvements to rooms between 1861 and 1938, the present study uses the change in the ratio of town population to total population. The same method is used back to 1840, while before 1840 the quality of rooms is assumed to be constant (the urbanisation ratio was roughly unchanged from 1800 to 1840). This method implies that between 1840 and 1861, quality per room increased by 19 per cent in total.

For the period up to 1861, previous historical national accounts draw on Lars Pettersson's study of building and construction.[94] However, his series is derived from

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90   Pursche (1989, p. 258).
91   Olsson (undated).
92   Using Jörberg (1972).
93   Johansson (1958, p. 25).
94   Pettersson (1987).

tax records for a few benchmark years, which are rather unreliable for approximating residential stocks and investments. For example, Pettersson assumes that half of the taxed value of rural properties consisted of buildings, while fire insurance data show that the proportion was probably less than a third.[95] Furthermore, it is very hard to deduce to what extent rural buildings were used as dwellings as opposed to agricultural production (mainly keeping animals). This study uses population growth instead as an indicator of annual changes in the construction of dwellings. The data are spliced to the estimated residential investments from 1861 onwards. The method may be rather crude but seems more reliable than the one applied by Pettersson.

All in all, the altered series of residential investment upgrades the net stock of residential buildings in the first half of the 19th century, which also upgrades the volume value of real estate for this period.

In Edvinsson (2005), nominal levels are determined by reflating the volume series with a rent index. For some periods, the rent index is adjusted to the development of the cost-of-building index. However, this approach is problematic. Instead, the present study computes nominal values directly and the rent index is adjusted accordingly. In the first step, the nominal value of the output of dwellings (the same as total rents) is established for the benchmark years 1910, 1945 and 1970.[96] For 1910, empirical data only exist for rents in various locations,[97] but Östen Johansson provides the number of apartments. The investigation reveals that previous studies have significantly underestimated nominal growth between 1945 and 1970, and that rents increased much faster than the official rent index suggests.

According to the housing censuses of 1945 and 1970, the nominal value of rents (which includes a fictitious market rent on owner-occupied apartments, or apartments rented out at a reduced rate) increased by a factor of 11.1. This is a much higher growth rate than recent historical national accounts indicate. It can be compared with the increase in the rent index by a factor of 2.46 and the 3-fold increase in the net stock of residential buildings, which together amounts to an increase in the nominal value by a factor of 7.38. To bridge this discrepancy we could assume a higher increase in either volume or price level (or both).

Between 1945 and 1970, average rent per room (which includes fictitious rents) increased from 204 SEK to 1252 SEK, whereas the rent index rose only 146 per cent. The increase in rent per room came in part from changes in quality but it also had to do with the changing geographic location of dwellings. The latter is not necessarily a quality improvement per se. Rural rents increased much faster than urban (especially Stockholm). Assuming that all the rooms in 1945 had the highest mea-

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95   In 1858, the estimated market value of rural buildings was 505 mn SEK (Finanskomiteń, 1863, table XXXI). The total market value of rural properties was at least three times higher.

96   Swedish Social Welfare Board (1952), and Statistics Sweden (1974). The investigation of 1945 and 1970 is based on the housing censuses, which also provide data on rents of apartments of various sizes, qualities and geographical locations.

97   Based on 119 towns and other locations presented in Swedish Social Welfare Board (1914).

sured quality at that time would give an average rent of 316 SEK per room. Assuming that in 1970 the average quality of rooms equalled the highest measured quality in 1945 would then give an average price increase by a factor of 3.96, i.e. a much faster price increase than according to the official rent index. From this it can be concluded that it is the growth of the rent index which is underestimated rather than the growth of the volume of residential buildings.

To arrive at nominal growth by a factor of 11.1 between 1945 and 1970, the price index of services of dwellings is assumed to have risen 1.65 percentage points faster per annum than the official rent index, or by a factor of 3.71 altogether in this 25-year period (this is still less than the estimate above of 3.96). This adjustment is based on the growth of the net capital stock of dwellings.

The output of other types of real estate roughly follows the method in Edvinsson (2005).

A comparison of actual rents between 1910 and 1945 shows an increase in the nominal value of total rents by a factor of around four-and-a-half. This yields roughly the same result as the method of reflating the volume series of residential buildings by the rent index. The latter method is therefore applied to the whole period before 1945 but the computed series is linked up to the lower values calculated for 1945.

Figure 4.5: *The nominal ratio of per capita value added of real estate, according to various estimates, to the average annual wage, 1800–2000.*
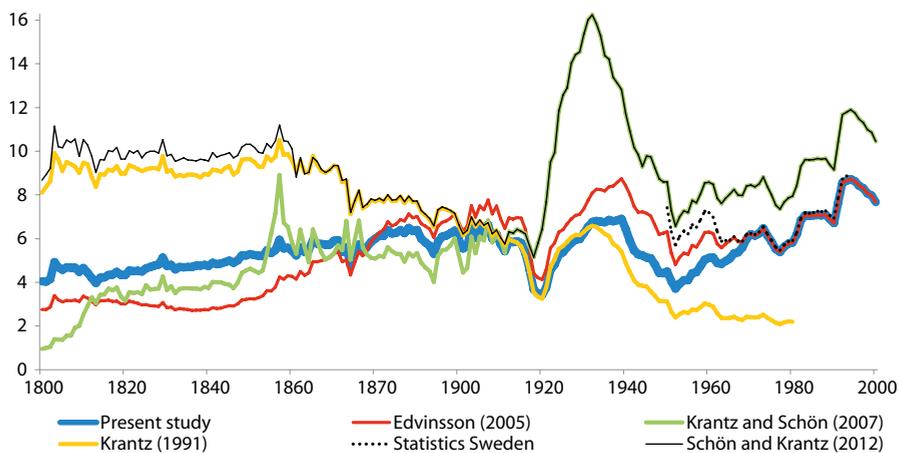
Sources: Edvinsson (2005), Krantz and Schön (2007), Schön and Krantz (2012), Krantz (1991), and the present study. Average annual wage is from Edvinsson (2005) back to 1850, and extrapolated back to 1800 using wage data in Jörberg (1972).

Figure 4.5 presents the ratio of per capita value added of real estate, according to various estimates, to the average annual wage. Using the revised series of the stock of residential buildings raises the value of real estate in the 19th century. For parts of the 20th century the value is significantly reduced.

For the early 19th century, the estimate in Krantz and Schön (2007) seems to be suspiciously low, which is admitted in Schön and Krantz (2012). In contrast, the series for this period in Krantz (1991) and Schön and Krantz (2012) seem to be much too high considering the low level of investment in dwellings. According to Schön and Krantz (2012), the volume ratio of investment in dwellings to services of dwellings rose from 0.12 in 1800–20 to 0.29 in 1930–50. Such a sharp increase is unrealistic if one assumes a constant rate of depreciation for the stock of dwellings. The increase around 1920 in the ratio of per capita value added of real estate to the average annual wage according to the series in Schön and Krantz (2012) is probably an exaggeration. For example, while according to Schön and Krantz (2012) the per capita volume of services of dwellings increased by 172 per cent between 1910 and 1930, the per capita volume of investment in dwellings increased by only 48 per cent between 1890–1909 and 1910–29. For the late 20th century the Krantz and Schön series are much too high compared to the series of Statistics Sweden.

4.6. Changes to other activities

The new calculations of real estate also affect the estimated size of the gross output of building and construction activities. The main changes concern residential investment, which is upgraded for the earlier periods, and repairs and maintenance of dwellings, which are downgraded.[98]

Some of the work which domestic maids performed in agriculture concerned industrial or agricultural production according to the definition in 2008 SNA. Jan Bohlin questions Krantz's assumption that 64 per cent of the time maids spent in agriculture was devoted to domestic services. From evidence in rural diaries, Bohlin argues that the share should be 10-25 per cent.[99] However, these diaries tend to omit the day-to-day service activities that women performed in an agrarian household. The share should therefore probably be somewhat larger than assumed by Bohlin. In Edvinsson (2005) the share is somewhat lower than Krantz's figure. The present study puts the share at 64 per cent in 1929–50, in accordance with Krantz' assumption, since it is based on information from that period. In earlier periods, however,

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98   From 1938 there are direct empirical data on repairs and maintenance, presented in Johansson (1958, p. 26). For the period before 1938, Johansson uses the gross output of services of dwellings for extrapolation backwards. However, this gross output significantly underestimates nominal growth. The present study uses the new series of services of dwellings to estimate a new series of repairs and maintenance as well, which significantly lowers the values, especially for the 19th century.

99   Bohlin (2003, p. 86).

the time devoted to domestic services was no doubt lower on account of the large scale of home-based manufacturing. The present study therefore assumes that in 1800 the share of domestic services was one third. For the years between 1800 and 1929 the share is interpolated using the trend in the ratio of value added in textile and food industries, including home-based manufacturing, to the value added of these activities in factory production and handicrafts.

The changes to other types of activities are minor. For shipping, a new freight index is used for the period 1800–25.[100] For trade, a correction is made by including pharmacies, which were accidentally excluded in Edvinsson (2005).

4.7. GDP by activity 1620–1800

Before the industrial revolution, annual fluctuations in the aggregate economy were largely dominated by the ups and downs of agricultural production.[101] The other activities did have an impact but it was not sufficient to determine the general direction from year to year. The fluctuations in agricultural production were, in turn, largely determined by the fluctuations in harvests. Animal produce was affected with some time lag. Harvests also affected some manufacturing and service activities, especially food, textile and leather industries, and trade, also with some time lag. Harvests were more volatile than other types of activity. Thus a reliable series of annual harvests may be used to estimate annual fluctuations in pre-industrial GDP.

Table 4.1 presents coefficients for four regressions covering the period 1800–40, where the two independent variables are the annual (natural) logarithmic changes in per capita harvests in the current and the preceding year.[102] The dependent variables are the logarithmic changes in per capita volume value added of the aggregate economy (two regressions), and of agriculture and food industries, respectively. When both the independent variables are included, the R-value of the regression for GDP per capita is as high as 0.96 (regression 1), implying that over 90 per cent of the variance is explained; when only the current logarithmic change in per capita harvests is included, the R-value falls to 0.81 (regression 2). For agricultural production (regression 3), the R-value is even higher (0.98) when two independent variables are included. For food industries (regression 4), current logarithmic change is excluded from the model because it is not significant, but the R-value is still very high (0.95).

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100 Based on North (1965, p. 235), and Harley (1988, pp. 873-874).

101 Edvinsson (2005, pp. 255-260).

102 Covering a longer period produces similar results. However, the regression equations are based on the period 1800-40 because it was from the 1840s that per capita GDP growth accelerated in Sweden.

Table 4.1: *Regressions for the period 1800–40, where the two independent variables are the annual logarithmic changes in per capita harvests in the current and the preceding year.*

Dependent variable	1. Logarithmic change in per capita GDP	2. Logarithmic change in per capita GDP	3. Logarithmic change in per capita value added of agri-culture	4. Logarithmic change in per capita value added of food industries
Constant	0.00	0.00	-0.00	-0.00
Coefficient, logarithmic change in per capita harvest	0.30	0.25	0.69	Not included
Coefficient, logarithmic change in per capita harvest, one-year lag	0.17	Not included	0.14	0.74
t-value, logarithmic change in per capita harvest	21.50	8.63	31.19	Not included
t-value, logarithmic change in per capita harvest, one-year lag	11.82	Not included	6.38	17.92
R-value	0.96	0.81	0.98	0.95
R^2	0.93	0.66	0.96	0.89
Adjusted R^2	0.93	0.64	0.96	0.89
Degrees of freedom	37	38	37	38

For the coefficients of regression 1 in Table 4.1 to be applicable to the period before 1800 and thereby arrive at an annual volume GDP per capita series, two conditions must be met: 1) a reliable harvest series must exist, and 2) the possibility of trend growth means that the constant cannot be set to zero, so conjectures have to be made about other activities, at least for some benchmark years.

For the period before 1800, earlier research is not entirely unanimous about the development of agriculture and food industries in Sweden. The most reliable accounts are proably those in studies on consumption patterns.

Most Swedish economic historians argue that after the 16th century, the economy became more dependent on grain production at the expense of animal production.[103] However, this probably occurred during the 16th century, before the period for the present study. Mats Morell concludes that consumption of crops displayed long-term per capita growth from the early 17th century to the early 19th century, while consumption of animal products and beer decreased.[104] In 18th century Sweden, consumption of grains exceeded their production, so a large share of consumption

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103 Gadd (1983, p. 278); Morell (1986).
104 Morell (1989).

had to be imported. According to Eli Heckscher, Sweden became a net importer of grains already in the 1680s.[105]

In order to estimate an annual series of GDP for the pre-industrial period one needs a reliable series for harvests. The present study utilizes a series that goes back to 1665, constructed by the author in a previous study, with some minor adjustments. This series is based on movements in grain prices, tithes and subjective harvest estimates.[106] Tithe estimates and fluctuations in grain prices are used to extend this series back to 1620. Lotta Leijonhufvud presents tithes for Sweden for the whole period 1539–1680.[107] These are adjusted for the expected underestimation of tithe accounts due to tax evasion.[108]

The approximation of GDP per capita is done with regression equation 1 in Table 4.1. To estimate the constant, GDP per capita is disaggregated into the per capita volume values added (in 1800 prices) of various activities for a few benchmark years: 1637, 1685, 1751 and 1800. These benchmarks are chosen because data on foreign trade exist for each of these years[109] and the first census based on occupation is from 1751 (which can be compared to 1800).[110] The estimated per capita volume values added are presented in Table 4.2, which also includes the year 1820. Henceforth, the constant of the regression equation is set at different values for different periods, in accordance with the benchmark calculation. For 1620–37, the constant is set to zero.

105 Heckscher (1949, Vol. 2.1, p. 172).
106 Edvinsson (2009).
107 Leijonhufvud (2001).
108 The details are provided in Edvinsson (2013a).
109 Boëthius and Heckscher (1938); Statistics Sweden (1972).
110 Statistics Sweden (1949).

Table 4.2: *Estimates of per capita value added of various activities in Sweden within present borders for the benchmark years, expressed in prices in 1800 (SEK).*

	1820	1800	1751	1685	1637
Agriculture and ancillaries	36.6	28.2	31.2	35.5	32.8
Food industries	6.1	5.8	6.9	5.7	6.3
Mining and quarrying	1.5	1.4	1.5	1.6	1.1
Textile and leather industries	4.6	4.4	4.4	4.4	4.4
Other manufacturing	2.1	2.2	1.9	1.9	1.6
Building and construction	2.0	2.0	2.0	2.0	1.9
Trade	1.6	1.6	1.5	1.2	0.6
Transports and communications	2.9	2.7	2.4	1.9	1.0
Real estate	2.9	3.0	3.0	3.0	2.7
Paid household work	4.2	3.9	4.0	3.5	3.1
Other private services	1.7	1.6	1.5	1.2	0.6
Public services	4.4	4.8	6.0	6.0	3.9
Sum	70.6	61.5	66.3	67.8	60.0
Population, 1000s	2573	2352	1791	1377	1110

The population series is from an earlier study by the author.[111] Estimating the size of the various activities is difficult, since no direct data exist for many of them. Various indicators are therefore used.

The values added of agriculture and food industries are estimated by extrapolating the known values in 1800 backwards, using the coefficients of regressions 3 and 4 in Table 4.1. One problem is to approximate the regression equations' constants. Even small constants entail an increase or decrease over time in per capita volume value added despite constant per capita harvests. For agriculture, the main factor behind such long-term changes is shifts in the relation between crops and animal produce. Since a calorie consumed from animals is of greater value than a calorie consumed from crops, the assumption of constant per capita calorie consumption and a shift from animal to crops entails a decrease in the per capita volume value of the consumption of food products. However, this only applies to comparisons between the 16th century and the 17th and 18th centuries. During the period under investigation, 1620–1800, the relation between production and consumption of crops and animal products can be assumed to be roughly stable. For food industries, Olle Krantz (2003) argues that a larger consumption of beer in the 16th century implies that the level of the per capita production of food industries in 1571 was much higher than in the early 19th century. However, the GDP series he uses from 1800 excludes home-based manufacturing, for example, baking at home, while the present

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111 Edvinsson (2009); Edvinsson (2013c).

study uses a GDP series that includes all manufacturing. If we assume that value added per unit of grain was roughly the same for bread baking and beer production, shifts in patterns of grain consumption should not affect value added of food industries. Therefore, the constants of regressions 3 and 4 in Table 4.1 are set to zero. The difference between the benchmark years reflects the volatility of harvests rather than long-term changes.

The 1751 census could only be used to estimate the size of public services, sea transports and paid domestic services if labour productivity is assumed to be constant. Andersson Palm shows that the prevalence of female servants increased from 6 to 9 per cent of the population between 1571 and 1751,[112] which is linearly interpolated to approximate the size of paid domestic services in 1637 and 1685. For some activities – forestry, fishing, wood industry, textile and leather industries, and stone and clay industries – the assumption is a constant level of per capita volume.[113] Foreign trade data are used to estimate production in mining and chemical industries, since the main part there was exported. For trade, Andersson Palm presents a series back to 1622 that is less reliable for the earlier decades.[114] When no other indicator is available, this series and the urban population are used as indicators for the development of most of the services. For building and construction, and real estate, 17th century urbanisation is assumed to have led to a 10 per cent increase between 1637 and 1800.

As can be seen from Table 4.2, per capita value added increased for some activities and stagnated for others. The per capita volume of trade increased 2.7-fold between 1637 and 1800. The censuses also show a slight increase in the proportion of the population engaged in sea transports between 1751 and 1800. The most dynamic activity was probably printing industries. Between 1620 and 1800, the number of book titles (registered by Sweden's central library) increased almost 10-fold.[115] If that is a correct reflection of the expansion of printing industries, the annual increase in per capita production amounts to 1.3 per cent. However, since printing industries represented just a tiny part of GDP (only 0.08 per cent in 1800), the impact on overall economic growth was minimal.

Some activities declined in the 18th century, after expanding in the preceding decades or centuries. This is most evident for mining and public services (the present study assumes that the secular decline of per capita agricultural production and food industries occurred before 1620). The most significant expansion of public services probably took place in the 16th century, with a continuation into the 17th century, at the height of Sweden's military power. Censuses show that the proportion of the

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112 Andersson Palm (2000, p. 24).

113 Since the number of workers in manufacturing declined between the mid 18th century and early 19th century, while the population increased, the per capita production of manufacturers declined significantly (Heckscher, 1949: Vol. 2.2, pp. 38*-39*). This, however, does not take into account home craft production, which may have advanced during the period. For example, there is no evidence that per capita consumption of textile and leather products decreased.

114 Andersson Palm (1992).

115 *Libris*, http://libris.kb.se.

population employed in public services (mostly military services) declined between 1751 and 1800. This negative development continued in the first half of the 19th century due to the dismantling of Sweden's military power. Copper production declined not only in per capita terms but also absolutely, after peaking in 1650.[116]

The annual fluctuations in GDP per capita between the benchmark years are assumed to be entirely determined by harvests fluctuations. Although wars increased the size of the public sector, that was presumably offset by the contraction of other activities that occurred when men were withdrawn from construction and crafts, for example.

4.8. GDP by expenditure

Edvinsson (2005) also includes a calculated series of GDP by expenditure, which for the period before 1950 is largely based on the series of GDP by activity. GDP by expenditure is estimated in market prices. The revision of GDP by activity in the present study leads to changes in GDP by expenditure. The main revisions concern private consumption and changes in inventories.

From 1950 onwards, the series is based on Statistics Sweden. Aggregate GDP is derived from GDP by activity by adding the excess of goods-related indirect taxes over goods related subsidies and a statistical discrepancy due to GDP by activity being recorded in basic prices. For the period before 1950, as in Edvinsson (2005), private consumption is calculated as a residual by deducting investment, public consumption and net export from GDP by expenditure. A difference from Edvinsson (2005) is that volume growth of GDP by expenditure is assumed to follow the series of GDP by activity (corrected for the distribution of indirect taxes on different expenditures), while the deflator of private consumption is estimated as a residual as well.

The upgrading of GDP that results from the inclusion of home-based manufacturing and higher agricultural output leads to private consumption in the 19th century being higher than in Edvinsson (2005). The revised real estate series explains the whole of the change to private consumption in 1950–70.

The registration of harvests in the year of production instead of the year of consumption calls for the calculation of a new series of changes in inventories. Harvests are assumed to be stored in the current year and consumed in the following year. Changes in inventories are therefore much more volatile, especially in the 19th century. The advantage of this method is that poor harvests have an effect on aggregate GDP in the current year, but on private consumption in the following year. The series of fixed investment is also revised, due to the recalculation of the production of dwellings.

The estimate of GDP by expenditure in the present study is based on an earlier series of Statistics Sweden before the switch to 1993 SNA, using the period 1980–94 as a benchmark. The newer series after 1994 are used for forward extrapolation of the 1980–94 series. The newer data by Statistics Sweden (2013) have substantially

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116 Tegengren (1924).

upgraded various expenditures, especially investment by broadening the concept of investment.

Moreover, the appendix presents a series based on the most recent data from Statistics Sweden, which are extrapolated backwards. For the period from 1970, the nominal values series are the same as the most recent series from Statistics Sweden, while for the period 1950–69 there are differences, especially for private consumption. The volume values are calculated using the Fisher annual chain index, whereas Statistics Sweden applies the Laspeyres annual chain index. Due to the so-called Gerschenkron effect, a Laspeyres chain index entails too low volume values for the early 19th century.

The appendix presents the two different series of GDP by expenditures; various expenditures are only presented with Statistics Sweden's most recent data as a benchmark for backward extrapolation.

Figure 4.6 displays the ratios of the various expenditures, based on Statistics Sweden's most recent series, to the series in Edvinsson (2005). For 2000, the changes in Statistics Sweden's methodology in the 1990s raise GDP by expenditure 12.5 per cent; a more inclusive concept of investment raises fixed investment almost 40 per cent; the uprating of private consumption is slight for 2000, while for 1922–67 the lower valuation of services of dwellings actually lowers private consumption. The largest revisions concern the 19th century and are occasioned by the inclusion of home-based manufacturing and the revised series of production of dwellings. For the first half of the century, GDP by expenditure is raised 32 per cent, private consumption 34 per cent and fixed investment 36 per cent. The revision to the changes in inventories, not depicted in the figure, is even more substantial. The series of government consumption, export and import are revised only slightly, mostly as a consequence of the changes in Statistics Sweden's methodology in the 1990s.

Figure 4.6: *Nominal ratios of various expenditures, using Statistics Sweden's most recent series, to the series in Edvinsson (2005).*
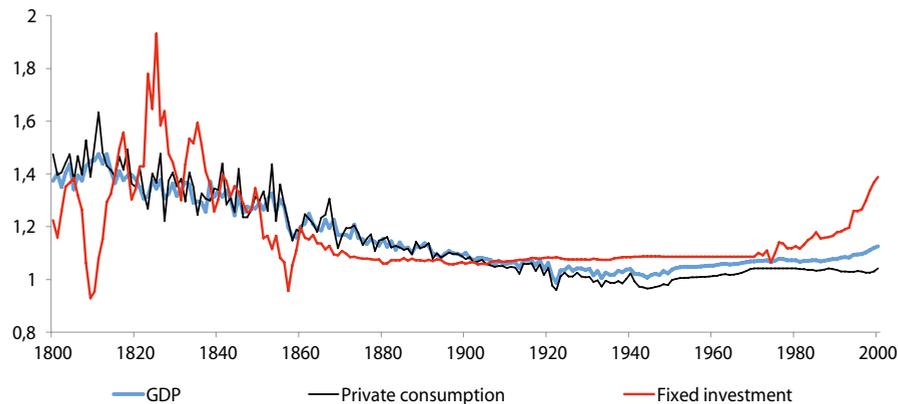
Sources: Table A4.2, Edvinsson (2005), and Statistics Sweden (2013).

4.9. Trends and fluctuations in GDP 1620–2012

Trend growth is a better measure of changes in long-term growth because it does away with the effects of individual years. According to the present study, average per capita trend growth (using an HP-filter, and setting λ=100) in 1620–1800 was only 0.04 per cent a year, but we cannot speak of complete stagnation. The present estimate is less than Maddison's assumption of 0.07 per cent annual growth in the same period.

Stagnation or very slow growth applies only to GDP per capita, not to total GDP. The increase in production was mainly a consequence of population growth.[117] That by itself required a more efficient use of natural resources. Given a constant level of technology, a larger population per unit of land would have led to lower production per capita. A constant or minor increase in per capita production in conjunction with a substantial increase in the population constituted significant technological progress, not technological stagnation.

While the present study was in progress, Schön and Krantz (2012) published their series of GDP before 1800, which goes back to 1560. There are some important methodological differences between their study and the present study.

Krantz and Schön estimate agricultural production by means of the demand approach, where per capita consumption of agricultural products is assumed to be negatively related to the real wage and positively related to the real price of agricultural products.[118] In contrast, the estimate in the present study is independent of the real wage's development. In the Krantz and Schön series, per capita agricultural production reached a very high level in the 17th and early 18th century; it then declined after the 1730s to a low in the early 19th century and it was not until the end of the 19th century that per capita production returned to the level in the 17th century. According to the Krantz and Schön series, in 1709, which according to the present study was the worst famine year after 1620, per capita agricultural production was 33 per cent above the average level in the 1820s, when Sweden was again a net exporter of grains for the first time in a century and a half. According to the present study, however, per capita agricultural production was largely unchanged up to the mid-19th century, followed by growth in the 1860s and '70s.

The sharp decline in per capita agricultural production from the early 18th to the early 19th century according to Krantz and Schön is problematic considering that the composition of food consumption and per capita net import of grains did not change much in this period.[119] There is no empirical support for a sharp fall in per capita calorie intake according earlier Swedish consumption studies.[120]

As calculated by Schön and Krantz (2012), per capita agricultural production follows the real wage, which does basically display such a trend, with a low point in

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117 See also Heckscher (1949, Vol. 2:1, p. 57).
118 Krantz and Schön (2012, p. 7).
119 Morell (1989).
120 Morell (1986).

the early 19th century. Earlier research is not in favour of using the real wage as an indicator of movements in per capita agricultural production. For example, Jörberg, who gathered the wage data used by Krantz and Schön, argues that "the fall in the real wages of day-workers provides no information on the general economic situation of agriculture during the later part of the 18th century".[121] The real wage is not a macroeconomic measure. As Maddison explains, as indicators of GDP per capita, measures of the real wage "cover only a small fraction of economic activity, and their representativity is almost never examined".[122]

The present study shows that economic difficulties were particuly severe in the years around 1700. Per capita trend growth was negative and total trend growth reached a low. The difficulties were aggravated by wars in the period 1700–20. The high real wage of male labourers reflected a shortage of men rather than a rising standard of living. For example, soldiers born in the 1720s were shorter than those in any subsequent period.[123] Mats Morell demonstrates that the calorie intake in Swedish "hospitals" was at a markedly low level in the period 1690–1730 and then stabilised at a higher level from the 1740s onwards.[124]

While the present study estimates GDP for various activities for a few benchmark years, Schön and Krantz (2012) estimate them annually. The main difference from the present study is that their level of public services is much higher in times of war. Since Krantz and Schön assume that the public sector expanded in wartime, their series display a very high level of GDP per capita in the early 18th century. While according to Krantz and Schön GDP per capita decreased by 32 per cent between 1700–20 and 1800–20, according to the present study it increased by four per cent. According to their series, GDP per capita was still eight per cent below the 1700–20 level in 1850–70, while according to the present study there was an increase of as much as 29 per cent. For 1700, the Krantz and Schön series puts GDP per capita 12 per cent above the level in the UK according to Maddison. Of all countries in the world, only Holland would have surpassed Sweden.

To what extent war expanded production is a difficult question that needs further investigation. Krantz and Schön's view is not unreasonable. However, if men were employed in the army, that would most likely entail fewer hours worked in other parts of the economy. In a capitalist economy with high unemployment, war could induce economic expansion because the unemployed or underemployed segment of the population could be brought into production. In an agrarian household economy, total employment did not change much. Of course, there could still be expansionary effects if hours worked per inhabitant tended to increase, but the ravages of war could also lead to a loss of labour productivity, offsetting such an effect. Against this background, the present study assumes that war had a neutral impact on the

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121 Jörberg (1972, Vol. 2, p. 343).
122 Maddison (2007, p. 308).
123 Gadd (2000: pp. 341–342).
124 Morell (1989: pp. 260–261).

pre-industrial economy. This implies that when the public sector expanded, less was produced in other activities, for example in home craft and construction.

In the Krantz and Schön series, volatility before 1732 is much more pronounced than according to the present study. The main reason is that for this period Krantz and Schön use a real wage series for Stockholm, where volatility is much greater than in the national wage series they use from 1732, since local series are more volatile than national series.

The population in 1620 is set substantially higher in the present study than in Krantz and Schön's, which follows a study by Lennart Andersson Palm. This is illustrated in Figure 4.7. Consequently, compared with the present study, while Krantz and Schön overestimate GDP per capita for the whole of the 17th century, they underestimate total GDP in the 1620s. For the 1630s and 1640s, total GDP is at much the same level in the two series, while Krantz and Schön overestimate total GDP for the whole of the 17th century's second half. The rapid growth of the population in the seventeenth century according to Andersson Palm can mainly be explained by his assumption of unrealistically low mortality rates – at a time of perpetual warfare. For example, for 1637 Andersson Palm records a crude death rate of 16.6 per 1000 and a non-war related death rate of just 13.5 per 1000. In comparison, official statistics indicate that the first year in which the death rate fell below 14 per 1000 was 1909 (in peacetime).[125]

Figure 4.7: *Two estimates of the population of Sweden within present borders 1620–1740.*
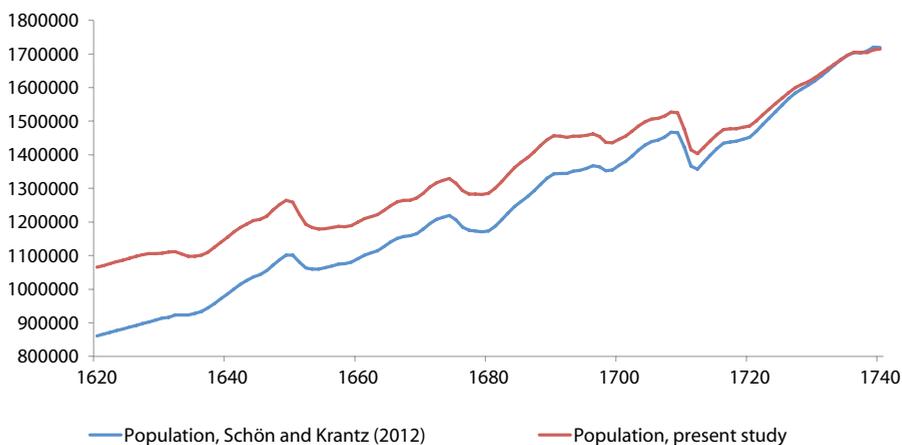
Sources: Schön and Krantz (2012), and Table A4.1.

Figure 4.8 compares various studies' pictures of the trend growth of volume GDP per capita in 1800–2010. It can be seen that the main revision in the present study

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125 Andersson Palm (2001).

concerns the period before the First World War, with substantially weaker spurts in growth around 1820 and in the 1850s and '70s. While the earlier series indicate that the trend growth of GDP per capita accelerated to above one per cent annually in the late 1840s, according to the present study this level was not reached until the late 1860s.

The main difference from Schön and Krantz (2012) in Figure 4.8 concerns trend growth in the early 19th century. Trend growth according to the present study is somewhat lower than in earlier studies but development according to the series in Schön and Krantz (2012) is very negative.

Figure 4.8: *Trend growth of volume GDP per capita (by activity) 1800–2010 according to various series.*
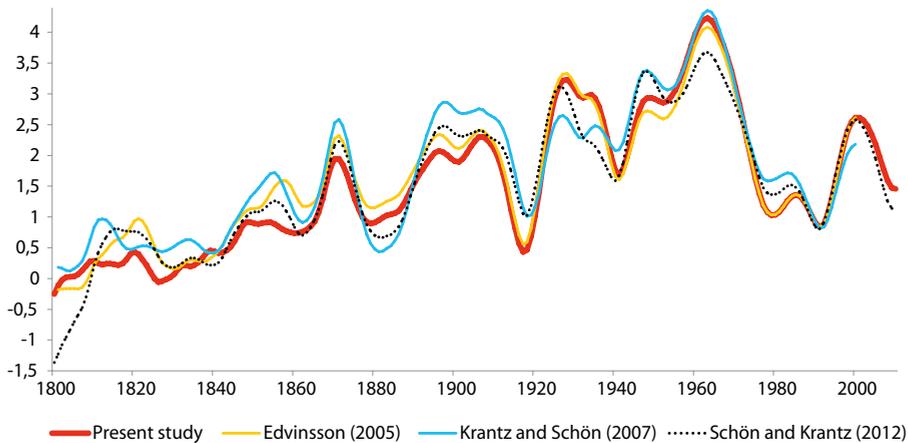
Source: Table A4.1, Edvinsson (2005), Krantz and Schön (2007), and Schön and Krantz (2012). The trend is calculated using a HP-filter with λ=100.

Since the present study presents relatively reliable estimates of annual fluctuations (long-term changes are more difficult to determine), it enables us to identify the most severe economic crises. In the pre-industrial economy, such crises were mainly caused by harvest failures. Furthermore, harvest failures were often followed by plagues.[126] Pre-industrial crises were therefore supply shocks. In contrast, modern economic crises were predominantly produced by fluctuations in the production of industrial goods, often as an effect of demand shocks.[127] During the early modern period, the negative demographic effects of supply shocks were mitigated by an increased division of labour and trade.

Modern crises, or recessions, are often measured as the fall in GDP. Another measure is the level of GDP or GDP per capita relative to a trend (so-called "growth

126 Larsson (2006, pp. 93–120).
127 Sherman (1991, p. 25).

cycles"). In an agrarian economy, falling GDP was not necessarily an indication of an economic crisis. Average harvests could follow either a good or a bad harvest. In the former case GDP would decline, in the latter it would rise. It seems more plausible to identify harvest failures in relation to the average for a certain period. Estimating the level of GDP relative to a trend therefore seems to be the best way of comparing modern and pre-industrial economic crises.

Figure 4.9 presents the level of GDP per capita in per cent above or below a trend; this is calculated by using an HP-filter, setting λ=100. Table 4.3 lists the 20 deepest crisis years. These tended to occur in all centuries, with a predominance in the pre-industrial period. Of the 20 worst crisis years, six occurred in the period 1620–1700, six in the 18th century, five in the 19th century, and three in the 20th century. All crises before the 20th century were caused by severe harvest failures.

Figure 4.9: *Swedish GDP per capita relative to its trend (using an HP-filter where λ=100), in per cent, and the moving 20-year standard deviation.*
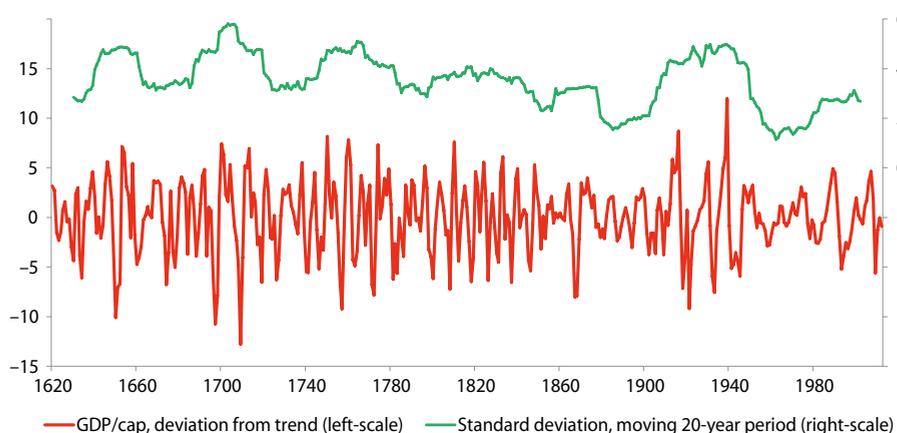
Source: Table A4.1.

Table 4.3: *Ranking of the 20 worst crisis years in 1620–2012, based on volume GDP per capita relative to its trend (using an HP-filter, where λ=100).*

Rank	Year	Relative trend (%)	Rank	Year	Relative trend (%)	Rank	Year	Relative trend (%)	Rank	Year	Relative trend (%)
1	1709	-12.8	6	1867	-8.0	11	1808	-7.2	16	1771	-6.8
2	1697	-10.7	7	1698	-7.9	12	1918	-7.2	17	1652	-6.7
3	1650	-10.1	8	1868	-7.9	13	1651	-7.0	18	1719	-6.5
4	1757	-9.2	9	1772	-7.8	14	1756	-6.8	19	1837	-6.5
5	1921	-9.2	10	1933	-7.6	15	1674	-6.8	20	1818	-6.5

Source: Table A4.1.

The three deepest crisis years were 1650, 1697 and 1709. These were severe harvest failures, accompanied by increased death rates and substantial declines in the total population. Although there were many good years, in the agrarian society it was the most severe harvest failures that had the most damaging consequences, also in the longer term. In the period 1650–1720, average population growth slowed to 0.2 per cent a year (compared to 0.6 per cent a year in both 1620–50 and 1720–70). This corresponds to the so-called Maunder Minimum (spanning 1645 to 1715), when sunspots became very rare and the Little Ice Age was at its coldest.[128]

There is more to welfare than its level. Volatility must also be taken into account. A volatile economy generates insecurity and reduces the utility from a given, average level of GDP per capita. Figure 4.9 displays the 20-year moving standard deviation in GDP per capita relative to its trend. Volatility was highest in the years around 1700. Although it has decreased somewhat with the advent of industrial society, volatility in 1914–45 was above the average for 1620–1800, mainly due to the shocks of World Wars and the Great Depression.

4.10. Conclusion

Swedish historical national accounts are among the most detailed for any country. However, as shown in this chapter, previous estimates of Swedish GDP for the 19th century suffer from a number of shortcomings. This chapter reports some important revisions, whereby GDP is raised substantially for the first part of that century, but lowered to some extent for the 1930s. There is scope for further improvements but the revisions presented here should correct some of the most serious deficiencies. They also render the historical data comparable with modern national accounts.

In addition, a new annual GDP series is presented at the aggregated level for the period 1620–1800. This series is very crude but even modern national accounts can be rather unreliable. For example, quality improvements of products have made it very difficult to estimate long-term trends in the modern era. This chapter also shows that the presented series is in line with earlier research on the development of the early modern Swedish economy.

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128 Luterbacher et al. (2001).

Appendix

Table A4.1: *GDP and GDP per capita in Sweden (within present borders) in nominal and volume values 1620–2012.*

Year	Volume growth (%)			Popu-lation, 1000s	Volume values, 2000 year's reference prices, SEK			Current prices, mn daler kmt 1620–1776, mn SEK 1777–2012		
	1980–94 benchmark		2008 SNA		1980–94 benchmark		2008 SNA, GDP/cap by expen-diture	1980–94 benchmark		2008 SNA, GDP by expenditure
	GDP by activity	GDP by ex-penditure	GDP by ex-penditure		GDP/cap by activity	GDP/cap by expen-diture		GDP by activity	GDP by expenditure	
1620				1065	9723	10823	11320	33.1	34.8	36.2
1621	-1.54	-1.54	-1.54	1070	9526	10603	11090	26.9	28.3	29.5
1622	-5.17	-5.17	-5.17	1076	8988	10005	10464	29.3	30.8	32.0
1623	-1.84	-1.84	-1.84	1081	8779	9772	10221	32.8	34.5	35.9
1624	-0.01	-0.01	-0.01	1087	8734	9722	10169	34.1	35.9	37.4
1625	1.34	1.34	1.34	1092	8807	9803	10254	34.3	36.1	37.6
1626	0.24	0.24	0.24	1097	8785	9778	10227	39.3	41.4	43.0
1627	-2.40	-2.40	-2.40	1103	8531	9496	9933	41.4	43.6	45.3
1628	-0.21	-0.21	-0.21	1106	8492	9453	9887	56.5	59.5	61.8
1629	-3.24	-3.24	-3.24	1106	8217	9146	9566	58.2	61.2	63.7
1630	-1.50	-1.50	-1.50	1107	8088	9002	9416	74.8	78.7	81.9
1631	7.53	7.53	7.53	1111	8664	9643	10086	78.7	82.8	86.1
1632	1.12	1.12	1.12	1112	8749	9739	10186	75.4	79.4	82.5
1633	-6.71	-6.71	-6.71	1105	8219	9149	9569	88.3	93.0	96.7
1634	-2.17	-2.17	-2.17	1098	8088	9003	9416	83.1	87.4	90.9
1635	7.05	7.05	7.05	1098	8659	9639	10081	81.8	86.1	89.5
1636	3.38	3.38	3.38	1101	8929	9938	10395	86.1	90.6	94.2
1637	1.08	1.08	1.08	1110	8952	9964	10422	83.5	87.9	91.4
1638	4.37	4.37	4.37	1124	9225	10268	10739	85.4	89.9	93.5
1639	3.79	3.79	3.79	1139	9446	10514	10997	94.1	99.1	103.0
1640	-0.56	-0.56	-0.56	1155	9268	10316	10790	92.3	97.2	101.1
1641	-1.90	-1.90	-1.90	1170	8970	9984	10443	105.5	111.1	115.5
1642	2.98	2.98	2.98	1183	9137	10171	10638	109.2	115.0	119.6
1643	-1.12	-1.12	-1.12	1194	8954	9967	10424	105.4	110.9	115.4
1644	2.08	2.08	2.08	1204	9065	10090	10553	123.7	130.2	135.4
1645	4.29	4.29	4.29	1208	9424	10490	10972	111.6	117.5	122.2
1646	2.65	2.65	2.65	1218	9597	10682	11173	117.1	123.3	128.2
1647	-0.45	-0.45	-0.45	1235	9416	10481	10963	115.6	121.6	126.5
1648	-1.69	-1.69	-1.69	1251	9139	10172	10640	116.3	122.4	127.3
1649	-5.55	-5.55	-5.55	1265	8539	9505	9942	128.4	135.2	140.6
1650	-6.78	-6.78	-6.78	1258	8001	8906	9315	165.1	173.8	180.8
1651	0.33	0.33	0.33	1223	8262	9197	9619	129.4	136.2	141.6
1652	-1.95	-1.95	-1.95	1193	8302	9240	9665	160.8	169.2	176.0
1653	14.21	14.21	14.21	1183	9560	10641	11130	114.1	120.1	124.9

Table A4.1 (cont.): *GDP and GDP per capita in Sweden (within present borders) in nominal and volume values 1620–2012.*

Year	Volume growth (%)			Popu-lation, 1000s	Volume values, 2000 year's reference prices, SEK			Current prices, mn daler kmt 1620–1776, mn SEK 1777–2012		
	1980–94 benchmark		2008 SNA		1980–94 benchmark		2008 SNA, GDP/cap by expen-diture	1980–94 benchmark		2008 SNA, GDP by expenditure
	GDP by activity	GDP by ex-penditure	GDP by ex-penditure		GDP/cap by activity	GDP/cap by expen-diture		GDP by activity	GDP by expenditure	
1654	-0.60	-0.60	-0.60	1179	9535	10614	11101	113.0	119.0	123.7
1655	-2.90	-2.90	-2.90	1180	9250	10296	10769	117.5	123.7	128.6
1656	-0.43	-0.43	-0.43	1183	9187	10226	10696	123.7	130.2	135.4
1657	-3.74	-3.74	-3.74	1187	8816	9813	10264	127.0	133.6	139.0
1658	7.72	7.72	7.72	1186	9505	10580	11066	115.0	121.1	125.9
1659	-6.42	-6.42	-6.42	1189	8869	9872	10325	134.4	141.5	147.1
1660	-1.94	-1.94	-1.94	1200	8621	9596	10037	133.7	140.7	146.3
1661	2.00	2.00	2.00	1210	8720	9706	10152	158.3	166.6	173.3
1662	2.21	2.21	2.21	1216	8869	9873	10326	152.6	160.6	167.0
1663	3.92	3.92	3.92	1221	9175	10212	10682	160.7	169.2	176.0
1664	2.26	2.26	2.26	1234	9286	10337	10812	153.3	161.3	167.8
1665	2.87	2.87	2.87	1248	9445	10513	10996	172.4	181.5	188.8
1666	0.80	0.80	0.80	1259	9435	10502	10984	168.3	177.2	184.2
1667	0.70	0.70	0.70	1264	9465	10536	11020	170.7	179.7	186.9
1668	4.25	4.25	4.25	1265	9863	10979	11483	151.2	159.2	165.5
1669	0.59	0.59	0.59	1271	9873	10990	11495	162.5	171.0	177.9
1670	1.35	1.35	1.35	1285	9897	11016	11522	152.3	160.4	166.8
1671	1.03	1.03	1.03	1303	9858	10973	11477	153.4	161.5	167.9
1672	-2.88	-2.88	-2.88	1316	9479	10551	11036	173.4	182.5	189.8
1673	-0.98	-0.98	-0.98	1324	9335	10391	10868	152.5	160.5	166.9
1674	-4.69	-4.69	-4.69	1329	8862	9864	10317	204.7	215.5	224.1
1675	2.56	2.56	2.56	1316	9178	10216	10685	204.2	214.9	223.5
1676	4.87	4.87	4.87	1293	9796	10904	11405	194.0	204.2	212.4
1677	-6.24	-6.24	-6.24	1283	9255	10302	10775	211.8	223.0	231.9
1678	-1.05	-1.05	-1.05	1283	9159	10194	10663	202.6	213.3	221.8
1679	3.86	3.86	3.86	1282	9522	10598	11085	191.8	201.9	210.0
1680	6.04	6.04	6.04	1285	10070	11208	11723	166.7	175.5	182.5
1681	2.89	2.89	2.89	1300	10241	11399	11922	166.0	174.8	181.8
1682	1.42	1.42	1.42	1320	10228	11385	11908	162.1	170.6	177.5
1683	0.98	0.98	0.98	1341	10167	11317	11837	164.6	173.2	180.2
1684	-4.63	-4.63	-4.63	1361	9552	10633	11121	211.3	222.4	231.3
1685	7.09	7.09	7.09	1377	10112	11256	11773	174.9	184.2	191.5
1686	2.06	2.06	2.06	1392	10211	11366	11888	171.2	180.2	187.4
1687	-1.75	-1.75	-1.75	1409	9910	11031	11538	176.7	186.0	193.4
1688	-3.72	-3.72	-3.72	1427	9419	10484	10966	182.1	191.7	199.3

Table A4.1 (cont.): *GDP and GDP per capita in Sweden (within present borders) in nominal and volume values 1620–2012.*

Year	Volume growth (%)			Popu-lation, 1000s	Volume values, 2000 year's reference prices, SEK			Current prices, mn daler kmt 1620–1776, mn SEK 1777–2012		
	1980–94 benchmark		2008 SNA		1980–94 benchmark		2008 SNA, GDP/cap by expen-diture	1980–94 benchmark		2008 SNA, GDP by expenditure
	GDP by activity	GDP by ex-penditure	GDP by ex-penditure		GDP/cap by activity	GDP/cap by expen-diture		GDP by activity	GDP by expenditure	
1689	3.05	3.05	3.05	1445	9586	10670	11160	178.5	187.9	195.4
1690	3.14	3.14	3.14	1457	9810	10920	11421	188.4	198.3	206.2
1691	1.92	1.92	1.92	1455	10011	11143	11655	184.3	194.0	201.7
1692	-0.41	-0.41	-0.41	1452	9989	11119	11629	195.1	205.4	213.6
1693	-8.85	-8.85	-8.85	1455	9085	10112	10577	246.5	259.4	269.8
1694	4.29	4.29	4.29	1455	9476	10548	11033	241.3	254.0	264.2
1695	-0.79	-0.79	-0.79	1457	9387	10449	10929	179.3	188.7	196.2
1696	-6.67	-6.67	-6.67	1462	8730	9717	10164	228.2	240.3	249.9
1697	-5.65	-5.65	-5.65	1454	8284	9221	9645	255.5	269.0	279.7
1698	2.20	2.20	2.20	1437	8566	9534	9972	273.1	287.5	299.0
1699	11.17	11.17	11.17	1436	9531	10609	11097	244.7	257.5	267.8
1700	6.54	6.54	6.54	1446	10081	11221	11737	239.2	251.7	261.8
1701	0.05	0.05	0.05	1456	10021	11154	11667	212.3	223.5	232.4
1702	-2.65	-2.65	-2.65	1470	9661	10754	11248	227.6	239.6	249.2
1703	0.47	0.47	0.47	1486	9604	10690	11181	226.3	238.2	247.7
1704	4.41	4.41	4.41	1498	9942	11066	11575	204.1	214.8	223.4
1705	-3.07	-3.07	-3.07	1507	9584	10668	11158	216.3	227.7	236.8
1706	-2.81	-2.81	-2.81	1509	9302	10354	10829	207.1	218.0	226.7
1707	-1.23	-1.23	-1.23	1516	9144	10179	10646	241.2	253.9	264.0
1708	-1.89	-1.89	-1.89	1528	8902	9908	10363	247.9	260.9	271.3
1709	-8.52	-8.52	-8.52	1525	8160	9082	9500	319.6	336.4	349.8
1710	6.86	6.86	6.86	1476	9004	10022	10482	222.7	234.4	243.8
1711	5.53	5.53	5.53	1415	9913	11034	11541	215.8	227.1	236.2
1712	-0.57	-0.57	-0.57	1403	9941	11066	11574	227.0	238.9	248.5
1713	3.51	3.51	3.51	1422	10152	11300	11820	226.0	237.9	247.4
1714	-5.00	-5.00	-5.00	1441	9514	10591	11077	270.4	284.6	296.0
1715	3.70	3.70	3.70	1460	9739	10841	11339	260.5	274.2	285.2
1716	0.09	0.09	0.09	1475	9647	10738	11232	315.8	332.4	345.7
1717	-4.27	-4.27	-4.27	1477	9226	10270	10741	454.2	478.2	497.3
1718	0.60	0.60	0.60	1477	9279	10328	10803	449.9	473.6	492.5
1719	-4.39	-4.39	-4.39	1482	8844	9845	10297	551.2	580.2	603.4
1720	9.70	9.70	9.70	1486	9678	10773	11268	373.8	393.5	409.2
1721	3.57	3.57	3.57	1501	9922	11044	11551	378.8	398.7	414.7
1722	-0.74	-0.74	-0.74	1519	9734	10834	11332	309.1	325.4	338.4
1723	-3.62	-3.62	-3.62	1535	9282	10331	10806	289.9	305.2	317.4

Table A4.1 (cont.): *GDP and GDP per capita in Sweden (within present borders) in nominal and volume values 1620–2012.*

Year	Volume growth (%)			Popu-lation, 1000s	Volume values, 2000 year's reference prices, SEK			Current prices, mn daler kmt 1620–1776, mn SEK 1777–2012		
	1980–94 benchmark		2008 SNA		1980–94 benchmark		2008 SNA, GDP/cap by expen-diture	1980–94 benchmark		2008 SNA, GDP by expenditure
	GDP by activity	GDP by ex-penditure	GDP by ex-penditure		GDP/cap by activity	GDP/cap by expen-diture		GDP by activity	GDP by expenditure	
1724	1.17	1.17	1.17	1553	9282	10332	10806	285.6	300.6	312.6
1725	3.75	3.75	3.75	1569	9532	10610	11097	294.4	309.9	322.2
1726	-5.06	-5.06	-5.06	1585	8954	9967	10424	303.8	319.8	332.5
1727	3.60	3.60	3.60	1600	9192	10232	10702	318.5	335.2	348.6
1728	5.98	5.98	5.98	1609	9686	10781	11276	302.5	318.4	331.1
1729	3.85	3.85	3.85	1618	10005	11137	11648	295.1	310.6	323.0
1730	0.79	0.79	0.79	1629	10014	11147	11659	293.6	309.1	321.4
1731	1.42	1.42	1.42	1643	10070	11209	11724	282.6	297.5	309.3
1732	1.82	1.82	1.82	1657	10168	11318	11838	289.9	305.1	317.3
1733	-1.23	-1.23	-1.23	1670	9964	11091	11601	308.5	324.8	337.7
1734	-0.10	-0.10	-0.10	1683	9876	10993	11498	297.1	312.7	325.2
1735	-0.70	-0.70	-0.70	1696	9733	10834	11331	307.0	323.2	336.1
1736	-0.87	-0.87	-0.87	1705	9599	10684	11175	317.4	334.1	347.5
1737	3.44	3.44	3.44	1705	9930	11053	11561	295.7	311.3	323.8
1738	2.58	2.58	2.58	1705	10186	11338	11859	291.5	306.8	319.1
1739	-6.67	-6.67	-6.67	1712	9464	10534	11018	299.6	315.4	328.0
1740	-4.58	-4.58	-4.58	1714	9020	10040	10502	335.4	353.1	367.2
1741	-0.71	-0.71	-0.71	1711	8974	9989	10447	369.7	389.2	404.7
1742	4.74	4.74	4.74	1704	9436	10503	10985	359.8	378.8	393.9
1743	0.81	0.81	0.81	1686	9612	10700	11191	350.8	369.2	384.0
1744	2.83	2.83	2.83	1683	9903	11023	11529	345.0	363.2	377.7
1745	-4.33	-4.33	-4.33	1703	9363	10422	10901	364.9	384.1	399.5
1746	-2.71	-2.71	-2.71	1722	9009	10028	10489	370.5	390.0	405.6
1747	4.48	4.48	4.48	1736	9340	10396	10874	410.2	431.8	449.1
1748	-0.19	-0.19	-0.19	1748	9254	10301	10774	439.8	463.0	481.5
1749	5.95	5.95	5.95	1760	9741	10843	11341	434.8	457.8	476.0
1750	7.87	7.87	7.87	1773	10431	11611	12144	449.0	472.7	491.5
1751	-4.21	-4.21	-4.21	1791	9888	11006	11512	453.0	476.8	495.9
1752	-1.28	-1.28	-1.28	1809	9664	10757	11251	447.0	470.5	489.3
1753	4.54	4.54	4.54	1827	10004	11135	11647	456.1	480.2	499.4
1754	-0.36	-0.36	-0.36	1847	9859	10974	11479	475.9	501.0	521.0
1755	-2.92	-2.92	-2.92	1866	9476	10547	11032	493.6	519.6	540.4
1756	-4.59	-4.59	-4.59	1882	8963	9976	10435	523.3	550.9	572.9
1757	-2.16	-2.16	-2.16	1891	8727	9714	10160	552.7	581.8	605.1
1758	9.37	9.37	9.37	1893	9534	10613	11100	605.8	637.7	663.2

Table A4.1 (cont.): *GDP and GDP per capita in Sweden (within present borders) in nominal and volume values 1620–2012.*

Year	Volume growth (%)			Popu-lation, 1000s	Volume values, 2000 year's reference prices, SEK			Current prices, mn daler kmt 1620–1776, mn SEK 1777–2012		
	1980–94 benchmark		2008 SNA		1980–94 benchmark		2008 SNA, GDP/cap by expen-diture	1980–94 benchmark		2008 SNA, GDP by expenditure
	GDP by activity	GDP by ex-penditure	GDP by ex-penditure		GDP/cap by activity	GDP/cap by expen-diture		GDP by activity	GDP by expenditure	
1759	7.45	7.45	7.45	1900	10210	11365	11887	613.7	646.0	671.8
1760	2.64	2.64	2.64	1916	10393	11568	12100	656.2	690.7	718.3
1761	-1.44	-1.44	-1.44	1934	10147	11295	11813	750.4	790.0	821.5
1762	-8.65	-8.65	-8.65	1946	9212	10254	10725	955.1	1005.4	1045.6
1763	-0.52	-0.52	-0.52	1951	9140	10174	10642	1029.6	1083.8	1127.1
1764	1.90	1.90	1.90	1959	9274	10323	10797	1109.0	1167.4	1214.0
1765	4.34	4.34	4.34	1971	9616	10704	11195	1084.2	1141.3	1186.9
1766	4.71	4.71	4.71	1984	10003	11135	11646	1007.6	1060.6	1103.0
1767	-0.75	-0.75	-0.75	2001	9847	10961	11464	813.5	856.3	890.5
1768	-4.62	-4.62	-4.62	2015	9325	10380	10857	681.4	717.3	746.0
1769	4.82	4.82	4.82	2026	9725	10825	11322	705.7	742.9	772.6
1770	2.45	2.45	2.45	2037	9909	11030	11537	806.1	848.6	882.5
1771	-9.19	-9.19	-9.19	2047	8954	9967	10425	900.3	947.7	985.5
1772	-1.19	-1.19	-1.19	2041	8871	9874	10327	933.9	983.1	1022.3
1773	6.71	6.71	6.71	2005	9640	10731	11224	918.3	966.7	1005.3
1774	6.87	6.87	6.87	1989	10385	11559	12090	863.0	908.4	944.7
1775	-5.74	-5.74	-5.74	2011	9682	10777	11272	953.0	1003.2	1043.2
1776	2.38	2.38	2.38	2031	9812	10921	11423	974.8	1026.1	1067.1
1777	3.54	3.54	3.54	2049	10069	11207	11722	57.2	60.3	62.7
1778	-1.09	-1.09	-1.09	2065	9882	10999	11505	59.6	62.7	65.2
1779	2.99	2.99	2.99	2081	10098	11240	11757	60.5	63.7	66.3
1780	-2.77	-2.77	-2.77	2104	9714	10812	11309	59.3	62.4	64.9
1781	-6.88	-6.88	-6.88	2126	8953	9966	10424	58.1	61.2	63.6
1782	4.15	4.15	4.15	2137	9276	10325	10799	60.7	63.9	66.5
1783	-2.88	-2.88	-2.88	2142	8986	10002	10461	61.6	64.9	67.4
1784	6.17	6.17	6.17	2144	9531	10609	11096	59.5	62.6	65.1
1785	-1.27	-1.27	-1.27	2147	9396	10459	10939	62.7	66.0	68.7
1786	-1.16	-1.16	-1.16	2157	9248	10293	10766	63.5	66.8	69.5
1787	8.85	8.85	8.85	2171	9999	11130	11642	65.2	68.6	71.4
1788	-1.31	-1.31	-1.31	2186	9802	10910	11412	68.1	71.7	74.5
1789	-0.40	-0.40	-0.40	2191	9739	10840	11338	69.7	73.3	76.3
1790	5.03	5.03	5.03	2188	10240	11398	11922	72.9	76.8	79.8
1791	0.18	0.18	0.18	2195	10228	11385	11907	72.1	75.9	78.9
1792	-2.28	-2.28	-2.28	2216	9901	11021	11527	75.1	79.1	82.2
1793	1.51	1.51	1.51	2240	9942	11066	11574	80.4	84.7	88.1

Table A4.1 (cont.): *GDP and GDP per capita in Sweden (within present borders) in nominal and volume values 1620–2012.*

Year	Volume growth (%)			Popu-lation, 1000s	Volume values, 2000 year's reference prices, SEK			Current prices, mn daler kmt 1620–1776, mn SEK 1777–2012		
	1980–94 benchmark		2008 SNA		1980–94 benchmark		2008 SNA, GDP/cap by expen-diture	1980–94 benchmark		2008 SNA, GDP by expenditure
	GDP by activity	GDP by ex-penditure	GDP by ex-penditure		GDP/cap by activity	GDP/cap by expen-diture		GDP by activity	GDP by expenditure	
1794	-0.39	-0.39	-0.39	2262	9808	10917	11419	92.0	96.8	100.7
1795	3.58	3.58	3.58	2277	10091	11232	11748	100.2	105.5	109.7
1796	3.89	3.89	3.89	2291	10420	11598	12131	103.4	108.9	113.2
1797	-1.57	-1.57	-1.57	2312	10164	11314	11833	104.7	110.2	114.6
1798	-5.51	-5.51	-5.51	2333	9515	10591	11077	107.2	112.9	117.4
1799	-0.40	-0.40	-0.40	2351	9408	10472	10953	123.8	130.4	135.6
1800	-2.48	-2.48	-2.48	2352	9169	10206	10675	144.7	152.3	158.4
1801	5.15	5.15	5.10	2351	9646	10737	11224	151.4	159.3	165.7
1802	3.17	3.17	3.28	2364	9899	11019	11532	149.3	157.0	163.5
1803	2.81	2.80	2.65	2380	10105	11248	11754	148.2	155.7	162.1
1804	-0.52	-0.52	-0.21	2396	9986	11116	11652	149.1	156.8	163.7
1805	-0.86	-0.86	-0.98	2413	9832	10944	11458	151.5	159.2	166.1
1806	-1.88	-1.87	-1.81	2425	9597	10683	11192	169.2	178.1	185.6
1807	0.95	0.95	0.73	2434	9654	10746	11234	175.4	184.6	191.9
1808	-5.78	-5.78	-5.65	2434	9098	10128	10602	203.1	213.7	222.3
1809	9.69	9.71	9.22	2411	10074	11216	11689	221.0	232.2	241.4
1810	4.63	4.63	5.08	2395	10609	11811	12364	235.2	246.9	258.1
1811	-5.96	-5.95	-5.80	2404	9941	11069	11605	257.5	270.7	282.9
1812	-4.26	-4.26	-4.33	2415	9474	10548	11051	300.1	315.6	329.5
1813	4.54	4.54	4.37	2421	9878	10999	11503	321.5	337.8	352.4
1814	2.93	2.93	2.92	2431	10127	11275	11792	320.5	336.6	351.7
1815	2.52	2.52	2.49	2452	10295	11462	11984	311.7	327.3	342.1
1816	-0.66	-0.66	-0.55	2481	10105	11251	11776	333.4	350.0	366.1
1817	-2.11	-2.11	-2.16	2509	9781	10890	11393	335.4	352.4	368.1
1818	-2.92	-2.92	-2.78	2534	9404	10470	10969	339.9	357.1	373.5
1819	3.78	3.78	3.35	2554	9682	10779	11247	355.1	372.7	388.7
1820	10.37	10.37	10.23	2573	10607	11809	12306	351.2	368.2	384.5
1821	-0.03	-0.04	0.32	2598	10504	11693	12228	323.0	338.5	354.9
1822	-3.06	-3.06	-3.13	2629	10063	11202	11707	311.9	330.6	342.3
1823	5.50	5.50	5.31	2668	10461	11645	12148	318.4	337.5	349.2
1824	4.93	4.92	5.10	2708	10813	12036	12577	333.4	349.2	366.1
1825	-2.24	-2.25	-2.21	2749	10412	11590	12115	338.7	354.6	372.1
1826	-6.63	-6.64	-6.45	2788	9586	10669	11175	361.2	378.7	397.1
1827	7.29	7.30	6.61	2816	10181	11333	11794	366.6	383.9	401.0
1828	3.64	3.64	4.02	2837	10474	11659	12177	350.1	366.4	384.5

Table A4.1 (cont.): *GDP and GDP per capita in Sweden (within present borders) in nominal and volume values 1620–2012.*

Year	Volume growth (%)			Popu-lation, 1000s	Volume values, 2000 year's reference prices, SEK			Current prices, mn daler kmt 1620–1776, mn SEK 1777–2012		
	1980–94 benchmark		2008 SNA		1980–94 benchmark		2008 SNA,	1980–94 benchmark		2008 SNA,
	GDP by activity	GDP by ex-penditure	GDP by ex-penditure		GDP/cap by activity	GDP/cap by expen-diture	GDP/cap by expen-diture	GDP by activity	GDP by expenditure	GDP by expenditure
1829	-2.61	-2.60	-2.67	2855	10138	11285	11778	359.8	376.8	394.6
1830	-1.95	-1.94	-1.95	2876	9869	10987	11466	367.0	384.6	402.4
1831	-0.12	-0.13	-0.13	2895	9793	10901	11376	396.4	415.3	434.4
1832	10.30	10.31	9.90	2912	10737	11953	12427	415.0	434.7	453.7
1833	2.82	2.82	3.22	2941	10931	12168	12700	400.3	419.4	439.6
1834	-6.72	-6.72	-6.60	2971	10093	11236	11742	383.4	401.6	421.3
1835	3.86	3.87	3.57	3004	10368	11542	12027	400.6	419.8	439.1
1836	0.76	0.76	0.99	3042	10315	11484	11993	410.4	429.9	450.9
1837	-4.94	-4.94	-4.83	3068	9724	10825	11319	407.7	427.0	448.2
1838	7.41	7.42	6.89	3083	10393	11570	12038	452.9	474.3	495.5
1839	5.42	5.41	5.70	3098	10902	12137	12662	462.8	484.6	508.1
1840	2.21	2.21	2.14	3123	11056	12309	12833	464.1	485.8	509.2
1841	-4.27	-4.27	-3.89	3156	10473	11658	12203	458.4	479.8	505.0
1842	2.69	2.69	2.14	3190	10640	11845	12332	477.2	499.6	522.9
1843	2.12	2.12	2.22	3222	10759	11977	12481	468.8	490.6	514.2
1844	1.09	1.09	1.17	3256	10762	11980	12494	440.2	460.7	483.5
1845	-2.83	-2.82	-2.55	3296	10331	11500	12028	462.2	483.6	508.8
1846	0.65	0.64	0.30	3330	10291	11457	11941	486.8	509.3	534.1
1847	6.55	6.55	6.42	3352	10891	12124	12621	523.1	547.2	573.4
1848	7.89	7.88	7.93	3380	11656	12975	13513	527.1	551.2	578.4
1849	-0.48	-0.48	-0.22	3419	11465	12763	13328	516.9	540.5	568.8
1850	0.73	0.73	0.58	3462	11406	12698	13240	540.7	565.3	594.1
1851	-2.43	-2.43	-2.15	3500	11009	12256	12815	547.4	572.1	602.9
1852	5.16	5.16	4.73	3529	11482	12782	13312	578.6	604.7	634.7
1853	-0.67	-0.66	-0.25	3552	11330	12614	13191	616.4	644.0	678.9
1854	5.35	5.35	4.99	3586	11823	13163	13719	665.4	695.4	731.0
1855	1.62	1.63	2.07	3625	11886	13234	13853	773.6	808.2	853.3
1856	2.95	2.96	2.94	3657	12129	13504	14133	859.8	898.4	948.0
1857	-1.25	-1.25	-1.35	3680	11901	13251	13855	847.4	885.4	933.9
1858	2.65	2.65	2.47	3711	12116	13489	14080	759.6	793.2	835.5
1859	1.64	1.64	1.93	3761	12151	13528	14162	744.4	777.2	821.2
1860	2.88	2.89	2.76	3824	12296	13690	14314	809.2	844.9	891.4
1861	1.92	1.92	2.22	3888	12323	13720	14389	853.7	891.2	943.0
1862	1.89	1.89	1.69	3942	12388	13792	14435	874.7	912.6	964.0
1863	4.89	4.89	4.98	3994	12822	14275	14954	891.8	930.9	985.0

Table A4.1 (cont.): *GDP and GDP per capita in Sweden (within present borders) in nominal and volume values 1620–2012.*

Year	Volume growth (%)			Popu-lation, 1000s	Volume values, 2000 year's reference prices, SEK			Current prices, mn daler kmt 1620–1776, mn SEK 1777–2012		
	1980–94 benchmark		2008 SNA		1980–94 benchmark		2008 SNA, GDP/cap by expen-diture	1980–94 benchmark		2008 SNA, GDP by expenditure
	GDP by activity	GDP by ex-penditure	GDP by ex-penditure		GDP/cap by activity	GDP/cap by expen-diture		GDP by activity	GDP by expenditure	
1864	3.21	3.21	3.22	4046	13064	14544	15236	874.2	913.3	965.4
1865	-1.37	-1.36	-1.24	4092	12741	14185	14879	864.3	902.1	956.4
1866	0.73	0.73	0.55	4137	12693	14132	14798	898.4	937.9	992.4
1867	-4.25	-4.25	-3.93	4178	12036	13400	14077	919.1	959.9	1019.2
1868	1.89	1.89	1.20	4184	12244	13633	14225	916.3	957.7	1010.5
1869	7.67	7.66	7.78	4166	13242	14742	15399	930.8	974.8	1030.2
1870	7.80	7.81	7.97	4164	14283	15902	16635	988.1	1035.8	1096.1
1871	1.37	1.37	1.45	4186	14400	16033	16785	1034.8	1084.7	1148.8
1872	2.99	3.00	3.43	4227	14687	16354	17193	1164	1218	1297
1873	4.19	4.20	4.38	4274	15135	16855	17750	1372	1435	1531
1874	1.01	1.01	1.18	4320	15126	16846	17769	1411	1483	1586
1875	0.79	0.79	0.65	4362	15097	16813	17709	1382	1447	1544
1876	3.36	3.35	3.41	4406	15447	17201	18131	1435	1504	1606
1877	-1.07	-1.08	-1.10	4457	15108	16822	17728	1431	1500	1601
1878	2.40	2.38	2.17	4508	15295	17028	17907	1326	1389	1480
1879	0.55	0.55	0.57	4555	15219	16943	17822	1278	1340	1428
1880	2.13	2.13	2.04	4572	15486	17241	18119	1356	1425	1519
1881	-0.11	-0.11	0.01	4569	15480	17234	18134	1379	1450	1547
1882	3.45	3.45	3.18	4576	15991	17803	18682	1421	1492	1588
1883	3.00	3.01	3.35	4591	16415	18276	19242	1431	1506	1609
1884	2.06	2.06	2.01	4624	16635	18521	19490	1436	1511	1614
1885	2.01	2.01	2.11	4664	16825	18733	19732	1396	1468	1570
1886	-0.59	-0.59	-0.63	4700	16597	18478	19455	1316	1383	1480
1887	-0.22	-0.22	-0.34	4726	16469	18335	19282	1254	1317	1409
1888	2.03	2.03	2.20	4742	16748	18646	19641	1346	1419	1521
1889	3.03	3.04	2.99	4761	17184	19132	20145	1417	1496	1604
1890	3.02	3.03	2.99	4780	17635	19635	20668	1488	1568	1680
1891	2.87	2.87	2.71	4794	18088	20140	21165	1563	1643	1755
1892	1.11	1.11	1.09	4805	18248	20317	21347	1544	1621	1734
1893	0.79	0.79	0.80	4815	18351	20433	21469	1528	1603	1715
1894	0.81	0.81	0.84	4849	18373	20457	21502	1505	1583	1695
1895	5.65	5.66	5.80	4896	19223	21405	22527	1601	1683	1804
1896	5.70	5.71	5.68	4941	20135	22424	23591	1694	1781	1910
1897	2.71	2.71	2.90	4986	20493	22824	24055	1821	1913	2056
1898	3.23	3.24	3.43	5036	20945	23329	24632	1959	2063	2219

Table A4.1 (cont.): *GDP and GDP per capita in Sweden (within present borders) in nominal and volume values 1620–2012.*

Year	Volume growth (%)			Popu-lation, 1000s	Volume values, 2000 year's reference prices, SEK			Current prices, mn daler kmt 1620–1776, mn SEK 1777–2012		
	1980–94 benchmark		2008 SNA		1980–94 benchmark		2008 SNA, GDP/cap by expen-diture	1980–94 benchmark		2008 SNA, GDP by expenditure
	GDP by activity	GDP by ex-penditure	GDP by ex-penditure		GDP/cap by activity	GDP/cap by expen-diture		GDP by activity	GDP by expenditure	
1899	3.74	3.75	3.89	5080	21542	23995	25369	2118	2233	2404
1900	1.70	1.70	1.53	5117	21752	24228	25572	2185	2297	2471
1901	-0.87	-0.88	-0.90	5156	21399	23834	25151	2125	2221	2390
1902	0.31	0.30	0.23	5187	21336	23761	25056	2107	2213	2379
1903	4.86	4.86	4.91	5210	22274	24807	26171	2288	2401	2581
1904	2.77	2.77	2.89	5241	22755	25344	26767	2331	2450	2636
1905	0.86	0.86	0.89	5278	22791	25383	26816	2390	2512	2701
1906	7.77	7.80	7.87	5316	24387	27167	28719	2670	2798	3011
1907	4.35	4.35	4.26	5357	25249	28131	29711	2889	3024	3249
1908	1.34	1.33	1.06	5404	25368	28261	29770	2931	3060	3280
1909	-0.95	-0.96	-0.95	5453	24899	27736	29220	2899	3032	3251
1910	7.56	7.57	7.63	5499	26554	29584	31183	3118	3262	3499
1911	1.25	1.25	1.37	5542	26680	29723	31366	3178	3324	3568
1912	4.60	4.61	4.67	5583	27703	30866	32590	3388	3533	3794
1913	6.59	6.60	6.75	5621	29328	32679	34554	3636	3803	4087
1914	0.45	0.44	0.10	5659	29264	32605	34357	3762	3917	4205
1915	1.84	1.83	2.10	5696	29608	32985	34851	4349	4519	4858
1916	4.88	4.89	4.67	5735	30841	34363	36231	5472	5681	6096
1917	-6.93	-6.93	-7.25	5779	28485	31739	33348	6329	6534	7002
1918	-6.24	-6.25	-6.15	5807	26579	29610	31145	8611	8884	9499
1919	4.49	4.50	4.73	5830	27663	30819	32489	10243	10659	11438
1920	6.93	6.93	6.87	5876	29352	32701	34452	11566	12064	12957
1921	-7.63	-7.62	-7.88	5929	26868	29936	31450	8477	8868	9492
1922	7.70	7.71	7.86	5971	28736	32019	33686	7153	7524	8061
1923	6.51	6.50	6.36	5997	30474	33954	35674	7145	7544	8075
1924	3.69	3.70	4.01	6021	31470	35069	36954	7384	7792	8356
1925	4.05	4.05	4.06	6045	32614	36347	38303	7646	8044	8628
1926	4.58	4.58	4.65	6064	34002	37892	39958	7674	8085	8679
1927	3.82	3.84	3.93	6081	35202	39235	41412	7790	8225	8837
1928	4.12	4.12	4.17	6097	36562	40750	43030	8058	8506	9143
1929	6.20	6.21	6.22	6113	38727	43165	45588	8407	8880	9546
1930	4.52	4.52	4.67	6131	40355	44981	47573	8488	8958	9643
1931	-3.00	-3.03	-3.13	6152	39010	43468	45925	7796	8236	8853
1932	-1.97	-1.99	-2.28	6176	38093	42439	44703	7437	7855	8417
1933	1.55	1.55	1.50	6201	38531	42928	45193	7399	7838	8388

Table A4.1 (cont.): *GDP and GDP per capita in Sweden (within present borders) in nominal and volume values 1620–2012.*

Year	Volume growth (%)			Popu-lation, 1000s	Volume values, 2000 year's reference prices, SEK			Current prices, mn daler kmt 1620–1776, mn SEK 1777–2012		
	1980–94 benchmark		2008 SNA		1980–94 benchmark		2008 SNA,	1980–94 benchmark		2008 SNA,
	GDP by activity	GDP by ex-penditure	GDP by ex-penditure		GDP/cap by activity	GDP/cap by expen-diture	GDP/cap by expen-diture	GDP by activity	GDP by expenditure	GDP by expenditure
1934	10.19	10.23	10.34	6222	42313	47157	49694	8137	8649	9255
1935	5.13	5.14	5.38	6242	44346	49425	52203	8670	9231	9891
1936	5.08	5.08	5.28	6259	46472	51796	54809	9244	9845	10563
1937	5.24	5.25	5.21	6276	48774	54364	57508	10239	10920	11721
1938	3.63	3.61	3.75	6297	50371	56133	59460	10685	11407	12250
1939	8.07	8.02	8.15	6326	54191	60363	64021	11830	12653	13590
1940	-9.47	-9.47	-9.94	6356	48822	54387	57377	12632	13608	14523
1941	-2.24	-2.38	-2.48	6389	47487	52822	55667	13831	15056	16040
1942	2.97	2.91	3.08	6432	48568	53994	56997	15105	16502	17602
1943	4.18	4.16	4.17	6490	50145	55737	58841	16258	17853	19037
1944	2.36	2.44	2.49	6560	50784	56493	59664	16763	18505	19718
1945	2.22	2.31	2.27	6635	51321	57139	60326	17515	19322	20579
1946	11.50	11.72	12.36	6719	56515	63045	66945	19764	21995	23534
1947	6.60	6.60	6.86	6803	59499	66372	70654	22034	24146	25912
1948	3.45	3.45	3.14	6883	60833	67857	72022	24465	26756	28616
1949	2.91	2.90	2.92	6955	61955	69104	73356	25340	27688	29618
1950	4.85	4.86	5.15	7014	64418	71857	76493	28276	30813	33036
1951	4.27	3.96	3.77	7070	66632	74111	78746	35508	38392	41151
1952	0.94	1.50	1.62	7125	66743	74651	79413	39611	41939	44970
1953	1.88	2.44	2.71	7171	67556	75970	81030	39703	43106	46302
1954	5.09	6.30	6.33	7213	70580	80284	85660	42119	45933	49339
1955	2.78	3.40	3.27	7262	72056	82452	87867	45130	49512	53106
1956	3.97	3.40	3.45	7315	74382	84647	90250	49371	53828	57750
1957	3.47	2.31	2.33	7364	76447	86020	91733	52962	57474	61665
1958	2.69	2.31	2.50	7409	78020	87464	93452	55116	60711	65190
1959	4.58	5.40	5.51	7446	81183	91725	98108	58013	64700	69516
1960	5.86	4.36	4.36	7480	85550	95287	101923	63275	70832	76065
1961	5.81	6.06	6.14	7520	90043	100532	107611	69442	77317	83067
1962	4.71	5.05	5.13	7562	93764	105033	112514	75648	84468	90782
1963	5.00	5.73	5.82	7604	97895	110422	118388	81257	91747	98668
1964	6.78	7.23	7.20	7661	103755	117523	125967	91343	102481	110165
1965	5.00	4.00	4.04	7734	107926	121077	129826	101342	113114	121563
1966	3.22	2.23	2.38	7808	110345	122608	131661	109586	123381	132635
1967	4.14	3.37	3.46	7868	114034	125777	135173	119583	134120	144186
1968	4.46	4.11	4.04	7912	118456	130213	139854	127784	142720	153281

Table A4.1 (cont.): *GDP and GDP per capita in Sweden (within present borders) in nominal and volume values 1620–2012.*

Year	Volume growth (%)			Population, 1000s	Volume values, 2000 year's reference prices, SEK			Current prices, mn daler kmt 1620–1776, mn SEK 1777–2012		
	1980–94 benchmark		2008 SNA		1980–94 benchmark		2008 SNA, GDP/cap by expenditure	1980–94 benchmark		2008 SNA, GDP by expenditure
	GDP by activity	GDP by expenditure	GDP by expenditure		GDP/cap by activity	GDP/cap by expenditure		GDP by activity	GDP by expenditure	
1969	5.02	5.69	5.66	7968	123538	136665	146734	137947	155573	166963
1970	5.00	6.17	6.05	8043	128503	143743	154156	152975	174678	187279
1971	2.36	0.30	0.40	8098	130630	143184	153718	167126	188946	202434
1972	2.60	2.85	2.74	8122	133626	146834	157468	179643	207138	221529
1973	3.76	3.52	3.83	8137	138398	151734	163202	200265	229689	246530
1974	3.63	4.57	3.28	8161	143010	158207	168059	236884	261765	278692
1975	1.01	1.58	2.27	8193	143889	160083	171203	276086	305362	326966
1976	2.09	0.51	1.40	8222	146363	160322	172964	311851	342979	369967
1977	-1.44	-1.60	-1.81	8252	143738	157196	169223	336939	373644	402428
1978	-0.13	1.70	1.54	8276	143129	159404	171332	373436	418053	448325
1979	3.20	4.21	3.95	8294	147384	165760	177709	420438	468578	502652
1980	0.78	1.49	1.34	8310	148235	167885	179734	475040	531884	570187
1981	-0.59	0.01	-0.25	8320	147182	167708	179067	517326	583656	622998
1982	1.18	0.99	1.23	8325	148832	169268	181175	569881	637318	681773
1983	1.78	2.00	2.00	8329	151410	172570	184714	634618	713763	763885
1984	3.14	3.88	4.32	8337	156018	179096	192526	708723	799474	856991
1985	1.72	2.31	2.19	8350	158437	182939	196427	763610	868853	931577
1986	2.69	2.28	2.63	8370	162321	186678	201125	840304	951809	1017135
1987	3.15	3.25	3.38	8398	166884	192095	207224	904392	1027766	1100877
1988	2.80	1.98	2.56	8436	170762	194999	211559	988046	1119771	1203241
1989	3.07	2.50	2.63	8493	174832	198554	215684	1096193	1238391	1333069
1990	1.23	0.78	0.63	8559	175615	198556	215368	1196088	1365700	1470375
1991	-1.30	-1.09	-1.26	8617	172152	195056	211212	1255284	1453208	1573394
1992	-1.96	-1.45	-1.22	8668	167794	191095	207408	1269103	1447782	1570955
1993	-1.78	-2.08	-1.97	8719	163847	186045	202146	1276770	1452507	1572541
1994	3.56	3.06	4.05	8781	168478	190389	208839	1355746	1535359	1678588
1995	3.63	4.10	3.99	8827	173671	197147	216033	1468283	1652877	1809575
1996	1.48	1.15	1.50	8841	175957	199106	218925	1509366	1690230	1853915
1997	3.08	2.24	2.71	8846	181272	203441	224724	1570262	1755355	1932988
1998	3.93	3.15	4.22	8851	188292	209737	234076	1630486	1823530	2025024
1999	4.51	4.08	4.70	8858	196625	218131	244876	1704541	1910279	2138421
2000	4.15	4.13	4.44	8872	204450	226779	255345	1813900	2012004	2265447
2001	1.10	1.30	1.30	8896	206144	229110	257970	1876741	2085693	2348419
2002	2.40	2.50	2.50	8925	210405	234075	263560	1950718	2170253	2443630
2003	2.40	2.30	2.30	8958	214650	238563	268614	2032805	2260164	2544867

Table A4.1 (cont.): *GDP and GDP per capita in Sweden (within present borders) in nominal and volume values 1620–2012.*

Year	Volume growth (%)			Popu-lation, 1000s	Volume values, 2000 year's reference prices, SEK			Current prices, mn daler kmt 1620–1776, mn SEK 1777–2012		
	1980–94 benchmark		2008 SNA		1980–94 benchmark		2008 SNA, GDP/cap by expen-diture	1980–94 benchmark		2008 SNA, GDP by expenditure
	GDP by activity	GDP by ex-penditure	GDP by ex-penditure		GDP/cap by activity	GDP/cap by expen-diture		GDP by activity	GDP by expenditure	
2004	4.50	4.20	4.20	8993	223436	247615	278806	2128951	2363266	2660957
2005	3.00	3.20	3.20	9029	229221	254520	286581	2208465	2459555	2769375
2006	4.40	4.30	4.30	9080	237964	263975	297227	2351089	2615071	2944480
2007	3.30	3.30	3.30	9148	244003	270674	304770	2498031	2776299	3126018
2008	-0.40	-0.60	-0.60	9219	241143	266964	300592	2561909	2845842	3204320
2009	-5.50	-5.00	-5.00	9298	225944	251461	283137	2471261	2758334	3105790
2010	6.70	6.60	6.60	9378	239026	265771	299249	2656893	2964150	3337531
2011	3.20	2.90	2.90	9449	244821	271423	305613	2779001	3091162	3480543
2012	1.00	1.00	1.00	9517	245502	272178	306464		3151768	3548783

Note: GDP by activity is measured in basic prices (excluding VAT, etc.), and GDP by expenditures in purchasers' (market) prices (which includes excess of goods-related indirect taxes over goods-related subsidies). SEK – riksdaler (specie) 1777–1788, riksdaler riksgälds 1789–1855, riksdaler riksmynt 1855-1873, krona 1873 onwards. In 1777: 1 SEK (riksdaler) = 18 daler kopparmynt. Sources: For GDP see the main text. The population data are described in Edvinsson (2013c).

Table A4.2: *Various expenditures 1800–2012 and their volume growth (%).*

Year	Private consumption		Government consumption		Gross fixed capital formation		Changes in inventories	Export		Import	
	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*
1800	141.77		13.70		6.61		-4.69	15.82		14.85	
1801	138.40	-2.7	13.00	-1.4	5.88	-10.4	6.47	20.93	32.5	18.99	24.5
1802	135.80	4.0	13.00	4.5	5.80	-1.7	1.10	22.34	8.5	14.51	-15.4
1803	132.07	1.1	13.40	8.1	5.74	1.0	3.94	20.82	-9.7	13.82	-5.3
1804	148.95	11.9	12.94	-6.2	7.06	15.8	-0.94	19.16	-9.7	23.45	66.8
1805	144.64	-4.3	13.22	3.0	7.01	-5.9	0.30	18.33	-6.1	17.43	-21.1
1806	165.09	-1.2	14.69	-7.7	6.81	-5.7	-2.47	20.38	9.6	18.93	-4.6
1807	160.76	-5.2	14.59	-0.5	6.82	0.4	3.95	19.94	-3.1	14.12	-23.2
1808	203.26	4.1	18.32	-1.0	7.56	-6.5	-5.19	12.69	-44.7	14.31	1.7
1809	206.97	-0.6	13.74	-15.3	5.69	-32.2	15.85	22.20	76.5	23.08	35.2
1810	243.55	13.6	14.15	11.6	9.04	39.7	-2.28	23.23	0.3	29.57	10.9
1811	259.14	-8.7	17.17	-8.5	10.76	8.4	-11.35	27.38	12.8	20.20	-35.5
1812	311.75	-1.8	21.19	-0.3	14.94	17.9	-3.53	23.21	-26.0	38.07	61.5
1813	322.74	1.2	21.09	-1.7	15.73	-4.1	11.55	28.57	27.4	47.29	24.9
1814	322.17	1.3	19.68	0.3	14.91	-5.1	3.77	32.95	7.8	41.78	-22.0
1815	295.14	-2.5	19.74	4.8	16.34	11.2	2.61	35.71	6.5	27.46	-30.0
1816	317.90	0.8	23.20	3.9	20.96	20.7	-2.68	32.20	-17.9	25.47	-11.6
1817	322.29	-1.4	23.38	-2.1	19.03	-8.2	-2.37	30.20	-5.2	24.42	0.6
1818	329.60	-2.0	26.30	5.3	18.94	-0.7	-11.90	39.39	17.1	28.85	6.3
1819	318.45	-4.5	26.12	-1.2	20.58	9.9	18.49	34.28	-13.1	29.20	0.5
1820	317.18	10.2	22.94	6.5	19.42	-3.4	17.66	33.29	-0.8	26.03	-8.1
1821	320.06	11.0	22.96	13.4	18.25	-8.1	-9.81	31.38	-1.6	27.89	24.2
1822	296.91	-6.6	22.90	-1.9	18.75	6.1	-0.25	31.63	0.5	27.61	2.6
1823	295.91	2.1	21.90	3.2	19.12	0.5	10.96	35.09	3.8	33.76	8.3
1824	314.45	8.5	23.93	8.7	21.31	8.3	-0.11	34.87	2.0	28.32	1.1
1825	315.75	-2.7	24.37	-0.1	22.44	0.1	-1.36	41.70	5.6	30.81	1.3
1826	363.57	-2.7	29.29	6.3	22.69	6.0	-17.94	32.00	-11.9	32.47	11.5
1827	324.50	-5.9	26.81	-7.5	21.21	-7.9	26.50	34.53	9.0	32.56	-2.0
1828	338.19	13.7	24.72	4.6	21.07	-1.4	-5.93	34.92	3.4	28.49	-5.1
1829	348.15	-2.2	25.53	-9.3	18.96	-8.6	-1.81	31.81	-9.4	28.04	1.8
1830	352.85	-2.9	26.60	-1.6	18.69	-0.3	-1.01	31.36	3.1	26.10	-3.5
1831	375.93	-2.6	29.90	8.4	20.14	5.5	1.44	34.38	8.4	27.35	-2.4
1832	377.75	4.6	27.21	-3.6	19.91	-3.0	29.54	33.22	-2.1	33.97	16.0
1833	402.15	12.7	25.52	1.0	20.20	0.7	-7.75	35.52	6.8	36.09	-1.1
1834	384.26	-6.2	27.11	-0.4	21.80	7.0	-12.84	35.53	-2.2	34.60	2.8
1835	370.62	-4.4	26.33	-1.5	24.43	8.9	17.91	39.75	13.7	39.90	15.6
1836	392.81	4.5	27.93	4.8	26.69	8.7	-4.18	41.22	-3.8	33.58	-19.5

Table A4.2 (cont.): *Various expenditures 1800–2012 and their volume growth (%).*

Year	Private consumption		Government consumption		Gross fixed capital formation		Changes in inventories	Export		Import	
	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*
1837	410.77	0.1	29.19	-0.9	26.23	0.0	-12.15	35.70	-14.1	41.50	30.5
1838	415.91	-3.1	29.72	-1.5	22.78	-14.0	31.75	44.18	26.5	48.82	12.0
1839	445.25	10.1	29.46	5.6	25.52	10.4	0.41	48.73	7.8	41.30	-17.0
1840	440.77	0.5	29.02	0.4	26.01	2.9	8.76	47.65	2.1	43.04	6.2
1841	479.23	4.4	30.96	5.7	25.45	-4.7	-34.75	50.38	6.2	46.31	12.0
1842	444.07	-8.5	30.75	0.9	27.93	10.7	23.69	43.13	-13.0	46.71	7.2
1843	446.45	4.1	30.86	4.1	27.55	-0.8	6.97	40.21	0.9	37.87	-13.5
1844	413.66	0.2	27.97	7.1	27.94	2.5	2.52	50.43	21.1	39.04	5.3
1845	448.16	0.8	32.48	-8.4	30.43	8.1	-19.07	58.43	8.1	41.64	6.0
1846	439.45	-7.2	34.92	7.1	31.57	3.1	15.72	58.50	-2.3	46.09	9.3
1847	459.10	2.8	34.71	3.7	33.22	3.1	28.43	66.39	9.5	48.44	1.0
1848	502.86	16.4	34.18	5.8	33.79	0.3	12.38	48.65	-19.0	53.43	15.5
1849	515.30	3.8	33.75	-1.8	35.78	3.2	-11.55	55.06	13.4	59.51	6.6
1850	514.94	-4.8	35.09	0.7	38.27	7.4	7.32	55.21	-0.4	56.76	-10.2
1851	541.33	1.2	37.31	0.0	42.79	13.8	-14.61	60.66	9.4	64.57	18.0
1852	519.55	-4.3	37.14	1.3	43.86	2.7	33.75	60.35	0.2	59.90	-1.6
1853	589.37	7.6	40.90	-2.8	46.63	1.7	-18.64	79.29	7.8	58.68	-9.3
1854	580.89	-4.7	41.40	5.7	53.20	4.0	36.70	93.36	20.5	74.57	24.6
1855	738.56	13.0	43.18	-8.2	70.64	10.7	-1.51	111.39	5.6	108.99	36.6
1856	863.87	7.5	43.72	-2.0	77.54	2.3	15.74	103.69	-6.0	156.59	39.0
1857	843.54	-3.4	44.42	0.7	71.68	-15.2	7.19	102.25	0.3	135.18	-22.3
1858	695.53	-5.0	46.13	11.2	69.10	12.7	22.97	83.91	-7.1	82.11	-28.1
1859	709.92	6.6	46.37	-0.7	69.65	3.4	-9.26	104.41	24.6	99.92	24.7
1860	736.53	-2.5	48.15	-0.2	77.58	8.9	26.10	116.33	8.5	113.31	9.3
1861	863.33	12.2	50.20	2.5	85.32	9.3	-14.50	109.75	-7.3	151.05	26.8
1862	805.15	-7.0	51.65	3.2	94.60	7.8	28.64	112.28	6.4	128.33	-10.8
1863	823.87	6.1	54.17	5.1	100.73	6.5	8.81	123.28	7.3	125.83	0.6
1864	773.69	-2.6	56.19	9.9	113.70	18.4	24.86	127.41	4.7	130.47	-2.9
1865	810.00	3.8	56.69	-4.2	94.01	-14.0	-14.19	146.83	19.6	136.92	7.0
1866	798.86	-5.3	60.08	1.4	91.04	-2.6	16.21	154.12	6.3	127.87	-7.3
1867	925.68	5.4	62.49	-4.3	77.59	-14.3	-64.28	170.42	9.1	152.70	11.1
1868	836.62	-7.1	64.76	0.1	57.32	-26.8	41.64	167.36	0.4	157.22	6.9
1869	814.2	1.1	63.8	10.1	84.2	57.1	50.9	168.5	7.8	151.4	2.2
1870	874.3	8.7	66.4	6.2	87.1	3.3	25.6	199.8	22.6	157.0	6.3
1871	962.4	7.1	68.1	-1.3	78.8	-12.9	5.7	224.4	9.8	190.6	20.9
1872	1056.8	1.8	70.2	-7.6	142.0	68.4	-6.0	274.8	5.8	240.6	14.4
1873	1194.4	0.1	77.5	-1.2	221.2	36.7	39.8	302.4	-1.3	304.6	14.6

Table A4.2 (cont.): *Various expenditures 1800–2012 and their volume growth (%).*

Year	Private consumption		Government consumption		Gross fixed capital formation		Changes in inventories	Export		Import	
	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*
1874	1295.8	11.1	79.2	-3.2	241.2	-3.3	0.6	314.4	-1.3	345.2	19.7
1875	1192.3	-7.3	84.8	3.1	233.9	3.2	50.8	283.2	2.6	301.1	-9.5
1876	1312.4	11.6	92.0	10.7	215.6	-18.4	0.6	312.0	13.4	326.6	11.7
1877	1330.5	-1.1	96.8	11.6	211.1	-3.7	5.6	303.6	-1.5	346.4	2.2
1878	1148.5	-4.6	97.1	8.2	191.9	-0.3	52.6	260.4	-1.5	270.8	-10.6
1879	1181.3	4.2	94.4	-1.0	150.3	-17.6	-7.3	256.8	13.3	247.6	-7.9
1880	1223.8	3.6	94.7	-2.0	160.3	1.8	29.8	324.0	3.4	313.9	23.3
1881	1333.6	6.0	98.3	1.6	153.8	-4.2	-20.2	308.4	-2.9	326.6	3.1
1882	1283.1	-1.9	100.0	3.6	147.0	-4.1	54.3	344.4	9.4	340.6	9.5
1883	1376.3	10.4	101.5	1.6	166.5	12.3	-5.8	349.2	1.8	379.0	13.3
1884	1331.1	-3.2	104.1	4.0	184.8	15.1	39.4	321.6	1.8	367.3	1.4
1885	1335.6	6.6	106.3	3.6	177.1	-1.7	13.4	325.2	3.8	387.1	11.3
1886	1219.1	-3.8	107.6	4.3	171.3	1.3	21.7	300.0	-4.3	339.4	-9.0
1887	1164.0	1.3	110.2	3.6	136.0	-19.8	12.3	320.4	11.3	333.6	4.8
1888	1259.2	0.9	107.3	-3.3	159.5	16.7	-0.6	364.8	7.7	369.7	3.3
1889	1338.2	6.5	109.8	-0.6	171.1	3.1	23.6	388.8	-3.0	427.8	14.0
1890	1383.7	-1.5	114.2	3.6	185.7	8.7	42.7	385.2	3.6	431.3	-3.4
1891	1370.2	5.4	119.3	3.1	145.3	-21.4	19.5	405.6	5.9	304.6	-5.1
1892	1422.5	-0.4	121.6	2.9	158.6	10.2	39.2	393.6	-2.6	401.0	1.9
1893	1398.8	0.2	125.4	4.0	139.3	-9.9	7.5	412.8	8.4	368.5	-5.5
1894	1396.9	4.1	125.1	1.1	142.8	0.5	12.8	412.8	-0.2	395.2	13.4
1895	1424.2	0.6	127.7	1.0	188.4	31.6	30.6	428.4	5.3	395.2	-2.2
1896	1473.5	3.5	128.2	-1.2	204.3	3.7	48.8	470.4	7.1	415.0	1.5
1897	1566.9	3.6	142.6	8.8	263.4	21.1	49.6	498.0	-3.3	465.0	8.0
1898	1758.5	9.2	151.4	1.9	307.8	12.0	39.7	480.0	-6.9	518.4	6.8
1899	1935.2	4.3	159.4	1.2	353.8	13.5	37.9	502.8	1.1	584.7	6.8
1900	1932.5	-0.5	179.2	10.6	346.0	-5.0	73.2	550.8	3.9	610.3	2.1
1901	1932.5	2.1	184.2	3.0	310.1	-9.9	5.3	493.2	-5.8	535.9	-11.0
1902	1953.2	0.7	186.0	1.5	276.1	-8.6	25.8	522.0	10.5	583.5	10.5
1903	2041.9	1.3	201.9	6.6	316.5	10.4	53.1	583.2	11.5	616.1	6.5
1904	2145.0	4.9	211.1	2.0	348.5	12.9	38.0	556.8	-4.5	663.8	4.8
1905	2117.9	-3.2	220.7	5.2	368.2	5.0	61.8	602.4	9.1	669.6	1.3
1906	2345.5	8.4	230.9	-2.9	434.9	15.0	68.9	673.2	6.3	742.8	8.7
1907	2595.1	6.5	252.4	2.5	427.1	-2.7	54.1	702.0	1.1	781.2	0.9
1908	2607.1	-0.7	274.3	8.0	372.5	-12.4	72.9	646.8	-3.8	694.0	-11.6
1909	2694.4	4.3	287.8	1.4	336.7	-10.3	7.6	637.2	-6.4	712.6	0.2
1910	2748.6	2.8	285.9	-3.0	391.5	14.4	57.3	790.8	23.3	775.3	9.1

Table A4.2 (cont.): *Various expenditures 1800–2012 and their volume growth (%).*

Year	Private consumption		Government consumption		Gross fixed capital formation		Changes in inventories	Export		Import	
	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*
1911	2676.7	-4.0	287.7	-0.1	439.5	12.1	85.7	883.2	12.8	804.4	1.3
1912	2874.4	5.2	307.0	3.7	452.4	3.0	76.6	992.4	9.5	909.0	9.3
1913	3024.9	8.3	314.7	1.0	549.8	18.3	107.4	1074.0	3.8	983.4	11.8
1914	3077.1	-6.6	331.5	3.9	530.6	-6.5	76.5	1032.0	-10.6	842.8	-25.1
1915	3436.6	-2.5	386.1	8.0	532.3	-10.9	77.3	1789.1	54.1	1363.5	41.0
1916	3992.8	-0.4	496.7	10.0	658.4	1.5	144.9	2221.1	-2.5	1418.2	-13.1
1917	4651.4	1.6	532.5	-18.5	837.7	1.9	128.7	1870.7	-43.3	1019.5	-45.1
1918	6969.9	-0.7	920.3	20.5	1115.9	-2.0	21.1	2056.7	-14.4	1584.4	9.4
1919	9595	26.1	950	-33.6	1437	6.3	78	2323	2.1	2944	69.0
1920	10665	5.2	1095	29.3	1642	4.7	270	3138	13.9	3852	20.9
1921	7171	-10.3	1101	1.5	1144	-19.9	63	1476	-22.0	1462	-35.1
1922	6076	5.3	933	6.0	887	4.8	-70	1534	37.4	1298	10.5
1923	5970	4.3	838	2.7	946	10.1	281	1546	-1.9	1505	14.7
1924	6238	4.3	852	2.1	1069	5.9	161	1692	20.2	1656	7.8
1925	6119	-0.4	874	1.2	1185	10.5	315	1817	10.7	1682	9.4
1926	6391	9.6	851	3.1	1138	-3.8	126	1906	7.8	1732	5.5
1927	6337	0.4	851	0.2	1181	4.3	137	2172	19.3	1842	5.9
1928	6629	6.2	873	3.8	1321	12.6	221	2092	-3.7	1992	13.3
1929	6747	4.0	895	4.9	1361	2.4	222	2399	18.9	2077	8.8
1930	6732	6.0	910	4.4	1604	18.0	239	2102	-7.7	1945	3.5
1931	6618	5.0	930	5.9	1380	-13.7	51	1535	-18.5	1660	-5.4
1932	6309	-1.5	918	0.3	1147	-15.3	92	1295	-16.3	1343	-19.0
1933	6200	-0.5	889	-0.9	1043	-4.2	84	1446	12.5	1274	-4.2
1934	6548	5.4	897	0.6	1318	26.3	288	1721	16.8	1517	15.0
1935	6916	2.7	954	3.8	1676	27.2	343	1718	2.0	1716	10.0
1936	7320	3.2	1000	5.4	1885	13.8	263	1993	14.3	1898	7.0
1937	7992	5.9	1105	6.3	2124	2.7	347	2621	5.0	2468	7.6
1938	8233	2.9	1235	8.7	2407	12.1	344	2452	1.0	2420	7.9
1939	9173	5.9	1639	29.1	2748	13.1	356	2580	10.3	2905	16.7
1940	10011	-6.6	2404	7.3	2246	-30.7	140	2052	-32.4	2330	-36.3
1941	10724	-8.2	2926	10.8	2347	-1.0	-72	2060	-7.7	1946	-26.2
1942	11091	-2.8	3144	1.4	3165	25.2	260	2012	-8.4	2069	0.1
1943	11933	2.5	3302	3.5	3625	9.2	424	1861	-6.7	2109	0.0
1944	12395	3.8	3522	3.7	3883	6.2	424	1444	-25.5	1949	-8.6
1945	11536	-8.5	3455	-1.7	3903	-0.7	479	2466	55.0	1260	-36.9
1946	14678	25.5	3071	-15.9	5139	29.8	790	3792	60.7	3936	225.6
1947	16944	11.9	3290	1.6	6085	15.5	1082	4579	15.1	6068	45.1

Table A4.2 (cont.): *Various expenditures 1800–2012 and their volume growth (%).*

Year	Private consumption		Government consumption		Gross fixed capital formation		Changes in inventories	Export		Import	
	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*
1948	18166	-0.1	3809	7.5	5779	-6.9	1095	5515	10.5	5748	-9.3
1949	18175	0.2	4052	5.3	5967	1.6	669	5791	1.8	5037	-14.1
1950	21467	10.0	4300	4.3	6657	9.4	156	7549	22.3	7093	33.7
1951	24048	-0.6	5371	4.8	8357	2.7	2021	11933	6.7	10579	14.7
1952	26714	4.0	6531	5.5	9699	2.8	1477	10846	-7.8	10297	-5.8
1953	27834	2.5	7197	8.7	10566	10.9	10	10151	3.8	9455	0.0
1954	29446	4.2	7540	5.0	11415	11.2	735	11112	10.7	10909	16.6
1955	31385	3.3	8192	2.1	11830	0.0	1743	12127	5.2	12171	9.6
1956	33935	2.9	9056	5.1	12798	2.6	1742	13794	9.4	13575	7.2
1957	35780	1.6	10089	3.0	13567	1.7	1845	15315	9.0	14931	6.9
1958	38271	2.5	10735	4.7	14969	9.7	1089	14734	0.1	14608	2.6
1959	40222	3.7	11460	5.0	16493	10.2	823	15317	6.1	14798	3.5
1960	42623	1.9	12319	1.7	18193	4.0	2803	17604	12.3	17477	16.2
1961	46190	6.0	13377	3.4	20257	7.9	2246	18597	5.2	17600	0.2
1962	50064	4.3	15320	6.2	22516	6.7	1933	19773	8.1	18824	5.7
1963	54304	5.3	17114	9.5	24880	7.0	1425	21439	7.3	20495	7.1
1964	58655	4.3	18974	2.9	28076	7.5	3390	24323	12.0	23252	9.7
1965	64849	4.8	21545	4.7	31013	4.3	4301	26206	5.6	26350	11.3
1966	70704	2.3	24920	5.5	33900	4.2	3067	27935	4.9	27891	4.3
1967	76490	2.6	27951	4.6	36755	5.2	2079	29880	5.5	28969	2.5
1968	81519	4.7	31252	6.9	37419	0.5	2304	32395	7.6	31608	8.3
1969	88635	5.2	34335	5.4	39407	4.1	3961	37266	11.5	36640	12.9
1970	96594	3.8	39855	8.1	42962	3.8	7409	44196	8.6	43737	10.4
1971	104065	0.1	45164	2.2	45292	-0.6	4106	48258	4.8	44450	-3.3
1972	114539	3.4	49939	2.4	50130	4.2	2001	52501	5.9	47580	4.0
1973	126380	2.6	55477	2.6	55005	2.7	1011	66191	13.7	57533	6.9
1974	144125	3.4	64121	3.1	61001	-3.0	8528	87873	5.3	86956	9.9
1975	164319	2.8	77224	4.7	69787	3.1	13243	90184	-9.3	87791	-3.5
1976	190034	4.2	91271	3.5	79921	1.9	11296	100172	4.3	102727	9.0
1977	208324	-1.0	109704	3.0	86643	-2.9	505	107948	1.5	110696	-3.8
1978	230893	-0.7	124228	3.3	88960	-6.8	-4255	123999	7.8	115499	-5.5
1979	255267	2.4	141058	4.7	101724	4.5	4411	149694	6.1	149502	11.6
1980	284664	-0.8	163430	2.2	117798	3.5	9008	166745	-0.6	171458	0.4
1981	317486	-0.4	180586	2.2	121084	-5.8	-821	186711	2.8	182048	-4.6
1982	353071	0.9	196509	0.7	131566	0.7	-2377	221048	6.8	218044	4.7
1983	382923	-2.2	215199	0.5	149684	3.4	-5979	271886	9.5	249828	1.0
1984	418351	1.8	233271	2.0	170697	8.1	-2601	310809	7.1	273536	5.3

Table A4.2 (cont.): *Various expenditures 1800–2012 and their volume growth (%).*

Year	Private consumption		Government consumption		Gross fixed capital formation		Changes in inventories	Export		Import	
	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Current prices, mn SEK	Vol. gr., %*	Current prices, mn SEK	Vol. gr., %*
1985	458591	2.6	250555	1.6	194646	7.9	5795	327587	1.3	305597	7.9
1986	504498	4.8	270331	1.7	203133	1.3	1038	333747	3.5	295612	3.6
1987	557974	5.0	284112	1.2	228949	6.1	2740	356644	4.0	329542	7.3
1988	608874	2.9	302267	0.9	261214	5.6	4163	386228	3.3	359505	5.0
1989	656971	1.1	338656	2.5	316610	11.4	7302	424642	3.2	411112	7.7
1990	717653	-0.7	389731	2.7	344944	0.2	5475	442095	2.3	429523	1.1
1991	794743	0.2	430701	4.2	331178	-8.8	-13592	442108	-2.0	411744	-4.9
1992	800751	-1.5	447668	2.3	291073	-10.6	498	439103	2.2	408138	1.6
1993	819525	-3.0	453491	0.2	245992	-16.9	-4947	514944	7.8	456464	-2.7
1994	858786	2.1	467687	-0.6	260378	7.0	17154	605524	13.5	530941	12.9
1995	894230	1.1	482083	-0.7	289031	9.9	21477	718416	11.3	595662	7.1
1996	918710	1.8	505497	0.7	299953	4.7	7140	714885	4.4	592270	3.4
1997	957982	2.8	515850	-0.8	304992	0.6	9371	813220	13.8	668427	12.4
1998	993943	3.3	543453	3.7	336903	8.8	15312	871764	9.0	736351	11.3
1999	1048348	4.0	571898	1.8	373808	8.7	5350	921629	7.2	782612	5.1
2000	1113679	5.3	585490	-1.2	407041	5.7	15286	1053949	11.7	909998	11.7
2001	1145837	0.7	617180	0.8	421196	0.5	6661	1087395	0.6	929850	-1.7
2002	1193701	2.6	659100	2.1	424061	-1.3	1834	1084269	1.3	919335	-1.3
2003	1241140	2.3	693596	0.9	428694	1.6	7672	1107579	4.2	933814	3.7
2004	1286263	2.8	704921	-0.3	453261	5.7	-1205	1222905	10.8	1005188	6.6
2005	1336052	2.8	725248	0.2	495703	8.1	-4305	1341244	6.6	1124567	7.0
2006	1389299	2.7	765257	1.7	551106	9.2	423	1504836	9.0	1266441	9.0
2007	1460162	3.7	797414	0.7	611964	8.9	23247	1621472	5.7	1388241	9.0
2008	1504777	0.0	835164	1.0	641807	1.4	6231	1715236	1.7	1498895	3.5
2009	1532516	-0.3	859703	2.2	558629	-15.5	-46290	1489445	-13.8	1288213	-14.3
2010	1617050	4.0	889623	2.1	601691	7.2	22802	1651448	11.4	1445083	12.0
2011	1671239	1.7	924116	0.8	650767	8.2	40391	1735241	6.1	1541211	7.1
2012	1718248	1.6	955873	0.7	672919	3.1	-4307	1722409	0.7	1516359	-0.6

* Volume growth.

Table A4.3: *Nominal value added of various activities, current basic prices (million SEK) 1800–2000.*

	Agriculture and ancillaries	Manu-facturing	Building and construction	Transport and com-munication	Trade, finance and business services	Real estate	Other private services	Public services	GDP
1800	66.24	32.42	4.78	6.36	4.03	7.00	12.66	11.19	144.66
1801	71.13	33.45	4.74	6.41	5.04	7.23	12.44	11.00	151.43
1802	68.35	34.40	3.90	6.62	5.96	7.21	12.02	10.81	149.27
1803	67.53	33.61	3.94	7.78	5.46	7.96	11.13	10.77	148.18
1804	67.88	33.88	5.16	7.39	4.43	8.27	11.55	10.59	149.14
1805	68.43	34.51	4.50	7.40	5.52	8.54	11.66	10.92	151.49
1806	79.61	35.29	4.66	6.73	6.83	9.36	14.57	12.18	169.24
1807	84.79	36.19	4.81	6.65	6.91	9.41	14.49	12.18	175.43
1808	99.89	39.49	5.51	4.66	9.15	11.06	18.20	15.11	203.06
1809	115.37	45.29	5.14	8.87	7.51	11.91	15.52	11.44	221.04
1810	118.54	51.25	6.36	12.59	7.57	13.27	14.72	10.89	235.18
1811	128.05	50.79	8.13	15.82	6.76	15.14	20.16	12.68	257.53
1812	148.04	57.53	11.84	10.77	12.40	17.58	25.94	16.03	300.13
1813	154.15	67.89	12.61	13.34	12.69	18.05	26.24	16.52	321.48
1814	152.32	71.40	10.51	14.11	13.73	18.81	24.35	15.27	320.51
1815	146.81	70.00	11.17	12.12	14.14	18.93	23.76	14.79	311.72
1816	155.74	71.24	14.34	12.72	14.62	19.87	26.94	17.88	333.35
1817	152.72	72.94	13.94	13.54	15.12	20.02	28.70	18.44	335.43
1818	148.22	76.05	14.30	14.47	14.90	20.68	30.96	20.27	339.86
1819	164.70	74.11	14.39	13.51	17.97	19.80	29.83	20.77	355.08
1820	161.03	81.80	12.98	15.09	18.07	19.33	24.83	18.02	351.15
1821	136.33	79.68	12.79	16.61	16.30	20.85	22.34	18.15	323.04
1822	134.45	70.96	13.82	16.10	14.91	20.92	22.56	18.14	311.87
1823	137.16	72.43	14.36	17.89	15.65	21.65	22.05	17.23	318.43
1824	142.86	77.83	15.42	18.69	15.03	22.21	22.31	19.09	333.44
1825	140.80	77.53	16.55	19.17	16.57	24.79	23.57	19.67	338.65
1826	159.63	74.19	16.04	13.78	18.01	23.97	31.90	23.66	361.17
1827	158.18	82.84	15.68	17.05	20.32	24.81	25.65	22.09	366.62
1828	147.67	84.97	14.35	17.05	18.02	25.22	22.50	20.29	350.07
1829	155.92	80.10	14.00	17.59	17.49	27.27	26.47	20.90	359.75
1830	157.67	83.55	13.82	17.11	18.97	25.67	28.88	21.33	367.01
1831	175.14	85.40	15.02	17.32	20.69	26.80	32.22	23.83	396.41
1832	190.91	91.73	14.55	18.74	21.82	26.03	29.64	21.60	415.03
1833	169.64	99.37	14.45	19.22	21.06	26.90	28.76	20.93	400.35
1834	158.13	90.37	15.87	18.43	21.11	27.54	29.65	22.27	383.37
1835	173.24	88.67	18.05	18.80	22.20	27.96	30.51	21.22	400.65

Table A4.3 (cont.): *Nominal value added of various activities, current basic prices (million SEK) 1800–2000.*

	Agriculture and ancillaries	Manu-facturing	Building and construction	Transport and com-munication	Trade, finance and business services	Real estate	Other private services	Public services	GDP
1836	172.87	95.40	19.12	17.56	23.99	28.44	31.13	21.87	410.39
1837	166.65	94.52	18.25	17.10	26.11	28.88	33.25	22.90	407.66
1838	207.79	95.19	17.32	19.48	25.55	29.19	35.42	22.93	452.87
1839	201.16	109.41	17.08	22.02	26.12	29.95	33.91	23.19	462.84
1840	207.39	105.49	16.99	22.43	25.72	29.81	33.61	22.69	464.13
1841	191.30	110.99	17.86	22.77	24.96	31.05	35.32	24.15	458.41
1842	213.18	103.75	18.97	23.43	25.97	31.81	36.47	23.63	477.22
1843	204.68	107.54	19.27	19.22	27.02	32.26	34.82	23.96	468.78
1844	182.96	106.24	19.42	21.20	25.42	32.00	31.73	21.18	440.15
1845	197.88	103.04	19.98	22.59	25.29	32.12	36.20	25.15	462.24
1846	210.90	106.07	21.75	21.11	29.00	32.32	38.85	26.84	486.83
1847	237.30	109.91	22.45	21.54	31.30	34.19	39.45	26.95	523.09
1848	229.23	120.39	21.03	23.53	33.04	36.38	36.70	26.79	527.09
1849	216.60	120.90	21.43	27.88	30.37	37.50	36.47	25.74	516.88
1850	234.80	119.84	23.11	25.69	33.21	38.49	38.76	26.80	540.69
1851	225.88	128.21	25.17	27.00	33.11	39.20	40.19	28.61	547.37
1852	254.67	127.05	27.00	25.40	34.82	39.81	41.64	28.20	578.58
1853	264.80	140.09	28.51	30.84	35.17	41.48	44.68	30.78	616.35
1854	295.90	145.18	32.56	29.21	41.22	45.91	45.52	29.93	665.43
1855	343.47	171.20	38.08	29.39	50.37	54.09	54.78	32.19	773.57
1856	373.55	197.79	42.35	32.50	59.60	60.71	60.54	32.75	859.79
1857	350.69	196.77	37.01	36.18	62.98	70.15	59.92	33.72	847.42
1858	318.56	170.22	35.60	32.08	56.09	58.76	52.17	36.07	759.57
1859	299.87	171.33	37.77	36.23	53.50	58.73	50.54	36.42	744.39
1860	341.88	171.92	44.15	38.48	58.13	61.39	55.34	37.96	809.25
1861	347.94	190.58	46.52	42.18	63.14	62.18	61.84	39.33	853.71
1862	368.84	188.43	48.25	39.90	60.33	67.53	61.89	39.50	874.67
1863	362.60	200.17	53.31	42.78	62.06	67.79	60.38	42.68	891.78
1864	344.19	198.37	57.49	40.77	62.92	69.07	57.28	44.11	874.19
1865	331.01	201.49	48.21	42.03	63.84	75.18	58.24	44.29	864.28
1866	366.01	197.73	46.68	46.58	61.32	71.47	62.52	46.06	898.37
1867	383.09	203.45	45.54	44.23	63.12	69.58	61.71	48.40	919.13
1868	390.39	198.65	39.79	43.92	62.45	68.52	63.08	49.54	916.34
1869	396.44	199.52	40.20	49.34	63.77	68.97	62.63	49.99	930.85
1870	435.8	206.3	44.8	48.8	68.0	70.7	63.0	50.6	988.1
1871	454.2	222.2	38.9	52.8	73.3	74.2	66.9	52.3	1034.8
1872	478.1	268.3	66.1	62.2	85.3	77.3	72.2	54.8	1164.3

Table A4.3 (cont.): *Nominal value added of various activities, current basic prices (million SEK) 1800–2000.*

	Agriculture and ancillaries	Manu-facturing	Building and construction	Transport and com-munication	Trade, finance and business services	Real estate	Other private services	Public services	GDP
1873	567.4	302.0	97.6	77.0	98.0	95.9	76.5	57.8	1372.3
1874	541.1	330.0	103.2	95.0	109.9	91.7	80.7	59.5	1411.1
1875	530.6	307.5	97.0	89.6	105.8	103.2	82.9	64.9	1381.6
1876	549.6	308.6	103.4	92.8	106.1	114.1	88.8	71.2	1434.6
1877	549.7	304.7	103.1	92.7	109.1	109.6	91.5	70.2	1430.7
1878	525.5	249.4	107.3	78.8	96.1	106.7	87.8	74.1	1325.6
1879	520.6	236.1	89.7	70.4	94.7	104.0	87.8	74.4	1277.6
1880	543.9	270.3	87.4	85.0	96.9	107.4	89.9	75.7	1356.5
1881	516.2	297.7	79.6	93.9	107.5	111.9	94.0	78.4	1379.2
1882	547.5	311.5	69.8	104.5	101.1	114.1	94.3	78.7	1421.4
1883	532.9	303.8	84.8	105.3	109.5	120.7	95.4	79.0	1431.4
1884	526.7	298.9	97.1	102.4	109.0	122.7	99.3	80.3	1436.2
1885	500.1	296.9	92.3	95.9	110.8	122.9	96.9	80.4	1396.2
1886	459.3	265.4	97.1	89.3	102.3	122.7	98.1	81.2	1315.5
1887	416.2	265.5	79.5	89.9	100.3	121.4	99.8	81.6	1254.1
1888	460.3	291.4	82.1	98.7	101.1	126.8	103.7	82.2	1346.3
1889	470.4	319.6	84.3	110.3	115.9	128.9	104.1	83.6	1417.1
1890	513.9	326.5	88.7	108.0	125.0	135.1	106.5	84.2	1487.9
1891	577.8	342.7	70.8	104.2	137.9	132.4	110.6	86.4	1562.7
1892	550.7	346.8	73.3	104.2	138.8	130.0	111.6	88.4	1543.9
1893	538.3	351.3	67.0	103.2	136.9	128.7	111.9	90.5	1527.7
1894	503.9	361.5	63.9	112.7	136.5	121.6	114.2	91.3	1505.4
1895	532.7	376.2	87.5	118.2	139.3	138.4	116.7	92.3	1601.4
1896	572.2	413.4	73.8	124.9	147.1	147.3	121.1	94.4	1694.3
1897	579.8	455.6	112.3	136.0	161.5	154.6	125.5	96.0	1821.3
1898	618.2	494.3	116.0	144.7	189.9	168.0	128.8	99.2	1959.1
1899	655.7	520.1	144.2	152.9	215.7	185.6	140.7	102.8	2117.8
1900	682.2	550.6	140.3	156.3	219.2	183.0	144.5	108.5	2184.7
1901	654.3	532.0	134.5	150.5	220.2	172.9	150.0	111.0	2125.4
1902	619.3	542.4	114.1	151.6	228.2	178.9	154.7	118.1	2107.2
1903	681.1	573.7	132.6	165.6	238.4	210.1	162.7	123.4	2287.5
1904	666.8	594.6	146.1	172.6	251.1	203.6	168.0	128.3	2331.1
1905	640.2	600.7	176.0	183.6	255.5	227.3	175.9	130.8	2389.9
1906	718.3	695.4	192.0	199.4	302.7	238.2	188.2	135.6	2669.8
1907	787.2	769.4	150.7	208.4	358.1	272.1	198.1	144.9	2888.8
1908	865.3	744.6	147.1	206.7	356.2	256.0	204.5	150.6	2931.0
1909	853.2	699.5	138.2	205.5	363.2	264.7	209.2	165.2	2898.7

Table A4.3 (cont.): *Nominal value added of various activities, current basic prices (million SEK) 1800–2000.*

	Agriculture and ancillaries	Manu-facturing	Building and construction	Transport and com-munication	Trade, finance and business services	Real estate	Other private services	Public services	GDP
1910	889.3	816.5	149.8	231.2	370.6	269.7	218.3	172.5	3117.9
1911	870.4	834.9	189.0	237.8	375.3	262.8	229.2	178.8	3178.3
1912	944.4	890.2	194.8	255.8	382.4	298.1	238.2	184.3	3388.2
1913	971.7	992.1	239.0	276.0	406.6	307.0	252.5	191.4	3636.3
1914	1057.3	981.8	225.7	275.3	417.5	322.5	280.5	201.0	3761.5
1915	1243.8	1153.8	224.9	337.1	479.9	340.4	343.6	225.4	4348.9
1916	1560.5	1563.9	242.6	421.3	628.2	366.0	442.2	246.8	5471.5
1917	1882.7	1726.6	245.1	429.5	786.2	387.9	598.1	272.7	6328.8
1918	2659	2116	386	634	1069	441	821	484	8611
1919	2804	2609	534	790	1412	513	974	607	10243
1920	2888	3222	549	888	1609	589	1083	739	11566
1921	1849	2094	587	693	1140	590	778	745	8477
1922	1362	1792	518	597	983	584	673	644	7153
1923	1462	1827	463	593	963	575	671	589	7145
1924	1484	1937	527	593	972	630	661	580	7384
1925	1567	1966	619	606	970	661	656	601	7646
1926	1493	2031	573	629	995	690	671	591	7674
1927	1493	2102	583	644	968	720	685	594	7790
1928	1520	2172	630	643	1038	744	706	605	8058
1929	1520	2386	649	694	1070	772	702	615	8407
1930	1412	2341	799	687	1073	815	739	624	8488
1931	1121	2089	727	671	978	844	718	648	7796
1932	1097	1930	644	683	872	863	696	653	7437
1933	1111	1916	639	676	857	865	691	645	7399
1934	1271	2317	636	712	971	884	696	649	8137
1935	1301	2568	713	738	1042	912	703	694	8670
1936	1427	2777	815	770	1067	951	723	713	9244
1937	1652	3262	796	837	1177	997	754	765	10239
1938	1554	3391	971	854	1222	1054	780	859	10685
1939	1683	3680	1034	1012	1408	1127	814	1073	11830
1940	1906	3823	758	1099	1448	1190	913	1495	12632
1941	2051	4243	860	1200	1480	1208	958	1831	13831
1942	2106	4640	1139	1342	1573	1235	1015	2055	15105
1943	2227	5100	1227	1416	1735	1275	1092	2187	16258
1944	2250	5302	1257	1476	1836	1329	1130	2183	16763
1945	2467	5417	1637	1543	1832	1386	1187	2046	17515
1946	2774	6378	1637	1767	2423	1533	1262	1989	19764

Table A4.3 (cont.): *Nominal value added of various activities, current basic prices (million SEK) 1800–2000.*

	Agriculture and ancillaries	Manu-facturing	Building and construction	Transport and com-munication	Trade, finance and business services	Real estate	Other private services	Public services	GDP
1947	2771	7189	2023	1844	2871	1633	1423	2280	22034
1948	3146	8291	1987	2106	3129	1685	1553	2568	24465
1949	3212	8416	2166	2205	3251	1801	1600	2688	25340
1950	3992	9543	2335	2329	3613	1927	1710	2827	28276
1951	5059	13052	2793	3124	4016	2060	1949	3455	35508
1952	6881	12615	3282	3520	4626	2259	2164	4263	39611
1953	5365	12812	3728	3529	4930	2495	2318	4526	39703
1954	5674	13767	3943	3704	5144	2723	2440	4725	42119
1955	5599	14763	4172	4081	5757	2972	2564	5222	45130
1956	6223	16122	4453	4493	6232	3413	2755	5681	49371
1957	5806	17504	4654	4957	6993	3734	2936	6378	52962
1958	5801	18033	4986	4867	7281	4170	3093	6884	55116
1959	5354	19196	5425	5128	7753	4592	3166	7398	58013
1960	5995	21144	5747	5641	8249	5028	3423	8048	63275
1961	6505	22942	6367	6058	9409	5537	3693	8930	69442
1962	6664	25205	7004	6437	10305	5893	3951	10190	75648
1963	6211	26474	7890	6844	11503	6390	4352	11593	81257
1964	7191	29844	8922	7394	13300	7140	4581	12971	91343
1965	7575	32920	9848	8115	14842	8089	5138	14815	101342
1966	7309	34205	10834	8830	16090	9398	5710	17209	109586
1967	7446	35839	11932	9791	17963	10463	6368	19781	119583
1968	6818	37830	12032	10500	19850	11611	6936	22208	127784
1969	6650	41724	12579	11188	20880	13121	7365	24442	137947
1970	7375	47289	12826	11742	22957	14867	7823	28095	152975
1971	8509	49522	13710	12771	25863	16179	8377	32195	167126
1972	8004	52218	14844	14174	27207	17843	9408	35945	179643
1973	8485	59334	16628	15936	30480	19672	10362	39367	200265
1974	12184	74549	17289	18112	36760	21315	11253	45423	236884
1975	13685	85306	20376	19871	44433	23878	13414	55124	276086
1976	15482	89310	25417	22131	51519	26580	15913	65501	311851
1977	15161	88699	26965	24858	55097	29270	17917	78972	336939
1978	15105	94582	27902	27436	63039	33910	20006	91457	373436
1979	15063	108074	30716	30998	72084	37819	22118	103567	420438
1980	17340	120127	34309	36257	80237	42390	24583	119798	475040
1981	19224	124563	36215	39805	88610	49081	28538	131291	517326
1982	21124	137100	39612	42136	97673	57970	31460	142806	569881
1983	23871	157265	41252	45416	112404	64743	34638	155028	634618

Table A4.3 (cont.): *Nominal value added of various activities, current basic prices (million SEK) 1800–2000.*

	Agriculture and ancillaries	Manu-facturing	Building and construction	Transport and com-munication	Trade, finance and business services	Real estate	Other private services	Public services	GDP
1984	26298	182593	45970	48303	128528	70581	38343	168106	708723
1985	27509	197978	48782	51985	139567	76404	41988	179398	763610
1986	28813	219090	50726	57398	160197	83193	46537	194350	840304
1987	29393	233488	56369	62473	177332	89972	52209	203155	904392
1988	30612	251379	63918	70443	198884	97911	57051	217849	988046
1989	33748	273051	79208	77700	219602	105706	64352	242827	1096193
1990	33603	282013	88602	86935	240568	116105	68302	279960	1196088
1991	29924	279528	93093	93684	243692	143079	74513	297772	1255284
1992	28513	277838	87853	94396	228487	167933	81601	302483	1269103
1993	26040	279978	74305	88059	247747	176380	82835	301425	1276770
1994	29035	323127	70094	93777	258454	188614	87263	305382	1355746
1995	32180	374999	71836	102306	287378	192607	95733	311244	1468283
1996	29882	376643	72366	106881	294179	200870	102653	325892	1509366
1997	30496	397110	71275	116162	306762	206677	109622	332159	1570262
1998	29816	417793	74760	121982	321683	205644	123108	335700	1630486
1999	29450	431038	78873	128657	349801	206495	133379	346848	1704541
2000	28049	453831	82548	130634	389057	211621	148300	369861	1813900

Source: See the main text.

Table A4.4: *Annual volume growth of the value added of various activities (per cent) 1800–2000.*

	Agriculture and ancillaries	Manu-facturing	Building and construction	Transport and communica-tion	Trade, finance and business services	Real estate	Other private ser-vices	Public services	GDP
1800									
1801	11.70	-2.57	-0.15	7.94	-2.36	-0.13	0.28	2.83	5.15
1802	1.07	8.83	-13.44	16.09	4.47	-0.27	0.79	3.86	3.17
1803	5.13	-0.28	5.59	2.04	-4.41	0.26	0.44	6.16	2.81
1804	-3.13	4.08	13.85	-2.47	2.30	0.83	0.59	-5.68	-0.52
1805	-1.05	-2.29	-13.21	0.01	4.88	0.95	0.81	4.67	-0.86
1806	-1.49	-0.06	-2.33	-10.41	3.76	0.79	0.06	-10.93	-1.88
1807	4.56	-4.68	2.43	-3.63	-2.93	0.54	0.04	-0.27	0.95
1808	-8.83	1.91	-4.58	-32.89	-2.93	-0.04	-0.66	-4.29	-5.78
1809	20.18	-1.36	-14.30	50.18	-1.81	-1.21	-0.55	-7.63	9.69
1810	0.13	16.22	-1.33	21.79	7.47	-2.01	1.06	4.02	4.63
1811	-9.83	-4.31	10.21	6.94	4.25	-1.68	1.44	-16.00	-5.96
1812	-4.26	-7.19	17.64	-21.45	-3.76	-0.51	1.03	-1.64	-4.26

Table A4.4 (cont.): *Annual volume growth of the value added of various activities (per cent) 1800–2000.*

	Agriculture and ancillaries	Manu-facturing	Building and construction	Transport and communica-tion	Trade, finance and business services	Real estate	Other private ser-vices	Public services	GDP
1813	6.77	2.00	-1.74	15.65	-0.44	0.25	0.88	5.78	4.54
1814	4.89	1.85	-8.84	5.22	0.92	0.28	1.14	3.72	2.93
1815	3.21	0.99	11.94	1.20	0.63	0.61	1.44	3.47	2.52
1816	-3.42	0.88	15.73	-4.75	0.58	1.40	1.25	3.77	-0.66
1817	-3.47	-2.33	-1.85	-0.50	-0.28	1.99	0.96	-1.44	-2.11
1818	-7.34	0.32	4.07	2.21	-2.05	2.06	1.09	-0.38	-2.92
1819	11.30	-6.77	4.41	-7.46	2.36	1.68	0.67	4.89	3.78
1820	14.98	10.92	-5.62	12.57	3.13	1.34	1.04	10.83	10.37
1821	-7.65	8.33	-5.22	13.28	4.14	1.30	1.73	15.15	-0.03
1822	-3.50	-8.69	8.80	0.33	1.42	1.60	1.98	-2.06	-3.06
1823	10.27	0.35	3.03	5.52	0.36	2.17	2.57	5.42	5.50
1824	2.12	11.28	4.33	3.99	2.92	2.58	1.83	11.35	4.93
1825	-4.55	-3.96	1.32	1.37	2.08	2.79	2.31	0.83	-2.24
1826	-12.48	-4.66	5.04	-13.73	1.68	2.69	-0.06	1.82	-6.63
1827	18.40	-3.40	-4.46	13.71	1.31	2.25	0.93	-3.56	7.29
1828	0.10	14.14	-8.64	6.55	-1.32	1.62	0.49	7.51	3.64
1829	-3.78	-3.08	-1.82	-1.45	9.56	1.00	1.01	-11.61	-2.61
1830	-3.15	-0.65	1.04	-5.43	0.62	0.78	0.89	-6.08	-1.95
1831	-1.13	-1.50	5.50	-6.46	6.70	0.72	0.69	6.39	-0.12
1832	22.61	1.01	-3.94	11.55	0.82	0.69	0.44	-1.38	10.30
1833	-3.89	16.76	-2.79	6.78	2.45	0.89	1.20	8.23	2.82
1834	-12.32	-6.21	5.86	-6.06	3.72	1.16	0.87	-2.93	-6.72
1835	10.56	-4.43	7.96	2.80	1.97	1.53	1.27	-3.36	3.86
1836	-3.38	7.16	4.85	-5.43	6.19	1.72	1.67	1.99	0.76
1837	-10.63	-2.82	-0.89	-3.70	6.49	1.54	1.24	-2.30	-4.94
1838	19.16	-1.67	-4.79	6.63	-2.41	1.06	0.60	-2.31	7.41
1839	3.11	13.26	1.28	15.62	-2.26	0.48	0.88	9.51	5.42
1840	3.98	0.16	0.25	4.96	1.71	0.45	1.31	-0.66	2.21
1841	-12.35	5.68	1.35	-4.67	-2.86	0.87	1.02	5.03	-4.27
1842	9.80	-8.60	7.35	6.50	-0.77	1.30	1.03	-0.65	2.69
1843	1.46	5.29	-1.99	-7.17	4.72	1.44	1.21	5.70	2.12
1844	-0.33	0.97	2.18	5.54	0.23	1.43	1.28	9.70	1.09
1845	-7.81	2.72	5.96	-1.26	5.11	1.54	1.50	-13.61	-2.83
1846	2.30	-4.46	4.96	-4.93	3.96	1.57	1.18	5.18	0.65
1847	11.95	2.66	-2.23	-3.17	8.28	1.29	1.19	7.06	6.55
1848	7.79	11.44	-4.00	23.59	6.51	1.01	1.68	11.72	7.89
1849	-5.92	6.14	2.94	19.96	-3.91	1.14	1.12	-3.65	-0.48

Table A4.4 (cont.): *Annual volume growth of the value added of various activities (per cent) 1800–2000.*

	Agriculture and ancillaries	Manu-facturing	Building and construction	Transport and communica-tion	Trade, finance and business services	Real estate	Other private ser-vices	Public services	GDP
1850	1.45	-1.32	6.30	-7.42	7.44	1.58	1.60	-2.27	0.73
1851	-7.98	2.39	13.60	4.71	-3.69	1.86	-1.54	-1.08	-2.43
1852	14.46	-3.73	2.21	-8.17	2.84	1.54	1.75	0.53	5.16
1853	-5.46	8.71	1.59	-7.56	6.80	1.07	0.72	-6.26	-0.67
1854	13.04	-4.65	0.73	12.60	0.07	1.02	1.15	3.53	5.35
1855	-2.88	12.23	-2.97	-1.55	10.98	1.05	3.13	-8.35	1.62
1856	1.46	4.75	1.18	7.10	10.58	1.47	2.72	-1.49	2.95
1857	-1.54	-2.65	-16.62	7.80	3.95	1.12	1.49	2.43	-1.25
1858	7.17	-5.87	11.68	3.22	-4.08	1.30	1.93	13.53	2.65
1859	-3.23	7.47	8.40	11.49	4.27	1.31	1.08	-0.66	1.64
1860	3.92	-0.57	11.73	-1.38	8.11	2.36	1.62	0.33	2.88
1861	-2.76	7.92	4.38	3.87	7.46	2.82	2.60	1.67	1.92
1862	8.17	-5.06	1.99	-2.80	-7.00	2.55	0.86	1.30	1.89
1863	3.62	5.90	10.10	9.23	3.32	3.87	2.07	9.45	4.89
1864	3.50	0.86	11.10	0.39	2.78	3.86	1.55	6.80	3.21
1865	-6.36	5.53	-8.98	5.78	4.47	2.58	0.70	-6.36	-1.37
1866	2.02	-1.05	-3.76	10.37	-3.83	1.71	0.75	-0.50	0.73
1867	-10.24	2.87	-3.69	-7.71	2.10	1.37	0.37	-3.53	-4.25
1868	9.07	-6.65	-8.79	10.72	-5.04	0.93	0.23	-1.11	1.89
1869	11.92	4.45	3.66	10.92	1.68	0.35	0.01	16.64	7.67
1870	10.10	9.51	7.98	0.91	15.44	0.94	0.21	-0.74	7.80
1871	-1.03	6.44	-10.61	5.92	8.54	0.21	1.80	-0.62	1.37
1872	-0.73	4.17	45.79	13.68	2.57	0.97	1.99	-8.86	2.99
1873	4.88	-0.38	25.17	14.21	0.76	3.76	1.33	-6.79	4.19
1874	-3.80	3.90	-1.16	22.24	3.17	4.89	1.28	-2.32	1.01
1875	1.19	-1.22	-0.84	-0.96	2.85	4.04	1.69	3.29	0.79
1876	2.02	8.59	-12.32	1.90	6.88	3.79	2.80	13.03	3.36
1877	-5.11	0.89	1.50	-1.63	0.35	4.09	1.36	6.71	-1.07
1878	9.07	-8.71	4.92	-9.04	-0.34	3.78	0.15	15.34	2.40
1879	0.90	3.13	-10.80	-6.87	7.29	3.05	0.92	0.99	0.55
1880	1.84	3.91	-0.94	16.13	-5.89	2.85	0.21	0.40	2.13
1881	-9.17	9.66	-3.88	7.85	13.02	3.04	3.34	1.30	-0.11
1882	8.12	0.97	-9.72	14.68	-6.17	1.70	0.30	1.99	3.45
1883	0.43	4.30	11.26	2.50	13.92	1.41	0.53	0.25	3.00
1884	2.71	-1.58	15.28	3.65	-3.86	2.09	3.25	2.46	2.06
1885	0.56	5.18	-1.73	-1.51	10.14	2.26	-0.40	0.52	2.01
1886	-2.20	-3.93	5.87	-2.42	3.43	1.77	2.23	3.69	-0.59

Table A4.4 (cont.): *Annual volume growth of the value added of various activities (per cent) 1800–2000.*

	Agriculture and ancillaries	Manu-facturing	Building and construction	Transport and communica-tion	Trade, finance and business services	Real estate	Other private ser-vices	Public services	GDP
1887	-1.05	3.16	-13.23	4.02	-1.71	1.41	1.91	0.78	-0.22
1888	-0.21	5.94	7.14	1.76	-0.39	0.92	2.19	1.02	2.03
1889	1.41	7.56	-0.87	12.62	0.85	1.68	-1.66	-0.67	3.03
1890	5.37	1.54	2.94	1.25	3.95	1.93	0.63	1.03	3.02
1891	4.89	5.17	-14.76	-3.31	9.59	0.76	2.10	1.40	2.87
1892	1.29	0.03	6.89	2.46	-0.44	0.01	0.61	2.86	1.11
1893	-0.49	3.57	-4.41	-0.08	2.86	-0.51	0.68	2.07	0.79
1894	-2.33	3.95	-4.91	8.71	1.58	-0.44	2.44	0.68	0.81
1895	5.47	6.82	24.78	5.97	5.23	0.91	1.30	0.47	5.65
1896	6.72	10.73	-6.51	7.03	3.50	3.25	2.72	-0.35	5.70
1897	-2.86	5.37	17.07	9.26	4.92	3.81	1.84	-0.32	2.71
1898	-0.38	6.61	1.23	2.76	13.18	4.30	-0.45	-1.11	3.23
1899	-1.49	5.06	11.69	6.81	10.48	4.03	6.33	-0.13	3.74
1900	3.36	0.41	-3.99	3.32	0.45	3.92	0.82	3.47	1.70
1901	-3.56	-0.43	-4.28	-0.72	2.32	2.71	3.13	0.34	-0.87
1902	-3.99	4.30	-7.91	-0.18	3.02	1.59	1.07	8.44	0.31
1903	6.54	4.46	8.75	8.06	3.09	1.36	2.76	1.67	4.86
1904	-1.52	5.03	9.64	3.62	7.07	3.12	1.93	-0.30	2.77
1905	-3.85	1.03	6.11	2.69	3.93	2.87	2.59	4.13	0.86
1906	8.84	8.96	9.29	8.52	15.30	3.64	4.23	-8.12	7.77
1907	3.30	6.31	-7.02	3.16	15.22	2.54	1.82	-1.09	4.35
1908	5.42	-0.30	-8.65	2.49	-2.11	1.53	1.25	4.63	1.34
1909	-0.92	-3.94	-9.08	-1.34	3.89	0.41	1.71	4.61	-0.95
1910	5.61	16.35	10.27	11.20	3.56	0.77	2.58	-0.38	7.56
1911	-3.67	0.73	15.42	3.44	4.82	1.68	3.72	2.22	1.25
1912	1.35	9.83	0.75	1.09	11.26	2.36	1.37	0.21	4.60
1913	3.79	10.70	14.34	10.96	3.73	3.16	4.17	1.34	6.59
1914	3.78	-2.28	-7.63	-3.89	5.09	2.45	-2.46	5.01	0.45
1915	-3.71	6.87	-13.19	-3.54	12.31	2.33	3.19	10.32	1.84
1916	1.47	8.77	-0.38	2.71	16.55	1.71	3.69	-6.03	4.88
1917	-1.70	-13.55	-0.76	-28.35	2.13	1.55	2.06	-12.86	-6.93
1918	-16.10	-12.97	-0.50	8.74	3.72	0.57	3.54	24.70	-6.24
1919	3.30	3.74	-1.43	16.46	6.17	-0.33	6.53	1.03	4.49
1920	11.33	5.39	-1.93	12.99	7.27	0.48	3.86	5.00	6.93
1921	10.72	-20.25	-5.70	0.11	-18.95	-1.89	-2.71	-10.47	-7.63
1922	-5.55	21.24	18.26	5.36	8.39	-0.73	6.72	5.50	7.70
1923	6.23	10.30	2.87	3.60	7.49	0.52	4.90	8.01	6.51

Table A4.4 (cont.): *Annual volume growth of the value added of various activities (per cent) 1800–2000.*

	Agriculture and ancillaries	Manu-facturing	Building and construction	Transport and communica-tion	Trade, finance and business services	Real estate	Other private ser-vices	Public services	GDP
1924	-4.36	14.00	1.81	1.97	6.94	1.59	-0.88	-1.32	3.69
1925	8.22	3.06	9.20	11.35	-1.77	1.85	-0.25	1.89	4.05
1926	-1.82	8.64	0.44	8.61	6.79	2.66	5.77	5.63	4.58
1927	0.36	8.58	5.17	5.92	2.11	2.09	2.83	-0.89	3.82
1928	1.08	5.24	10.75	3.20	5.18	2.36	3.07	4.06	4.12
1929	2.82	10.00	5.55	9.68	5.49	2.73	5.16	4.60	6.20
1930	5.00	1.56	17.59	3.70	4.22	2.77	5.20	3.43	4.52
1931	-8.08	-5.71	-6.83	3.35	-4.53	2.72	-0.25	7.69	-3.00
1932	0.11	-5.27	-6.94	1.62	-4.41	2.13	-0.44	3.33	-1.97
1933	-0.08	4.28	-3.22	-0.20	3.43	1.82	1.11	0.70	1.55
1934	7.09	20.44	12.41	7.57	13.89	3.11	0.61	0.70	10.19
1935	-4.44	9.22	15.08	5.72	5.07	4.20	2.35	3.91	5.13
1936	-0.57	7.56	12.90	5.43	3.32	5.31	1.81	4.16	5.08
1937	9.37	7.29	-3.90	5.61	3.65	5.84	1.62	3.93	5.24
1938	-2.85	3.85	10.72	6.00	2.82	5.05	-0.09	9.20	3.63
1939	2.83	8.45	9.57	4.62	11.90	6.88	0.75	20.78	8.07
1940	-9.12	-11.79	-33.93	-3.78	-7.83	4.47	5.46	-10.79	-9.47
1941	-10.33	-3.43	-3.74	3.93	-12.01	-0.05	-2.87	16.95	-2.24
1942	-3.39	2.44	21.03	6.42	-3.72	2.03	-1.82	9.22	2.97
1943	3.11	3.24	6.36	2.91	8.18	2.93	1.94	5.90	4.18
1944	-0.50	5.36	2.78	1.74	8.17	2.63	0.21	-4.95	2.36
1945	6.97	1.79	13.90	4.65	-3.39	3.78	0.91	-6.02	2.22
1946	9.71	16.34	12.02	18.57	26.70	6.61	2.81	-9.51	11.50
1947	-8.51	8.05	13.27	15.64	13.27	5.41	0.50	7.02	6.60
1948	3.82	5.89	-5.75	8.34	1.10	3.11	1.17	4.00	3.45
1949	6.77	1.32	4.17	3.23	2.80	3.40	-0.35	3.99	2.91
1950	3.94	4.57	6.14	3.64	8.78	4.93	2.43	3.55	4.85
1951	1.89	7.58	-2.98	8.13	1.80	3.33	2.81	3.42	4.27
1952	2.89	-3.51	7.01	2.81	2.19	3.61	0.21	4.53	0.94
1953	-5.26	2.23	12.25	-0.89	2.74	3.22	1.46	4.19	1.88
1954	4.31	5.58	6.88	5.36	7.08	3.81	3.11	2.58	5.09
1955	-3.59	4.52	2.11	6.31	4.22	3.98	0.61	2.01	2.78
1956	0.62	4.81	3.68	4.32	5.82	4.07	1.86	4.20	3.97
1957	1.64	4.56	2.46	4.58	3.79	4.13	0.54	2.86	3.47
1958	-1.06	2.16	6.02	1.78	4.95	3.87	-1.01	4.32	2.69
1959	-3.06	5.92	8.45	4.84	6.48	4.45	0.07	4.45	4.58
1960	5.34	9.06	0.59	9.15	4.48	5.08	3.01	2.87	5.86

Table A4.4 (cont.): *Annual volume growth of the value added of various activities (per cent) 1800–2000.*

	Agriculture and ancillaries	Manu- facturing	Building and construction	Transport and communica- tion	Trade, finance and business services	Real estate	Other private ser- vices	Public services	GDP
1961	2.04	7.74	6.80	4.01	7.65	5.00	2.75	4.12	5.81
1962	-0.25	7.18	4.44	4.92	5.43	5.58	0.04	2.78	4.71
1963	-4.04	5.70	6.31	3.65	6.93	6.76	3.56	6.51	5.00
1964	4.45	10.14	6.30	5.72	9.15	5.13	-0.07	2.64	6.78
1965	-0.11	7.74	3.61	5.72	5.22	5.07	0.38	3.64	5.00
1966	-3.57	3.35	3.58	4.25	4.25	5.93	0.54	3.92	3.22
1967	3.70	3.38	5.69	1.27	5.55	6.21	0.07	5.26	4.14
1968	-1.81	5.68	0.85	5.11	4.52	6.69	1.62	6.02	4.46
1969	-4.79	7.93	3.95	5.82	4.11	4.67	-0.64	6.09	5.02
1970	0.69	7.20	1.90	2.75	4.91	4.97	-5.01	8.19	5.00
1971	4.29	1.21	-0.74	4.49	3.08	3.50	-0.95	3.98	2.36
1972	-3.91	2.01	3.56	1.31	4.35	3.04	3.48	3.41	2.60
1973	-0.24	5.62	-0.70	6.92	5.01	3.04	4.49	1.81	3.76
1974	4.27	3.96	-8.35	10.90	4.29	2.49	6.45	4.58	3.63
1975	-6.80	-1.04	5.41	-3.70	2.32	2.13	4.92	4.17	1.01
1976	0.60	0.15	2.02	2.60	4.16	1.80	-0.22	4.22	2.09
1977	-5.62	-5.82	-1.34	1.93	-1.21	1.15	0.34	2.37	-1.44
1978	1.49	-2.51	-1.97	0.59	-0.97	1.46	-0.51	2.67	-0.13
1979	-0.84	4.80	0.82	3.01	4.01	1.34	1.10	3.54	3.20
1980	0.75	-2.26	-0.30	3.86	1.16	0.92	1.44	2.92	0.78
1981	-1.11	-4.19	-5.18	-0.38	0.63	1.18	4.45	1.85	-0.59
1982	2.69	-1.80	1.97	0.69	3.66	1.47	0.82	2.07	1.18
1983	4.73	3.07	-2.87	-2.05	3.11	0.96	1.27	2.03	1.78
1984	-0.24	4.84	5.01	4.14	3.65	1.07	-0.27	2.39	3.14
1985	-3.32	2.24	-0.30	0.47	4.53	1.37	0.34	1.20	1.72
1986	-1.05	2.86	2.02	2.76	6.56	1.16	2.10	1.00	2.69
1987	-3.03	3.46	4.06	3.47	6.99	1.65	6.17	0.18	3.15
1988	-0.67	2.65	2.56	4.00	5.80	1.57	1.97	1.28	2.80
1989	6.61	2.24	8.34	3.16	3.79	1.15	2.60	2.24	3.07
1990	0.46	0.35	1.93	5.59	1.43	1.41	-1.22	1.07	1.23
1991	-8.11	-5.21	-1.92	-1.15	0.69	0.93	0.57	0.42	-1.30
1992	-1.34	-2.55	-5.76	0.53	-3.74	1.33	1.93	-2.32	-1.96
1993	-0.73	1.01	-8.93	-5.35	-3.23	0.59	1.03	-2.28	-1.78
1994	2.29	11.32	-4.39	2.15	5.55	1.68	1.18	-1.08	3.56
1995	0.16	9.18	-0.79	4.91	4.30	0.44	5.53	-0.58	3.63
1996	0.22	2.96	-0.45	3.98	1.55	1.01	1.51	-0.28	1.48
1997	0.41	5.85	-3.27	7.56	5.40	2.01	2.85	-1.21	3.08

Table A4.4 (cont.): *Annual volume growth of the value added of various activities (per cent) 1800–2000.*

	Agriculture and ancillaries	Manu-facturing	Building and construction	Transport and communica-tion	Trade, finance and business services	Real estate	Other private ser-vices	Public services	GDP
1998	-1.48	6.44	1.47	4.42	4.83	0.91	10.36	0.71	3.93
1999	0.73	5.82	2.84	7.84	7.46	1.99	4.02	1.30	4.51
2000	0.45	6.21	1.68	5.33	7.06	2.46	7.41	-1.04	4.15

Source: See the main text.

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5.
Fiscal statistics for Sweden, 1670–2011[*]

Klas Fregert and Roger Gustafsson

5.1. Introduction

This chapter presents data on central government fiscal measures in Sweden, starting in 1670. Annual data on central government debt are presented from 1670, and on expenditures and revenues from 1719. The aim is to construct measures that are broad, meaningful, and widely used. In practice, this means constructing measures according to the principles in Sweden's current budget system.

Sweden is well suited for this attempt. First, it has been territorially and politically stable to an unusual degree since 1719, when a new instrument of government (*regeringsform*) was adopted with a representative government. Second, annual data are available in printed form for the whole period. We use Simonsson (1918) for the data on debt in 1670–1718. For the period 1719–1809 we use Åmark's (1961) monumental study based on archival material. For the period 1810-20 we use Rathsman (1855). From 1821 onwards we use government publications.[1] The sources are listed in "Data sources" at the end of the chapter.

The chapter is organized as follows. Section 2 presents the definitions used in the calculations. Section 3 describes the flow variables (expenditures, revenues and deficits), section 4 the construction and evolution of debt for the fiscal branch of the central government. Section 5 presents consolidated measures for the fiscal and monetary branches of the central government, including seigniorage. Section 6 concludes. A companion working paper, Fregert and Gustafsson (2005), describes the data in more detail in a series of appendices, as well as the institutional setting. The connections between Sweden's fiscal and monetary histories from 1668 to 1931 are analysed in Fregert and Jonung (1996).

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[*] The chapter is an update of Fregert and Gustafsson (2008).
[1] International data on government debt are tabulated in Reinhart and Rogoff (2009, appendix A.2).

5.2. Definitions[2]

5.2.1. The territory

Swedish territory has been constant since 1809. From the mid-1600s, the Swedish state ruled over Estonia, Livonia and Ingria, Pomerania, Wismar and Finland.[3] Estonia, Livonia and Ingria were lost in 1721, i.e. before our series of expenditures and revenues start. Separate budgets for Pomerania and Wismar were drawn up by their administrations and had to be approved by the Swedish Parliament. Occasionally, funds were transferred from Sweden to Pomerania, but not the other way. These expenditures appear in the Swedish budgets as "payment to fill the state deficit in Pomerania". Separate budgets for Finland were drawn up in Sweden from 1722 to 1792; however, as we cannot distinguish Sweden from Finland in the period 1793–1809, Finland is included in the figures for 1722–1809.[4] Furthermore, the year 1809 also represents a break in the data sources. From 1815 to 1905 Sweden was in a union with Norway with the Swedish king as head of state; each country had its own administration and budget but foreign policy was run by Sweden and the cost of the Swedish Ministry of Foreign Affairs was shared.

5.2.2. The central government

The central government is a part of general government, which in turn is a part of the public sector, as outlined in Figure 5.1 in accordance with the UN System of National Accounts (SNA) 2008. The defining characteristic of the central government relative to public corporations and social security is that it is financed mainly by taxes. A practical definition of the central government is the activities that appear in current official budgets. Thus, we do not include either public corporations, such as the national railway system and the social security system, or local and regional government. However, the public corporations' net revenues are included because they are owned by the central government.

In official government accounts, the central bank is treated like any other public corporation, such that only its transfers to the treasury enter the budget and borrow-

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2   See Blejer and Cheasty (1991) for a general discussion of definitions and measurement problems.
3   Finland was ceded to Russia in 1809 after a war. Pomerania was occupied by France in 1807 and ceded formally in 1815. Wismar was "lent" to Mecklenburg in 1803 against a down payment to Sweden; Sweden had the right to repurchase Wismar after 100 years at the price of the down payment compounded at 3 per cent annual interest; in reality this was a sale, since neither party foresaw a return to Sweden.
4   The size of the Finnish budget varied over the years but was usually less than 10 per cent of the total budget; the annual average in 1722-92 was 8.2%. Incomes and expenditures are given separately for Finland and Sweden in Åmark (1961, Table 1, pp. 130-141).

ing at the central bank is lumped together with other borrowing. This concept of the central government may be labelled the central government's fiscal branch. Since the central bank has a special position as a source of finance for the central government's fiscal branch, for some macroeconomic purposes it may be preferable to consolidate the central government's monetary and fiscal branches, which we do in section 6.

Figure 5.1. *The public sector*
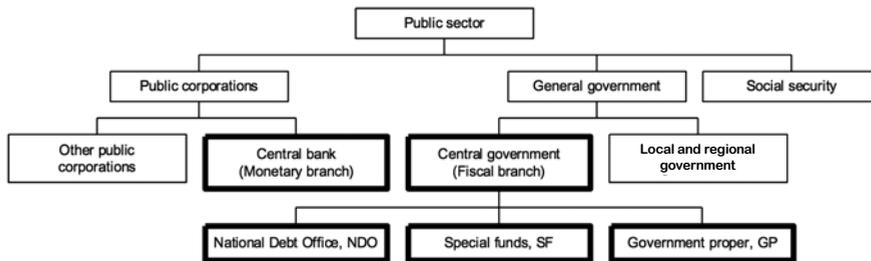
Much of the practical work is done on the consolidation of entities that today constitute the central government's fiscal branch but earlier were separated institutionally and therefore had separate "off-budget" accounts. Figure 5.1 and Table 5.1 give an overview of how revenues and expenditures have been consolidated.

The central government proper (*Statsverket*), with its own budget and accounts, has always been a subset of our concept the central government. The official budget has been consolidated gradually. The split was largest before 1809, when a number of special funds existed (see Table 5.2). The special funds and the National Debt Office had their separate budgets and earmarked revenues. In 1809, the special funds disappeared as separate agencies, and the National Debt Office's accounts were included in the official budget. An ancient agency, the National Board of Trade (*Kommerskollegium*), had previously been financed within the budget but appeared off budget from 1809 to 1874.[5] It has been included, though the numbers are insignificant.

After 1809, the only major item outside the budget has been government lending to public corporations for investment purposes and later also to private companies (private railways) and individuals (mortgage lending and student loans). Most of the lending was undertaken by the National Debt Office, though the government proper occasionally also lent some means. The traditional term for this lending has been net lending.[6] In 1912–1937 and from 1997, net lending was included in the budget. For the periods 1854–1911 and 1938/39–1995/96 we add net lending to the expenditure side.

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5   From 1809, *Konvojfonden* and *Krigsmanhuskassorna* were included in the government proper (*Statsverket*), while *Manufakturfonden* was administered by the National Board of Trade.

6   This is the term used in Blejer and Cheasty (1991), see also below on the definition of the deficit.

Table 5.1. *Consolidation of the central government 1722–2003*

Years	Revenues	Expenditures
1722–1766	GP + NDO + SF	GP + NDO + SF
1766–1788	GP + SF	GP + SF
1789–1809	GP + NDO + SF	GP + NDO + SF
1810–1853	GP + SF	GP + SF
1854–1911	GP + SF (1854 – 1873)	GP + SF (1854 – 1873) + NL (1854 – 1911)
1912–2011	GP	GP + NL (1938/39 – 1995/96)

Note: GP = Government proper, NDO = National Debt Office, SF = Special Funds, NL = Net lending.

Table 5.2. *Special funds.*

Name in Swedish	Explanation	Years	Maximum revenue, dsm (year)	Maximum debt, dsm (year)
Generalförrådskassan	Funding of temporary military needs	1721–1775	114,795 (1766)	46,887 (1740)
Krigsmanshuskassorna	Pension fund for retired military	1722–1809	109,284 (1809)	74,982 (1729)
Konvojfonden	Military convoys to escort Swedish ships, financed by export and import duties	1726–1809	440,550 (1778)	2,107,253 (1776)
Landhjälpsfonden	Subsidized lending to manufacturing, financed by import duties	1727–1739		
Manufakturfonden	Successor to Landhjälpsfonden	1739–1766	373,346 (1750)	3,380,381 (1757)
Manufakturdiskont-fonden	Lending agency for manufacturers	1756–1776		
Slottsbyggnadsfonden	Tax financing of the new royal castle in Stockholm	1728–1777	114,828 (1756)	
Kommerskollegium	National Board of Trade	1809–1874		

Source: Åmark (1961).

5.2.3. Government accounts and deficit measures

Until 1980 the government accounts have been presented in the form of financial statements divided into two equal-value columns of sources and uses of funds. This corresponds to the one-period central government budget constraint, which shows sources of funds as being equal to uses:

$$\underbrace{T_t + CBT_t + L_t}_{Sources} = \underbrace{G_t + I_t + i_t B_{t-1} + \Delta A_t + AM_t}_{Uses}, \tag{1}$$

The sources of funds consist of: T_t the government's revenues from taxes, income from public corporations and sales of real assets (privatizations), CBT_t revenue transfers from the central bank, and L_t new loans. Uses of funds consist of: G_t current expenditures (consumption and transfer payments), I_t real investments and long-term financial investments (net lending), $i_t B_{t-1}$ nominal interest payments on government debt B_t, ΔA_t changes in short-term financial assets, and AM_t amortization of debt (buy-backs and principal payments).

The change in government debt in turn is equal to new loans, L_t, minus amortization of government debt, AM_t, so (1) may be written:

$$\underbrace{T_t + CBT_t + \Delta B_t}_{Sources} = \underbrace{G_t + I_t + i_t B_{t-1} + \Delta A_t}_{Uses}. \qquad (2)$$

We calculate the *total* budget deficit as total expenditures minus total revenues, also commonly labelled the government's borrowing requirement. Rearranging (1) and (2) gives the link between the total deficit and its financing:[7]

$$DEF_t = (G_t + I_t + i_t B_{t-1}) - (T_t + CBT_t) = L_t - AM_t - \Delta A_t = \Delta B_t - \Delta A_t. \qquad (3)$$

A positive deficit is thus financed by increasing government debt or by selling financial assets.[8] An increase in debt that exceeds required borrowing, DEF_t, leads to an increase in short-term financial assets, ΔA_t. If the government is running a surplus, it amortizes debt or accumulates financial assets.

Changes in financial assets arise naturally from the uneven timing of revenues, expenditures and borrowing operations. They can also arise from the planned delay of expenditures from one year to the next as some revenues are allocated for use over more than one fiscal year. These means are then carried across years as "unspent balances" or "reservations". The change in short-term financial assets is usually small and consists mostly of changes in the National Debt Office's and the central government proper's checking accounts at the central bank.

The source-use account statement is presented in Table 5.3. Identifying the deficit involves separating revenues and expenditures, on the one hand, from financing operations, on the other. By convention, expenditures and revenues, the left-hand side of equation (3), are said to appear "above the line", and financing operations, the right-hand side, appear "below the line", where the line is the total deficit line drawn in Table 5.3.

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7   This is not a true accounting identity, since it leaves out changes in debts and assets unrelated to transactions. With real data accounting errors must also be added.

8   Financing by high-powered money does not appear explicitly as all new debt, whether sold to the public or the central bank, is included for the fiscal branch (the official budget). When the fiscal and monetary branches are consolidated, high-powered money appears explicitly as shown in section 5.

Table 5.3. *The government budget and the total deficit line*

Sources	Uses	Net: Uses– sources
Revenues: taxes, sales of real assets, income from public corporations, T_t	Current expenditure, G_t	
Transfers from the central bank, CBT_t	Investment, I_t	
	Interest payments, $i_t B_{t-1}$	
Subtotal	Subtotal	Total deficit: borrowing requirement
New loans, L_t	Short-term financial asset accumulation, ΔA_t	
	Amortization, AM_t	
Subtotal	Subtotal	Total surplus
Total Sources	Total Uses	0

The table can be simplified by netting sources and uses below the line and putting the resulting net amount, that is, the total deficit, on the source side, as in Table 5.4. From a practical point of view, calculating the deficit as expenditures minus revenues from the source-use statement amounts to identifying items above the line and ignoring the rest.

Table 5.4. *The government budget and the total deficit line with the budget deficit on the source side.*

Sources	Uses	Net: Uses– sources
Revenues: taxes, sales of real assets, income from public corporations, T_t	Current expenditure, G_t	
Transfers from the central bank, CBT_t	Investment, I_t	
	Interest payments, $i_t B_{t-1}$	
Subtotal	Subtotal	Total deficit: borrowing requirement
Total deficit: borrowing requirement		Total surplus
Total Sources	Total Uses	0

5.2.4. Conversion to a common currency unit

We present nominal amounts in thousands of SEK (krona), Sweden's currency unit since 1873. The currency units used in the original sources before 1873 and their conversion rates into SEK are presented in Table 5.5.

Table 5.5. *Conversion of units in government accounts into SEK*

Period	Currency unit in accounts	Conversion rate, account units to kronor
1718–1776	Daler silvermynt (dsm)	1 dsm = 1/6 rdr sp = 1/6 SEK
1777–1789	Riksdaler specie (rdr sp)	1 rdr sp = 1 rdr rgs* = 1 SEK
1789–1803	Riksdaler specie (rdr sp)	Floating exchange rate rdr sp and rdr rgs**, 1 rdr rgs = 1 SEK.
1803–1809	Riksdaler specie (rdr sp)	1 rdr sp = 1.5 rdr rgs = 1.5 SEK
1809–1857	Riksdaler banco (rdr bco)	1 rdr bco = 1.5 rdr rgs = 1.5 SEK
1858–1873	Riksdaler riksmynt (rdr rmt)	1 rdr rmt = 1 rdr rgs = 1 SEK
1873–2011	SEK (Krona)	

*rdr rg = riksdaler riksgäld.

** Floating exchange rate from Edvinsson (2010, Table A4.5, p. 209, column "This study").

Table 5.5 gives the conversion factors used to convert the original amounts into SEK. Since parallel units of accounts were used in some periods, conversion into a common unit of account over time can follow different paths depending on which particular unit of account is chosen for a given period. We follow the practice of choosing the units of account that are deemed to have been most prevalent in actual use. The construction is described in Edvinsson (2010, p. 189) following Jörberg (1972, pp. 78–85), who in turn built on Heckscher (1942). The nominal SEK series thus constructed can be deflated with the consumer price index according to Edvinsson and Söderberg (2010, pp. 417–418) or with nominal GDP according to Edvinsson (2014), since they follow the same sequence of units of account.

The monetary units in the government accounts follow another sequence of units of account. Hence the amounts in the government accounts have first been converted into the most prevalent unit of account and then converted into SEK. Conveniently, the units of account in prevalent use between 1777 and 1873 link one to one to SEK according to: 1 riksdaler specie (1777–1788) = 1 riksdaler riksgälds (1789–1854) = 1 riksdaler riksmynt (1855–1872) = 1 SEK (1873-). Thus, from 1777 the procedure amounts to translating the nominal amounts to the one-to-one series of units of account. Before 1777 the main unit of account was daler silvermynt, which has been translated into SEK using the official conversion rate: 6 daler silvermynt = 1 riksdaler specie.[9]

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9   "Daler silvermynt" were originally units of silver coins but became units of account for copper coins and copper plates in the 17th century and units of account for Riksbank notes in the early 18th century. The Riksbank notes were irredeemable from 1745. Thus "daler silvermynt" is a generic term for in reality separate units of account such as: "daler silvermynt in copper coins" or "daler silvermynt in irredeemable Riksbank notes". The generic term "daler silvermynt" is appropriate as a reference to the prevalent unit of account. In addition, when the specific unit of account changed, its relation to the old one was initially one to one. For example, copper coins were originally stamped with "daler silvermynt" according to the relative value of copper to silver.

From 1789 until 1803 the nominal amounts in riksdaler specie have been translated into riksdaler riksgälds, and hence into SEK, by using the floating exchange rate between them according to the exchange rate in Edvinsson (2010, Table A4.5, p. 209, column "This study"). In 1803, the riksdaler riksgäld became convertible into riksdaler specie at 1.5 riksdaler riksgäld per riksdaler specie. When the riksdaler notes denoted in riksdaler specie became inconvertible in 1808, they were relabelled riksdaler banco, still with the exchange rate 1.5 riksdaler banco per riksdaler riksgäld. Thus the nominal values given in riksdaler specie and riksdaler banco in the government accounts from 1803 to 1857 have been multiplied by 1.5.

5.3. Expenditures, revenues, and deficits

We present aggregate revenues and expenditures from 1719 as potential measures of the central government's claims on the total economy. We do not present any disaggregated data because the classification schemes in the government accounts have varied over time and that poses a number of difficulties in the creation of consistent long series.

While the possibility that we have missed some transactions altogether cannot be ruled out, we believe this is a minor problem. A potentially greater problem lies in changes in the degree of netting between incomes and revenues. Ideally, all revenues and expenditures should be recorded gross. The nettings have occurred in particular in transfer systems, which are financed by special taxes and only net contributions have appeared in the budget. A significant modern example of netting is transfers to local governments financed by central government personal income taxes, where only the net revenues are recorded in the budget. In recent years, the budget has gradually moved towards gross numbers for all transfer systems.

We have calculated the net revenues for government corporations (*affärsdrivande verk, uppdragsverksamhet hos myndigheter*) in 1810–1911 in order to conform to the data thereafter. The rationale is that these expenditures are truly benefit financed and therefore should be treated as commercial activities. Finally, it should be noted that netting does not alter the deficit calculations as it affects revenues and expenditures by the same amount.

Another problem is the degree to which the budget has been recorded on a cash or an accrual basis. This is a minor problem, since only the timing, not the amount, is affected. Our overall impression, documented below, is that the budget-makers strove for cash-based accounting until 1993. Major differences occur on the expenditure side. Transfer payments were generally on a cash basis, while other expenditures were often on an accrual basis. An explicit attempt to use cash-based accounting also for the expenditure side was introduced in 1917.

We divide the whole period into four sub-periods, corresponding to different source materials. In the first period, 1721–1809, only ex ante budget data for expenditures and

revenues exist.[10] The second period is 1810–20. The third period is 1821–1911 when the first official closed budget accounts were published. The final period covers 1912 until today. Figure 5.2 shows expenditures and revenues as shares of nominal GDP.

Figure 5.2. *Central government expenditures and revenues 1722–2011 as shares of nominal GDP*
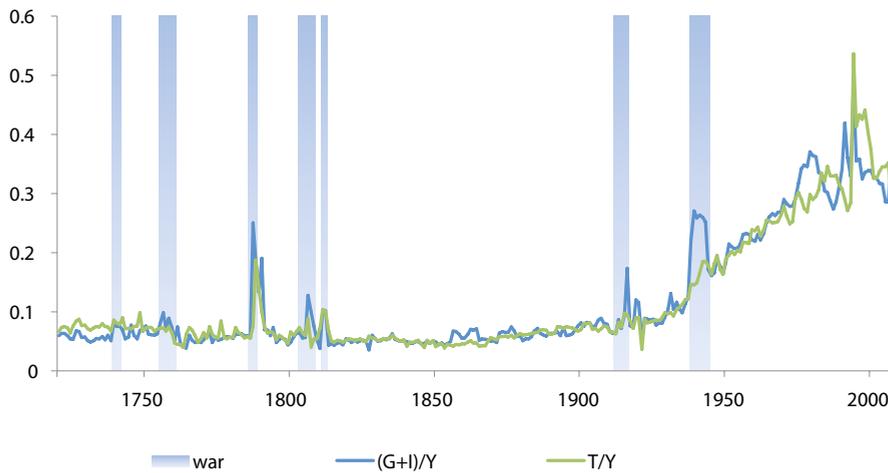
Sources: Expenditures and revenues: data appendix; nominal GDP: Edvinsson (2014, Table A4.1: Current prices, GDP by activity); wars: Wikipedia, "List of wars involving Sweden".

Note: The nominal GDP values 1722–1776 in daler kopparmynt have been converted into SEK by applying the exchange rate 18 daler kopparmynt equal to 1 SEK, as explained in Edvinsson (2010, p. 189). World Wars I and II are marked but it should be noted that Sweden was neutral, not a belligerent.

5.3.1 The period 1722–1809

The general format of the government budget (*Riksstaten*), that is, ex ante measures, is given in Åmark (1961, Tables 1, 16 and 26). It is a statement in the form of sources and uses of funds, constructed such that sources equal uses. The terms used were requisitions (*rekvisitioner*) for sources of funds and "orders" (*anordningar*) for uses. The residual, whereby the two sides balanced, is the accounting item "State deficit" (*statsbrist*); it represents the means that were lacking when the budget was

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10 The first general ex post account for the whole central government in Sweden was constructed for 1622 by a Dutchman, Abraham Cabeljau. General accounts were constructed almost annually until 1677 and between 1688 and 1711. The increasing size and complexity of the government, in combination with the mix of monetary and in-kind payments, led to the abandonment of general accounts. Attempts to reestablish them recurred through the 18th century, but without success. In 1810 the Riksdag decided to create general accounts and the first one was published for 1821. See Stuart and Rystedt (1905, Chapter 1) and Åmark (1961, pp. 72–75).

drawn up but are anticipated to be provided through some combination of loans, increased revenues or decreased expenditures.

Table 5.6. *The government budget (Riksstaten) 1719–1809.*

Sources (rekvisitioner)	Uses (anordningar)	Net: Uses–Sources
This year's means, TYM_t (*Löpande årets medel*)	Primary expenditures, PE_t	
	Interest payment part of debt service, $i_t B_{t-1}$ (*Skuldfordringsstaten*)	
Subtotal	Subtotal	Total deficit
Last year's means, LYM_t (*Förra årens medel*)	Amortization part of debt service, AM_t (*Skuldfordringsstaten*)	
Kept from last year, KLY_t (*Behållet till första kvartalets behov (1722–1792)*) (*Behållet i statens kassor (1793–1809)*)	Last year's state deficit, $LYSD_t$ (*Fyllnad i föregående års statsbrist*)	
New loans, L_t (*Lånemedel*)	Kept to next year, KNY_t (*Behållet till nästa års stat*)	
State deficit, SD_t (*Statsbrist*)		
Subtotal	Subtotal	Total surplus
Total Sources	Total Uses	0

Note: Debt service appears as a sum in the budgets and its division has to be estimated as described in the text. Primary expenditures are the sum of the categories: Civilian (*Civila behov*), Military (*Försvarsväsendet*), Court (*Hovet*) and Payments to Pomerania (*Fyllnad i Pommerska staten*). Debt service is presented as a total in Åmark (1961, Tables 16 and 60).

To define the measures of the total and primary deficits, it is useful to formalize the bookkeeping identity. Using the abbreviations in Table 5.6, we have:

$$\underbrace{TYM_t + LYM_t + KLY_t + L_t + SD_t}_{Sources} = \underbrace{PE_t + AM_t + i_t B_{t-1} + LYSD_t + KNY_t}_{Uses}. \quad (4)$$

The sources of funds consist of this year's total funds ($TYM_t + LYM_t + L_t + SD_t$) plus funds carried over from last year (KLY_t). The uses of funds consist of primary expenditures (PE_t) plus debt service ($AM_t + i_t B_{t-1}$), that is, amortization and interest payments, payment for last year's state deficit ($LYSD_t$) plus the means kept for next year (KNY_t).

If the projected state deficit is covered by borrowing, the total deficit, computed as expenditures minus revenues, is:

$$DEF_t = (PE_t + i_t B_{t-1}) - (TYM_t + LYM_t) = \quad (5)$$
$$= L_t + SD_t - AM_t - LYSD_t - (KNY_t - KLY_t)$$

The right-hand side gives the deficit from the financing side, corresponding to $\Delta B_t - \Delta A_t$ as in equation (3). The budget only shows total debt service, which must be divided into amortization (not included in the deficit) and interest payments (included). For the period 1722–77 we have approximated interest payments on central government debt from known interest rates and debt amounts for the different classes of debt. From 1778, interest payments have been presented annually by the National Debt Office.[11]

The item "payment of last year's deficit" appears as a balancing item on the use side in some years between 1765 and 1792. We are not sure how this item should be interpreted. If it represents expenditures which were included in the previous year's expenditures but not paid for in that year, it constitutes arrears that should be booked above the line as true expenditures this year and subtracted from the previous year's expenditures. Compared to booking the item below the line, some of the deficit would be shifted forward in time to represent a cash, as opposed to an accrual, measure of the deficit. If, on the other hand, it represents new expenditures not accounted for in the previous year's budget, it should be added to this year without a deduction last year. The description in Åmark (1961, p. 166) of the term as a balancing item suggests the first interpretation and we have therefore not included it, that is, we have put it below the line as a purely financial transaction. The cumulative deficit in this case will be the same as if we had shifted it between the years.

Since the figures are ex ante, the calculated deficit will not be equal to the actual deficit. A priori, there is no reason to believe that the budget figures systematically under- or overestimate the actual deficit. First, in that the budget was a political document and thus likely to err on the optimistic side, the deficit may be underestimated. Second, the deficit may also be underestimated because revenues may be overestimated due to double counting between "this year's means" (TYM_t) and "last year's means" (LYM_t).[12] Finally, the deficit may be overestimated to the degree that the state deficit is covered by expenditure cuts or revenue increases, instead of by borrowing. A posteriori, the calculated budget deficits do not differ systematically from the change in debt, as shown in Fregert and Gustafsson (2008, section 5), which indicates that there were no systematic errors.

Total revenues and expenditures are presented in the appendix and in Figure

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11 See appendix G in Fregert and Gustafsson (2005) for the exact calculations.

12 "This year's means" refers to expected revenues during the fiscal year emanating from taxes formally levied in the same year; "last year's means" refers to taxes levied in previous years but collected this year. According to Åmark (1961, p. 99), there may be some double counting because not all "this year's means" will actually be collected during the year and thus appear later as "last year's means". In principle, there should be no double counting because the instructions for the construction of the budget entailed estimating the likely actual collection based on previous experience. Åmark argued that the revenue calculation was more likely to overestimate than underestimate and thus there is probably some double counting.

5.3.[13] Large positive or negative deficits correspond to large changes in debt. Large positive deficits occurred in the periods of war in the early 1790s and in 1808–09. The negative deficit in 1803 is due to the revenue connected with the transfer of the debt in *riksgäldssedlar* to the Riksbank, as explained in section 4.3.

5.3.2. The period 1810–20

For 1810 to 1820 we use the figures in Rathsman (1855) and adjust them to be consistent with later periods. The closed account figures given in Rathsman cover only a subset of the activities used in the official accounts from 1821. For the overlapping year 1821, the sum of revenues in the official accounts is 40 per cent larger than in Rathsman. Since we lack information on the missing revenues, we chain Rathsman's series to the official figures by multiplying Rathsman's figures by 1.4. Regarding expenditures, Rathsman calculated them for 1810 but for the period 1811–20 he just submitted budget data, which contain only about half of the true expenditures in this period. Another complication during this period is the so-called "war fund" (1810–17), for which the exact timing of revenues and expenditures is uncertain. We use a summary printed in the official records of the parliamentary session of 1817–18, *Rikets ständers revisorer (1817–1818)*. To arrive at the central government's total expenditures, we sum the recalculated revenue figures from Rathsman, the revenues of the "war fund" and the revenues of the National Board of Trade (*Kommerskollegium*) and then add the change in government debt. That is, we calculate total expenditures residually as the sum of revenues plus the change in government debt ($G_t + I_t + i_t B_{t-1} = T_t + CBT_t + \Delta B_t$).

5.3.2. The period 1821–1911

The *Riksdag* of 1809–10 decided that a general ledger (*Rikshuvudbok*) of the total Swedish government was to be set up; the work was not completed until 1821, when the first account was constructed (published in 1822). We use the published closed accounts (*Capital-Räkning till Riks-Hufvud-Boken* 1821–1853*, Kapital-Konto till Riks-Hufvud-Boken* 1854–1911).

   The published general ledgers were constructed as a combined balance sheet and expenditure-revenue statement called the Capital Account, which includes the government proper and the National Debt Office. It was set up as in Table 5.7.

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13 Separate data for the government budget and the sum of the National Debt Office, the special funds and other "off-budget" items are available in appendix H in Fregert and Gustafsson (2005).

Table 5.7. *The capital account from the general ledger (Capital-Räkning till Riks-Hufvud-Boken), 1821–1853*

Debit	Credit
Closing balance, credit t–1 = Opening balance debt, B_{t-1}	Closing balance, debit t–1 = Opening balance assets, $A_{t-1}^R + A_{t-1}^{NL} + A_t$
Expenditures, $G_t + i_t B_{t-1}$	Revenues, $T_t + CBT_t$
Closing balance assets, A_t^{Total}	Closing balance debt, B_t
Total debit =	Total credit =
$B_{t-1} + G_t + i_t B_{t-1} + A_t^R + A_t^{NL} + A_t$	$A_{t-1}^R + A_{t-1}^{NL} + A_{t-1} + T_t + CBT_t + B_t$

The two sides in Table 5.7 are equal according to the bookkeeping identity:

$$B_{t-1} + G_t + i_t B_{t-1} + A_t^{Total} = A_{t-1}^{Total} + T_t + CBT_t + B_t, \qquad (6)$$

where total assets at the end of period t, A_t^{Total}, are divided into real assets A_t^R, net lending A_t^{NL} and short-term financial assets A_t.

The format of the accounts changed in 1854. First, instead of being presented as a single account, the general ledger was divided into ten funds, which grew to over 80 in 1911. From each fund, balances, expenditures and revenues were transferred to and summarized in the capital account. Second, the ledger was set up with net assets (or net debts), instead of assets and debts.

To calculate the deficit as the borrowing requirement as described by equation (2), we transform the statement into a "Sources and uses" statement, as described in Table 5.8. The opening and closing assets are moved to the Uses (expenditure/debit) side and, likewise, the opening and closing debt to the Sources (revenue/credit) side.

Table 5.8. *Capital account rearranged as sources and uses*

Sources	Uses	Net: Uses – sources
Revenues, $T_t + CBT_t$	Expenditures, $G_t + i_t B_{t-1}$	
	Investment, $\Delta A_t^R + \Delta A_t^{NL}$	
Subtotal	Subtotal	Total deficit
Borrowing, ΔB_t	Financial asset change, ΔA_t	
Total	Total	0

The change in real assets and long-term financial assets corresponds to investments, I_t, that is, real investments and net lending, $\Delta A_t^R + \Delta A_t^{NL}$. We then get the total deficit as:

$$DEF_t = (G_t + i_t B_{t-1} + \Delta A_t^R + \Delta A_t^{NL}) - (T_t + CBT_t) = \Delta B_t - \Delta A_t, \qquad (7)$$

where the right-hand side shows the financing of the deficit as $\Delta B_t - \Delta A_t$.

In practice, however, this procedure is not possible, since the change in real assets

and net lending reported in the capital account does not measure true investment expenditures (I_t). First, assets appeared in the capital account long after the investments had been made. A prominent example is the national railways, which entered the general ledgers in 1876 at a value of 165.5 million SEK. When new assets were introduced in the general ledger, they were balanced by an entry called "additional opening balance". Second, some assets were never included in the general ledger. Two examples are investments in telegraphs and telephones and in hydroelectric power and canals. The sum of these investments in the period 1891–1911 was approximately 68.5 million SEK. In addition, the government lent funds for investments in private railways. During the period 1854–1911, these investments totalled approximately 89.2 million SEK.

We have therefore calculated the investment expenditures separately and added them to the other expenditures. Some investments were paid by the government proper and some, the largest part, by the National Debt Office.[14] We calculate the total figure (for the period 1854–1911) to 598.2 million SEK. The part paid out from the government proper can be retrieved from the general ledgers.[15] The problem is what to include as investment expenditures. The most obvious part is transfers to the national railways fund, which total 133.4 million SEK during 1876–1911. We also add government appropriations, which were transferred to various funds, for a total of 56.6 million during 1865–1911.[16]

Expenditures and revenues have been recalculated to correspond to the level of netting in later periods, since all revenues and expenditures, including government corporations, are given gross. Thus, expenditures and revenues are overestimated relative to later periods. For example, all operational expenditures for the national railway system were entered on the expenditure side of the capital account, while operational revenues were entered on the revenue side. From 1912, only the operational surplus, that is, net revenues, was entered on the revenue side. This made it necessary to compute net revenues for all government corporations and similar activities that are included later as net revenues.[17]

Due to incomplete data for the period 1810–54, we have approximated interest payments in accordance with $i_t B_{t-1} = 0.04 \times B^{IB}_{t-1}$, where B^{IB}_t is interest-bearing debt, most of it to the Riksbank at 4 per cent interest. From 1855, interest payments are given in the capital accounts, to which we have added the interest payments of the National Board of Trade.

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14   Data on investment expenditures paid out by the National Debt Office are obtained from the official records of parliamentary sessions.

15   Specifically, we use *Statsregleringsfonden* to identify transfers to other funds, that is, transfers that increase assets in other funds but have no impact on current expenditures.

16   The most notable were appropriations to *Arbetarförsäkringsfonden* (22.4 million SEK). Annual figures for investment expenditures are presented in appendix I in Fregert and Gustafsson (2005).

17   The netting procedure is exemplified and explained more thoroughly in Fregert and Gustafsson (2005).

The total expenditure, revenue and deficit figures of the central government, that is, the government proper plus the National Board of Trade and the War Fund, are presented in the appendix.[18]

5.3.3 The period 1912–2010

Since 1912 the budget and the closed accounts have been presented as a source-use statement of flows only.[19] Between 1923/24 and 1995/96 the accounts were made up for broken fiscal years, beginning on July 1st. The 1923 fiscal year ran from January 1st to June 30th and fiscal 1995/96 ran from July 1st 1995 to December 31st 1996. This explains the small figures for 1923 and the large figures for 1995/96.[20]

The structure of the budget between 1912 and 1937/38 is presented in Table 5.9. As a consequence of the 1911 budget reform, all government revenues and government expenditures, including loans, amortizations and expenditures for increases in state capital assets (investment expenditures), were brought together in a single budget. The purpose was to achieve a more uniform arrangement of the budget that balanced expenditures and revenues against each other. Within the budget, current revenues and expenditures were to balance and loans were only to be used for capital expenditures.

We calculate the deficit as:

$$DEF_t = (EC_t + IE_t) - (RP_t + RPF_t + CBT_t), \qquad (8)$$

where EC_t is current expenditure, IE_t is expenditure to increase state capital assets minus amortization of government debt (AMT_t), RP_t is revenue proper and RPF_t is receipts from productive funds (net revenues from public corporations).

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18 Separate funds data are available in appendix J in Fregert and Gustafsson (2005).

19 For a discussion on the Swedish budget in the 20th century see Lane and Back (1989).

20 We have not adjusted the figures for 1923 and 1995/96 here as the user may wish to choose the method for this.

Table 5.9. *The budget of the Swedish State, 1912–1937/38*

Sources (Swedish term)	Uses (Swedish term)	Net: Uses-sources
Revenue proper, RP_t (*Egentliga statsinkomster*)	Expenditure current, EC_t (*Verkliga utgifter*)	
Receipts from productive funds, RPF_t (*Inkomster av statens produktiva fonder*)	Expenditure for Increase of State Capital Assets, excl. amortization, IE_t (*Utgifter för kapitalökning, exkl amortering*)	
Share in the profit of the Riksbank, CBT_t (*Andel i Riksbankens vinst*)		
Subtotal	Subtotal	Total deficit
Capital assets employed (*I anspråk tagna kapitaltillgångar*)	Amortization (*Avbetanling å statsskulden*)	
Loans (*Lånemedel*)	Change in the cash fund (*tillfört kassafonden*)	
Unspent balances from last year (*Minskning av behållningen å reservationsanslagen*)	Unspent balances kept to next year (*Ökning av behållningen å reservationsanslagen*)	
Subtotal	Subtotal	Total surplus
Total	Total	0

Note: The items "Unspent balances from last year" and "Unspent balances kept to next year" refer to transfer of funds between years emanating from income items which the state could choose whether to use in the current or future fiscal years. Only the net amount is shown and appears as a positive number on either the source or the use side. The sum of this net amount and the change in the cash fund represent the net change in financial assets (ΔA).

In 1937 it was time for a new budget reform. The budget was now divided into two parts, a current or so-called "working budget (*driftbudget*)" with revenues and current expenditures and a "capital budget (*kapitalbudget*)". The requirement that the current budget should be balanced yearly was replaced by a requirement to balance it in the medium term. This turned the working budget into a tool for stabilizing business cycles. Table 5.10 describes the two budgets. In order to compute a total deficit, they have to be consolidated. This is done according to:

$$DEF_t = [EWB_t + \Delta SGC_t + (CI_t - RI_t)] - RWB_t , \qquad (9)$$

where EWB_t is total expenditures in the working budget, ΔSGC_t is "changes in standing government credits to public enterprises"[21] representing net lending outside the budget, CI_t is capital investments, RI_t is repaid investments and RWB_t is total reve-

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21 The data on changes in standing government credits are taken from the balance sheets of the National Debt Fund.

nue in the working budget. A summary table of the total budget appeared from 1965/66, shown as in Table 5.11, with the deficit on the source side and a new division of the categories above the line. Our method, applied from 1938/39 to 1979/80, gives the same result.

Table 5.10. *The budget of the Swedish State, 1937/38–1979/80*

Sources (Swedish term)	Uses (Swedish term)	Net: Uses-sources
Current revenue, (*Egentliga statsinkomster*)	Current expenditure (*Egentliga statsutgifter*)	
Receipts from State Capital Funds (*Inkomster av statens kapitalfonder*)	Expenditures on State Capital Funds (*Utgifter för statens kapitalfonder*)	
Subtotal working budget, RWB_t	Subtotal working budget, EWB_t	Total working budget deficit
	Capital Investments, CI_t (*Investeringsbemyndiganden*)	
	Repaid Investments etc., RI_t (*Avgår kapitalåterbetalning*)	
Subtotal capital budget	Subtotal capital budget	Total capital budget deficit
Subtotal working and capital budget	Subtotal working and capital budget	Total budget deficit
Capital means* (*Kapitalmedel*)		
Kept from last year (*Reservationer till föregående budgetår*)	Kept to next year (*Reservationer till följande budgetår*)	
Change in cash fund** (*Underskott att avföras å statens budgetutjämningsfond*)	Savings on capital budget* (*Besparingar som regleras inom riksgäldsfonden*)	
Subtotal	Subtotal	Total surplus
Total	Total	0

* Appears only in capital budget. ** Appears only in working budget.

Table 5.11. *Summary of the total budget of the Swedish State 1979/80.*

Sources (Swedish term)	Uses (Swedish term)	Net: Uses-sources
Current revenue	Expenditure	
(*Skatter, avgifter m.m.*)	(*Utgiftsanslag*)	
Receipts from State Capital Funds	Other uses of funds	
(*Inkomster av statens kapitalfonder*)	(*Beräknad övrig medelsförbrukning)*	
Other financing		
(*Beräknad övrig medelsförbrukning*)		
Subtotal	Subtotal	Budget deficit
Budget deficit		Budget surplus
(*Underskott*)		
Total	Total	0

A proposal for a modernization of the government budget was put forward in 1977 and adopted from the fiscal year 1980/81. The earlier system with separate working and capital budgets was replaced by a uniform state budget, as shown in Table 5.12. Items below the line cease to be explicit and are replaced by the borrowing requirement, that is, the total deficit on the source side, as in Table 5.4.

Table 5.12. *The budget of the Swedish State, 1980/81–*

Sources (Swedish term)	Uses (Swedish term)	Net: Uses-sources
Tax revenue	Expenditure	
(*Skatter*)	(*Utgiftsanslag*)	
Non-tax revenue	Other expenditure	
(*Inkomster av statens verksamhet*)	(1980/81 – 1989/90)	
	(*Övrig medelsförbrukning*)	
Capital revenue	Adjustment to cash basis	
(*Inkomster av försåld egendom*)	(1997 –) (*Kassamässig korrigering*)	
Loan repayment	National Debt Office net lending	
(*Återbetalning av lån*)	(1997–)	
	(*Riksgäldskontorets nettoutlåning*)	
Computed revenue		
(*Kalkylmässiga inkomster*)		
Grants from the EU (1994/95 –)		
(*Bidrag från EU*)		
Subtotal	Subtotal	Total deficit (borrowing requirement)
Borrowing requirement (= total deficit)		
Total	Total	0

However, not all let lending was consistently included in the budget. Between 1980/81 and 1989/90, net lending, ΔSGC_t, was included under the heading "other expenditure". From 1990/91, ΔSGC_t was incorporated in the National Debt Office's net lending and disappeared from the budget. In addition, in 1985/86 the National Debt Office began its own net lending outside the budget. In 1997, all net lending was again included in the budget. Thus, during 1985/86–1995/96 we must augment the expenditures with net lending from the National Debt Office.

Finally, a cash correction factor was added to the expenditure side in 1997. Adding the National Debt Office's net lending and the cash correction factor makes the budget deficit equal to the central government's borrowing requirement. The deficit is then calculated straightforwardly as total expenditures minus total revenues. The expenditure, revenue and deficit figures for the period 1912–2011 are presented in the appendix.

5.4. Government debt

Currently there are three official measures of central government debt in Sweden. We report total gross debt at par value, which is currently published by the Swedish National Debt Office (*Riksgäldskontoret*). The Swedish National Financial Management Authority (*Ekonomistyrningsverket*) reports total gross debt at par value minus the government debt holdings of government authorities, so-called consolidated government debt, as well as total gross debt at par value.[22] Finally, Statistics Sweden (*Statistiska centralbyrån*) reports consolidated government debt at market value, in accordance with EU and UN national account standards.

There is no single best measure of government debt. Here we focus on the consistency of the changes in debt and the deficit. Consistent measures can be constructed with either par values or actual values. If government debt is sold initially below par, that is, at a discount, the flow of money from new bond sales will be less than the change in debt. The change in debt at par value will then correspond to the deficit, *provided* the discount is included as an expenditure. This has been the case in the Swedish budget at least since 1912. By the same token, if the discounts are not included in the budget, the deficit will be smaller than the change in debt at par value (and equal to the change in debt at market value).

Robert Barro (1987) argued that, due to large discounts on issues of new debt, the nominal value of government debt in the United Kingdom gives an exaggerated picture of the true debt burden in the 18th and 19th centuries. In principle the govern-

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22 Official consolidated debt does not correspond to consolidated central government debt as defined in section 6, since the debt held by the Riksbank is not subtracted in the official measure. The official consolidated government debt constitutes the central government's contribution to the public sector debt that is used in the Maastricht criteria.

ment can choose any nominal value of new debt issues and then sell at a discount.[23] To calculate a more realistic debt measure, he instead used the cumulated deficits as the measure of government debt from a benchmark in 1700. (Thus he assumed that the discounts are not included in expenditures.) We stick to the official nominal debt numbers, as they are consistent with the method in the government budget accounts, and we wish to study whether there are other possible sources of discrepancies between the deficit and the change in debt. In addition, the discounts below par have been so small that the difference between the evolution of debt valued at par and at actual value is negligible. Between 1857 and 1960/61, the cumulative discount constituted less than half of one per cent of the total debt (*Riksgäldskontorets årsbok* 1960/61).

We follow the official statistics on foreign debt, which before 1988/89 is converted into SEK at the rate when the bond was issued. After 1988/89 the debt is recorded at the actual exchange rate.[24]

Over the years, the composition of government debt has changed quite substantially. We prefer to use the official figures as much as possible. One problem is "interest-bearing" versus "non-interest-bearing" debt. Up until 1809, as we do not have any information on the division between these two categories, we include all debt. During the first half of the 19th century, political decisions changed the non-interest-bearing component several times. We therefore choose to include all debt, that is, interest-bearing plus non-interest-bearing, up until 1857. From the mid-1830s the non-interest-bearing component was quite small and stable. From 1858 we include only interest-bearing debt as presented by the National Debt Office.

We divide the description into four periods according to data availability. During the first period, 1670–1718, annual figures are available for the government's loans at the Riksbank. Annual data are not available for the second period, 1719–76. In the third period, 1777–1857, annual figures are presented by the National Debt Office. The fourth period runs from 1858, when the government began large-scale foreign borrowing, until today.[25]

Figure 5.3 shows the historical, mostly positive, connection between wars and the government debt:GDP ratio and the unique peace-time increase in debt in the 1970s. Both features are familiar from other Western countries.

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23 Selling new callable government debt below par can in some instances be advantageous for the government through early retirement.

24 More details on valuation principles and an overview of measures of government debt used before the current three measures are available in Riksgäldskontoret (2002).

25 See Dahmén (ed.) (1989) on the history of Swedish government borrowing since 1789.

Figure 5.3. *Government debt 1670–2010 as a share of nominal GDP (B).*
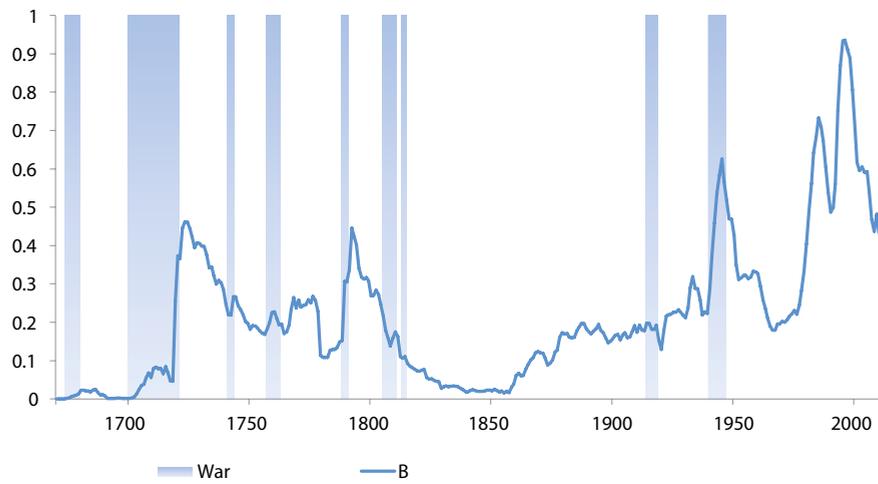
Sources: Dept in Appendix, nominal GDP, see Figure 5.2.

Bringing home the body of King Karl XII of Sweden. In that year, 1718, the Swedish state debt reached a high point. Painted by Gustaf Cederström (1845–1933) in 1884.
Source: Nationalmuseum.

5.4.1 The period 1670–1718

The only annual figures on government debt available in printed form that we are aware of record government loans in the Riksbank, published in Sveriges Riksbank (1918). General histories of the regency period, 1660–72, refer to the period as one of peace but with weak state finances due to diminishing tax receipts. The diminishing receipts were occasioned in turn by transfers of government-owned land to the nobility before and during the regency. State finances were then improved by confiscations of the transferred land, the so-called "Reduction", during the reign of Karl XI, 1672–97. New loans from the Riksbank began on a small scale in 1670, two years after the founding of Sveriges Riksbank, even though the Bank's charter clearly prohibited lending to the state. Borrowing accelerated during the Scanian war (*Skånska kriget*, 1675–79) and debt peaked in 1685. In the next few years the loans from the Riksbank were quickly reduced by amortization. By this time, the only form of government debt seems to have been the loans from the Riksbank: "…the government's borrowing requirements disappeared fully due to the large financial reforms of Karl XI" (Heckscher (1936), p. 372). The Great Northern War, which began in 1700 and ended with the death of Karl XII in 1718 (peace treaty in 1721), led to an accumulation of debt that cannot be followed year by year, except for the borrowing at the Riksbank ("*Kronans yngre lån*"). In 1719, government debt to the Riksbank made up 14 per cent of all the debt in that year, as shown in Table 5.13.

5.4.2 The period 1719–76

A National Debt Office, under the supervision of parliament, *Riksens ständers kontor*, was set up in 1719 to pay off the debt accumulated from 1697 to 1718 during the reign of Karl XII. Almost no new loans were taken up before 1740 and budget surpluses were used to pay off this so-called "old debt", which was not eliminated until well into the 19th century. From 1740 the government started to raise new loans to finance the war against Russia (1741–43).

The different components of the debt have been estimated separately, using available data on the debt in certain years in combination with available data on new loans and amortization. We calculate the debt recursively back in time from known amounts, using the relation:

$$B_{t-1} = B_t - L_t + AM_t. \tag{10}$$

We now describe the procedures and the data we use for the old debt as well as for the new debt from 1740 onwards.

The so-called "old debt" can be divided into five parts as described in Table 5.13, with the initial values in 1719. The largest part consists of: debt to the Riksbank, the insurance- and salary-notes, and the number debt. The debt to the Riksbank is known from the Bank's annual balance sheets, given in Sveriges Riksbank (1931).

The other debts were left to the newly formed National Debt Office to pay off; as the Office's main books are arranged in four-year periods, we have interpolated to estimate annual debt figures.[26]

Table 5.13. *Composition of government debt in 1719, incurred before 1719, the "Old debt".*

Swedish name	Explanation	Total 1719, dsm
Bankogälden	Loans from the Riksbank	6,910,796
Försäkrings- och lönesedlar	Interest bearing promissory notes paid to government employees in exchange for token money (mynttecken and myntsedlar) issued 1715–1718.	11,049,911
Nummergälden	Number debt. Private loans classified in 11 groups in 1719 in order of priority.	24,139,180
Kronoförpantningar	Swaps of income from government properties against fixed down payment to the government for a limited period.	2,301,358
Diverse kreditorer	Short-term loans from various creditors	2,413,481

We have calculated the initial value of debt in 1719 from known amounts in 1718. The amount of the so-called insurance notes, issued initially in 1719, was estimated; these notes were issued in exchange for token money (*mynttecken* and *myntsedlar*) to finance war from 1715 to 1718, at a devalued rate of 50 per cent. The number debt consisted of various types of loan; it included loans from churches, unpaid wages, bills etc. The name "number debt" refers to its division into 12 groups (labeled 1 to 11 and one group "without number"), which were to be paid off beginning with group 1. To this debt must be added interest arrears, which had the lowest priority.

The "new debt" can be divided into five parts, as described in Table 5.14. To calculate the annual debt figures, we use information on specific new loans and the amortization of old loans given in Åmark (1961, chapter 10). Further information can be obtained by studying the debt service figures in the proposed budgets. We also make use of the inventories of total debt that were made in 1764 and 1777.[27]

Table 5.14. *Composition of government debt incurred after 1740.*

Swedish name	Explanation	Start year	Maximum amount, dsm (year)
Bankogäld	Loans from the Riksbank	1743	49,585,997 (1772)
Utrikes lån	Foreign debt	1759	29,444,790 (1776)
Lotterilån	Lottery loans	1758	6,650,175 (1759)
Andra inrikes lån	Other domestic debt	1751	7,793,281 (1764)
Lån från publika kassor	Loans from public depositories	1731	4,437,240 (1764)

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26 Details are given in appendix A in Fregert and Gustafsson (2005).

27 For the exact calculations and further explanations see appendix B in Fregert and Gustafsson (2005).

5.4.3 The period 1777–1857

Between 1777 and 1809, the National Debt Office presented annual debt figures, which are given in Åmark (1961). We include the debt issued by *Riksgäldskontoret* after 1789 in the form of short-term notes, so-called *riksgäldssedlar*, which became a medium of exchange. This part of the debt has the same character as the loans from the Riksbank.[28]

Between 1811 and 1815, foreign debt was eliminated by means of an effective default by the Swedish parliament to compensate for the losses Sweden had suffered in the Napoleonic wars (see Åmark, 1961, pp. 654–660).

In addition to the debt handled by the National Debt Office, in 1808-30 the government proper had a debt to the Riksbank, which has to be added to the figures from the National Debt Office. This debt, which arose to cover expenditures for the 1808-09 war, was taken over by the National Debt Office in 1830.

Only semiannual data are available for most of the period from 1815 to 1850 but this is a minor problem because there were no dramatic changes in the debt. (The only major changes were the repayment of the debt handled directly by the government proper, and for this part we have annual data from the Riksbank's balance sheet.) To approximate the debt for the missing years we use the income-expenditure statement of the National Debt Office on new loans and amortizations.

Painting of a Russian vs. Swedish naval battle in Finnish waters. By Johan Tietrich Schoultz.
Source: Wikimedia.

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28   See further footnote 36 for the treatment of *riksgäldssedlar*.

5.4.4. The period 1858–2010

For this period we use the official data from the National Debt Office and add, as in the previous period, the debt of the National Board of Trade. The total debt is presented in the appendix and in Figure 5.4.[29] Between 1923/24 and 1995/96 the state budget accounts were given for broken fiscal years, beginning on July 1st, so we have chosen the debt figures at mid-year (30 June) to conform with the budget data.

5.5. The consolidated central government and fiscal seigniorage

For a joint analysis of fiscal and monetary policy, it is useful to look at the consolidated central government (fiscal plus monetary branch). In particular, this enables us to calculate seigniorage revenue in a manner that is consistent with the general accounting principles presented in section 2.[30] The central bank budget constraint, derived from its balance sheet and income-expenditure statement, can be written as:

$$\underbrace{\Delta H_t + \Delta A_t + i_t B_{t-1}^{CB} + i_t^* B_{t-1}^* + OS_t}_{Sources} = \underbrace{\Delta B_t^{CB} + \Delta B_t^* + CBT_t + OU_t}_{Uses}. \qquad (11)$$

The central bank receives funds from: new high-powered money, ΔH_t; new government deposits at the central bank, ΔA_t; interest income on its holdings of government debt, $i_t B_{t-1}^{CB}$, and non-government debt, $i_t^* B_{t-1}^*$; and other sources, OS_t.[31] The central bank uses funds to: buy domestic government bonds, B_t^{CB}; buy domestic non-government and foreign bonds, B_t^*; transfer funds to the fiscal branch, CBT_t; and other uses, OU_t.[32]

Consolidation is achieved by adding the one-period budget constraints of the fiscal branch (3) and of the central bank (11),[33]

$$\begin{aligned}
T_t + CBT_t + \Delta B_t + \Delta H_t + \Delta A_t + i_t B_{t-1}^{CB} + i_t^* B_{t-1}^* + OS_t &= \qquad (12) \\
= G_t + I_t + i_t B_{t-1} + \Delta A_t + \Delta B_t^{CB} + \Delta B_t^* + CBT_t + OU_t.
\end{aligned}$$

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29 Separate data for the National Debt Office and the National Board of Trade are available in appendix F in Fregert and Gustafsson (2005).

30 For a related discussion see Neumann (1992, 1996).

31 Other sources of the Riksbank (OS_t) is equal to: the change in capital plus other revenues (for instance capital gains) plus the increase in deposits from other than the government (or bank deposits, included in) ΔH_t plus the increase in other liabilities.

32 Other uses of the Riksbank (OU_t) is equal to: the increase in other assets plus the operational costs plus its profit (not transferred to the fiscal branch).

33 See Walsh (1998, pp. 132–138) for a discussion of the consolidated budget constraint and the measurement of seigniorage in a closed economy.

Equation (12) can be simplified as:[34]

$$T_t + S_t + \Delta B_t^{Public} = G_t + I_t + i_t B_{t-1}^{Public} . \tag{13}$$

where $B_t^{Public} = B_t - B_t^{CB}$ is government debt held by the public and S_t is seigniorage:

$$S_t = (\Delta H_t - \Delta B_t^*) + i_t^* B_{t-1}^* + (OS_t - OU_t) . \tag{14}$$

Seigniorage represents a true revenue source for the consolidated government as it can be used to finance expenditures. It consists of the flow of new high-powered money that is not used to buy domestic non-government bonds and foreign bonds, $\Delta H_t - \Delta B_t^*$, interest on non-government bonds, $i_t^* B_{t-1}^*$, and other net inflow to the central bank, $OS_t - OU_t$.[35] Rearranging (13) gives us an expression for the consolidated budget deficit:

$$DEF_t^C = (G_t + I_t + i_t B_{t-1}^{Public}) - (T_t + S_t) = \Delta B_t^{Public} . \tag{15}$$

where DEF_t^C is the deficit of the consolidated central government. We note three differences between the consolidated and the fiscal branch deficit. First, seigniorage enters as additional revenue for the consolidated central government. Second, only interest payments to the public matter for the consolidated deficit, since the interest payments from the fiscal branch to the central bank are an internal transaction that washes out as shown by (15). Third, central bank transfers do not matter, since they also represent internal transactions as shown by (15).[36]

Table 5.15 shows the source-use statement for the consolidated government corresponding to Table 5.4, with the budget deficit below the line and seigniorage above the line as sources.

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34 We assume that all government financial assets (A_t) are held at the central bank and, for simplicity, we ignore the terms "price and volume changes" and "errors and omissions".

35 If the central bank does not buy domestic non-government bonds or foreign bonds and if the other net inflow of the central bank is zero, seigniorage is equal to ΔH_t, a common empirical measure, see for example Fischer (1982).

36 The debt in *riksgäldssedlar* was initially considered a public debt, but the bonds soon turned into a currency. The decision in 1803 to let the Riksbank redeem 15 out of 18 million riksdaler riksgälds against 10 million riksdaler specie, confirmed the monetization of this debt. In the consolidation, we treat the riksdaler riksgälds as loans from the central bank from the beginning in 1789 and thus they never appear as public debt. Instead their increase represents seigniorage. A small error arises from the 3 million riksdaler riksgälds not redeemed by the Riksbank and which hence should be treated as public debt. Since we cannot associate the creation of these 3 million with any specific year, we have not corrected for this.

Table 5.15. *Fiscal and monetary branch sources and uses.*

	Sources (Inkomster)	Uses (Utgifter)
Monetary branch (central bank)	Seigniorage = net sources = $S_t = (H_t - B_t^*) + i_t^* B_{t-1}^* + OS_t - OU_t$	
Fiscal branch	Taxes and other revenues, T_t	Current expenditures, G_t Investment, I_t Interest on government debt, $i_t B_{t-1}^{Public}$
	Budget deficit, $DEF_t^C = \Delta B_t^{Public}$	
	Total	Total

For practical reasons, we use an alternative expression of seigniorage, obtained by combining the definition of S_t in (14) with the central bank budget constraint in (11):[37]

$$S_t = (\Delta B_t^{CB} - \Delta A_t) + (CBT_t - i_t B_{t-1}^{CB}). \qquad (16)$$

Seigniorage is here expressed as the sum of fiscal branch net borrowing from the central bank, $\Delta B_t^{CB} - \Delta A_t$, and transfers from the central bank to the fiscal branch net of interest payments from the fiscal branch to the central bank, $CBT_t - i_t B_{t-1}^{CB}$.[38]

Yearly data on seigniorage, interest on public debt, consolidated deficit and the public debt are presented in the appendix.

5.6. Conclusions

We have presented two sets of data: fiscal branch measures and consolidated (fiscal and monetary branch) measures. Both should be useful for macroeconomic research, particularly studies that focus on the interplay between fiscal and monetary policy. Depending on the institutional set-up, studies of causation between revenues and expenditures and the sustainability of fiscal policy may use either or both measures.

The most salient feature of the data is the recent rise in government debt as a fraction of GDP. It passed 60 per cent in the late 1970s, a level that had previously

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37 See appendix L in Fregert and Gustafsson (2005) and Gustafsson (2005). An additional way to express the seigniorage is $S_t = G_t + I_t + i_t B_{t-1}^{Public} - T_t - \Delta B_t^{Public}$, by equation (15). However, following the discussion in the previous section, this will not be correct due to "price and volume changes" and "errors and omissions".

38 This measure is also used by Neumann (1992), from whom we have borrowed the term *fiscal seigniorage*, that is, seigniorage directly used for budget purposes. This flow measure is distinct from the extra revenue the government obtains from capital gains due to unexpected inflation, which erode the real value of the debt.

been seen only in connection with the wars of Karl XII and World War II. The fast debt build-ups in 1978–82 and 1991–94 dwarf the slow increase between 1858 and 1914, when the government borrowed in international markets to build a national railway system. Remarkable are also the steady repayments of war-induced debts, inherited from despotic kings, through budget surpluses in 1719–56 and 1810–54 under new proto-democratic constitutions.

The major break in the series occurs in 1821, when published closed accounts begin. Major changes in the presentation of the budget occurred in: 1912, when the budget was unified to show only flows; 1938, when the accounts were divided into a current (working) and a capital account; 1980, when the budget was unified; and 1996, when the deficit was defined as the borrowing requirement. A test of the figures' reliability is provided in Fregert and Gustafsson (2008, section 5). We show that the figures' reliability increases with their nearness to the present, as indicated by the decreasing difference between the change in debt and the total budget deficit.

Appendix

Table A5.1. *Expenditures, revenues, interest payments, central bank transfers, seigniorage and debt of the Swedish central government 1670–2011 in thousands of SEK. Abbreviations below.*

Year	$G_t + I_t$	$i_t B_{t-1}$	T_t	CBT_t	DEF_t	B_t	$i_t B^P_{t-1}$	S_t	DEF^C_t	B^P_t
1670						3				
1671						2		-1		
1672						2		0		
1673						3		1		
1674						10		8		
1675						29		18		
1676						57		29		
1677						100		42		
1678						115		15		
1679						142		28		
1680						201		59		
1681						215		14		
1682						193		-22		
1683						196		3		
1684						208		12		
1685						223		15		
1686						238		16		
1687						160		-78		
1688						100		-60		
1689						106		7		
1690						84		-23		
1691						19		-64		
1692						21		2		
1693						24		2		
1694						26		2		
1695						26		0		
1696						26		0		
1697						26		0		
1698						26		0		
1699						26		0		
1700						26		0		
1701						26		0		
1702						69		43		
1703						154		86		
1704						278		124		
1705						426		147		
1706						441		15		
1707						737		296		
1708						943		206		
1709						994		51		
1710						995		0		
1711						995		0		
1712						1,000		5		
1713						998		-2		
1714						992		-6		
1715						1,213		221		
1716						1,212		-1		

Table A5.1 (cont.). *Expenditures, revenues, interest payments, central bank transfers, seigniorage and debt of the Swedish central government 1670–2011 in thousands of SEK. Abbreviations below.*

Year	G_t+I_t	i_tB_{t-1}	T_t	CBT_t	DEF_t	B_t	$i_tB^P_{t-1}$	S_t	DEF^C_t	B^P_t
1717						1,200		-12		
1718						1,152		-48		
1719						7,802				6,651
1720						7,749		-53		6,608
1721						7,703		-46		6,563
1722	1,021	70	1,143		-53	7,659	-	-93	-30	6,520
1723	1,023	70	1,187		-95	7,442	-	-122	-42	6,303
1724	1,005	70	1,190		-115	7,304	-	-74	-111	6,165
1725	967	70	1,194		-156	7,256	-	30	-256	6,024
1726	914	70	1,089		-105	7,130	-	-97	-78	5,898
1727	945	70	1,338		-323	6,976	-	-163	-230	5,744
1728	1,147	70	1,413		-197	6,837	-	-101	-166	5,605
1729	1,096	70	1,428		-262	6,634	-	-162	-170	5,472
1730	916	70	1,248		-262	6,498	-	-106	-225	5,336
1731	896	66	1,209		-247	6,241	-	-114	-199	5,154
1732	823	65	1,151		-263	6,043	-	-65	-263	4,956
1733	839	66	1,184		-279	5,859	-	-45	-300	4,772
1734	847	65	1,197		-285	5,674	-	-60	-290	4,586
1735	930	66	1,283		-288	5,481	0	-104	-249	4,394
1736	950	66	1,303		-288	5,278	0	-21	-332	4,191
1737	949	65	1,305		-291	5,078	0	-82	-274	3,991
1738	855	66	1,216		-296	4,875	0	-165	-197	3,787
1739	997	66	1,238		-175	4,744	1	-237	-3	3,656
1740	945	67	1,257		-245	4,604	2	-71	-239	3,516
1741	1,689	70	1,757		2	4,504	5	-10	-53	3,416
1742	1,506	72	1,619		-41	4,368	7	-8	-98	3,280
1743	1,471	72	1,523		19	5,189	6	978	-1,024	3,153
1744	1,326	130	1,716		-260	5,114	8	-31	-351	3,072
1745	1,103	134	1,441		-204	4,934	11	-161	-166	2,979
1746	1,174	134	1,487		-180	4,796	16	-121	-176	2,892
1747	1,767	137	1,617		286	5,004	22	158	14	2,774
1748	1,471	156	1,841		-213	4,922	23	-62	-285	2,662
1749	1,298	158	1,828		-372	4,793	22	-110	-398	2,530
1750	1,698	158	2,443		-586	4,539	23	-206	-516	2,400
1751	1,800	153	1,677		276	4,823	25	3	145	2,449
1752	1,882	168	1,806		245	4,737	26	-167	269	2,336
1753	1,567	168	1,864		-129	4,714	24	-47	-226	2,242
1753	1,620	173	1,933		-141	4,691	25	-117	-172	2,161
1755	1,645	213	1,850		7	4,714	61	-154	10	2,105
1756	1,827	136	2,046		-83	4,911	58	-43	-118	2,231
1757	2,447	136	2,211		372	5,634	56	741	-449	2,131
1758	3,306	173	2,453		1,026	6,676	68	776	145	2,413
1759	2,453	193	2,306		340	7,663	65	-62	274	3,116
1760	3,239	231	2,711		759	8,303	94	179	444	3,176
1761	3,033	257	2,687		603	8,721	103	42	407	3,365
1762	2,789	273	2,499		562	10,246	112	1,297	-896	3,619
1763	4,251	300	2,576		1,975	11,169	102	-91	1,867	4,394
1764	2,700	336	2,699		336	10,523	132	-161	294	3,923

Table A5.1 (cont.). *Expenditures, revenues, interest payments, central bank transfers, seigniorage and debt of the Swedish central government 1670–2011 in thousands of SEK. Abbreviations below.*

Year	G_t+I_t	i_tB_{t-1}	T_t	CBT_t	DEF_t	B_t	$i_tB^P_{t-1}$	S_t	DEF^C_t	B^P_t
1765	2,417	337	2,367		387	10,567	139	-83	272	3,831
1766	2,171	329	3,450		-950	10,763	127	-16	-1,136	3,718
1767	2,736	331	3,329		-262	10,546	120	-120	-354	3,603
1768	1,971	335	2,601		-295	10,025	127	-599	96	3,385
1769	1,878	121	2,352		-353	9,295	121	34	-387	2,717
1770	2,171	105	2,128		148	11,552	105	108	40	4,449
1771	2,391	181	2,717		-145	11,963	181	220	-366	4,370
1772	2,712	408	3,375		-255	12,636	180	247	-730	4,372
1773	3,065	430	2,857		638	12,536	182	306	84	4,296
1774	3,090	430	3,605		-84	12,422	183	-192	-140	4,232
1775	2,533	429	3,288		-327	13,235	183	-497	-76	5,416
1776	3,115	480	3,063		532	14,503	245	-427	724	6,951
1777	2,949	557	3,173		333	14,724	335	-208	320	7,160
1778	3,197	258	5,013		-1,558	13,585	258	79	-1,637	6,021
1779	3,401	270	3,411		260	6,895	270	-7,415	7,675	6,695
1780	3,426	244	3,225		445	6,446	244	-119	563	6,446
1781	3,303	243	3,315		231	6,328	243	1	230	6,328
1782	3,321	236	3,423		135	6,559	236	-114	248	6,559
1783	3,822	242	4,518		-455	7,799	242	-215	-241	7,799
1784	3,686	305	3,876		114	7,672	305	153	-39	7,672
1785	3,913	349	3,819		442	8,094	349	-26	468	8,094
1786	3,780	356	3,554		582	8,567	356	27	555	8,567
1787	3,863	350	3,777		436	9,720	350	-80	516	9,720
1788	3,810	389	3,767		432	10,363	389	214	218	10,363
1789	17,420	235	5,231		12,424	21,351	235	5,162	7,263	16,120
1790	13,614	947	13,662		899	22,237	947	2,839	-1,940	13,792
1791	9,532	952	9,904		581	24,261	952	-24	605	16,215
1792	14,333	872	7,482		7,723	33,507	872	2,192	5,531	23,237
1793	5,587	953	5,896		644	33,934	953	1,187	-543	22,591
1794	6,337	984	5,859		1,463	36,937	984	1,333	129	24,233
1795	5,953	871	6,659		164	34,151	871	2,055	-1,891	19,511
1796	7,630	695	6,643		1,683	32,922	695	807	875	17,463
1797	5,020	795	5,513		303	32,738	795	-1,724	2,027	18,963
1798	5,739	838	6,445		132	33,976	838	1,143	-1,011	19,098
1799	6,862	988	7,060		790	38,142	988	1,085	-295	22,105
1800	7,731	950	7,496		1,185	38,901	950	2,040	-855	20,845
1801	6,721	1,035	6,988		767	40,867	1,035	-492	1,260	22,243
1802	7,096	1,083	9,844		-1,664	42,349	1,083	813	-2,477	23,406
1803	8,606	1,136	8,987		1,246	40,248	1,136	-3,053	4,192	23,041
1804	9,451	1,023	9,950		524	36,854	1,023	-2,822	3,346	21,986
1805	9,859	1,015	11,118		-243	32,723	1,015	-1,799	1,556	20,269
1806	9,454	949	10,874		-471	30,098	949	-2,414	1,942	19,922
1807	9,837	914	10,518		233	27,576	914	-1,470	1,703	19,619
1808	25,986	945	17,917		9,013	27,984	945	488	8,524	19,668
1809	21,646	963	8,954		13,655	35,135	903	6,253	7,341	18,578
1810	17,611	1,135	12,807		5,938	41,074	720	1,683	3,841	22,497
1811	13,751	1,306	14,027		1,029	42,103	785	1,771	-1,262	22,479
1812	11,347	1,381	21,546		-8,818	33,285	795	147	-9,550	13,527

Table A5.1 (cont.). *Expenditures, revenues, interest payments, central bank transfers, seigniorage and debt of the Swedish central government 1670–2011 in thousands of SEK. Abbreviations below.*

Year	$G_t + I_t$	$i_t B_{t-1}$	T_t	CBT_t	DEF_t	B_t	$i_t B^P_{t-1}$	S_t	DEF^C_t	B^P_t
1813	33,047	1,044	33,131		960	34,245	439	-1,795	2,150	13,576
1814	32,650	1,036	32,454		1,231	35,476	461	2,247	-1,591	12,803
1815	13,459	1,012	20,965		-6,495	28,981	449	-2,100	-4,958	8,456
1816	15,427	747	16,632		-458	28,523	211	-2,637	1,642	9,524
1817	14,553	724	16,285		-1,008	27,515	223	-857	-653	9,540
1818	15,900	702	17,638		-1,036	26,478	236	-973	-529	8,823
1819	17,029	678	17,976		-268	26,210	249	-2,866	2,168	9,856
1820	15,542	685	17,016		-789	25,421	278	-1,367	171	10,108
1821	17,403	679	16,677		1,405	24,504	295	-1,117	2,138	9,861
1822	16,355	668	16,952		72	23,867	307	-831	542	9,850
1823	15,318	657	17,034		-1,059	17,805	320	-906	-490	3,944
1824	17,178	631	17,131		678	17,109	318	268	97	3,504
1825	16,509	618	17,671		-545	17,920	315	-876	29	4,559
1826	18,278	605	19,530	533	-1,180	17,366	312	-771	-169	4,244
1827	18,880	593	18,423	502	547	16,764	310	404	361	3,883
1828	17,276	581	17,436	528	-107	15,916	307	-893	1,040	3,276
1829	12,664	328	21,076	537	-8,620	10,073	64	-7,401	-946	3,471
1830	22,163	328	20,540	481	1,469	11,811	63	-633	2,319	5,211
1831	21,853	355	21,772	75	360	13,603	91	180	-9	7,003
1832	20,991	394	21,302	121	-39	13,333	130	-860	678	6,733
1833	20,415	397	20,938	207	-334	13,043	133	51	-442	6,443
1834	20,977	399	20,765	167	444	13,183	135	623	-276	6,583
1835	20,956	432	21,572	107	-292	13,249	168	-637	188	6,781
1836	22,774	455	22,192	746	291	12,980	196	-84	862	6,644
1837	25,484	473	24,468		1,490	11,326	220	-357	1,593	5,122
1838	24,280	418	25,043		-345	10,849	170	1,278	-1,871	4,777
1839	23,740	362	24,079		24	8,830	120	-2,589	2,369	2,890
1840	23,199	316	23,463		52	8,349	79	-1,467	1,282	2,541
1841	23,514	296	24,078		-267	10,369	64	-2,215	1,716	4,693
1842	23,521	343	19,873	3,467	525	11,515	123	2,982	789	5,971
1843	22,197	355	22,778		-225	10,209	134	2,024	-2,471	4,797
1844	20,536	348	20,923		-40	8,907	132	303	-559	3,627
1845	22,679	341	23,190		-170	9,362	130	422	-803	4,214
1846	24,233	339	25,152		-579	9,823	116	-687	-115	4,807
1847	24,222	338	24,023	907	-370	11,146	97	-1,272	1,568	6,262
1848	24,604	361	20,645	4,922	-602	12,472	141	7,267	-3,166	7,720
1849	25,776	384	26,599		-439	12,158	190	-1,677	1,044	7,538
1850	25,204	355	25,579		-19	11,408	151	-758	534	6,920
1851	27,798	309	27,760		347	13,639	125	-283	446	9,283
1852	28,340	304	23,870	3,150	1,624	12,893	125	3,206	1,388	8,669
1853	26,933	298	28,193		-961	10,828	125	-317	-817	6,736
1854	31,145	323	30,279		1,189	13,929	158	-3,979	5,003	9,969
1855	33,940	324	29,560	4,050	654	12,223	158	-84	4,622	8,395
1856	38,852	320	38,538		634	17,206	161	4,933	-4,458	13,510
1857	41,675	287	36,683		5,280	14,091	138	-183	5,314	10,527
1858	50,975	270	31,527	1,500	18,219	23,645	119	3,564	16,003	20,213
1859	49,573	486	33,540		16,519	29,051	343	1,613	14,763	25,751
1860	50,322	1,607	35,776		16,153	49,788	1,470	-3,680	19,695	46,620

Table A5.1 (cont.). *Expenditures, revenues, interest payments, central bank transfers, seigniorage and debt of the Swedish central government 1670–2011 in thousands of SEK. Abbreviations below.*

Year	$G_t + I_t$	$i_t B_{t-1}$	T_t	CBT_t	DEF_t	B_t	$i_t B^P_{t-1}$	S_t	DEF^c_t	B^P_t
1861	46,967	2,308	39,013	1,000	9,262	57,060	2,181	-1,099	11,234	54,024
1862	48,635	2,190	39,636		11,189	52,410	2,061	5,254	5,805	45,596
1863	54,804	2,379	43,543		13,639	54,695	2,076	-282	13,618	48,070
1864	61,478	2,696	44,347		19,827	67,693	2,403	2,438	17,095	61,254
1865	59,571	3,524	40,659	5,000	17,436	78,248	3,239	4,405	17,746	70,820
1866	64,215	3,992	42,522		25,685	91,004	3,662	1,503	23,852	83,149
1867	47,872	4,541	38,638	3,400	10,375	99,672	4,170	2,573	10,831	91,160
1868	49,600	5,240	38,658	1,800	14,381	110,663	4,817	610	15,149	104,131
1869	49,670	5,272	39,666	1,500	13,776	114,923	4,933	1,696	13,241	107,866
1870	51,979	5,393	49,819	3,500	4,053	118,616	5,073	126	7,106	111,742
1871	52,325	5,634	58,681	1,500	-2,222	123,020	5,310	1,341	-2,387	116,123
1872	59,757	5,880	62,577	1,351	1,710	124,302	5,555	3,449	-714	117,376
1873	65,977	5,534	72,313	-	-802	121,113	5,236	-5,147	4,047	116,196
1874	90,557	5,642	81,292	-	14,907	130,697	5,401	-9,928	24,593	126,585
1875	91,567	6,030	79,689	500	17,408	140,360	5,804	5,868	11,815	137,443
1876	93,417	7,108	83,732	1,250	15,544	176,356	6,954	181	16,459	173,494
1877	92,670	8,093	82,281	1,300	17,182	182,343	7,955	8,710	9,634	175,585
1878	98,316	8,884	79,823	900	26,478	212,734	8,597	-4,010	31,100	210,008
1879	86,686	9,588	71,207	1,350	23,717	220,482	9,442	6,966	17,956	214,406
1880	78,822	9,698	81,026	1,300	6,194	230,542	9,341	1,340	5,796	222,663
1881	81,623	9,126	87,208	1,185	2,356	234,902	8,533	-2,533	5,481	227,505
1882	72,790	9,448	85,853	1,250	-4,865	229,092	9,046	-2,181	-1,836	223,243
1883	77,785	9,196	87,644	1,600	-2,263	228,013	8,922	2,993	-3,930	221,589
1884	77,240	9,449	88,666	1,300	-3,277	230,347	9,156	-4,879	2,609	225,897
1885	81,410	9,633	88,644	1,300	1,100	247,210	9,437	2,073	130	242,084
1886	88,333	10,011	84,560	1,200	12,584	245,949	9,756	406	13,122	241,244
1887	90,154	9,676	81,114	-	18,716	246,109	9,464	1,530	16,974	241,048
1888	85,050	9,761	92,861	1,250	699	265,034	9,527	-1,720	3,436	260,875
1889	86,111	10,151	98,965	-	-2,703	259,054	9,938	3,685	-6,601	254,140
1890	87,641	10,983	102,146	1,300	-4,822	259,653	10,638	1,916	-5,783	253,036
1891	98,684	9,779	98,017	1,300	9,146	265,413	9,477	-2,335	12,479	260,822
1892	97,837	9,984	95,494	1,850	10,478	274,047	9,791	2,981	9,154	268,845
1893	98,452	10,329	99,495	1,750	7,536	278,811	10,118	2,583	6,492	274,085
1894	98,401	10,544	113,316	2,801	-7,173	293,292	10,330	-3,858	-727	288,858
1895	94,923	10,456	119,121	2,480	-16,222	287,647	10,290	-84	-13,824	282,653
1896	123,946	10,269	121,780	2,340	10,095	292,878	10,079	1,687	10,558	287,907
1897	108,910	10,086	136,451	2,700	-20,155	290,750	9,913	-1,940	-15,687	285,813
1898	117,477	10,028	144,023	1,800	-18,317	286,920	9,838	3,548	-20,256	282,778
1899	132,797	10,456	153,516	2,000	-12,263	319,724	10,304	16,722	-27,137	315,676
1900	149,593	10,905	153,359		7,138	343,090	10,759	-59	7,052	340,185
1901	160,508	12,276	143,636		29,148	354,277	12,152	-5,736	34,760	352,061
1902	171,354	12,192	147,398	2,000	34,149	354,040	12,111	-9,256	45,323	351,190
1903	171,997	12,121	183,177	2,716	-1,775	352,511	12,008	-22,388	23,217	350,671
1904	190,373	12,056	185,985	3,285	13,159	391,190	11,976	3,532	12,832	389,390
1905	193,369	13,411	194,613	4,000	8,166	412,243	13,352	-1,870	13,978	410,443
1906	198,385	13,301	188,519	5,100	18,066	426,907	13,228	13,091	10,003	425,107
1907	219,597	14,693	208,755	5,350	20,186	468,102	14,622	30,570	-5,104	467,037
1908	252,441	17,133	196,096	6,400	67,077	519,071	17,099	-4,903	78,346	519,071

Table A5.1 (cont.). *Expenditures, revenues, interest payments, central bank transfers, seigniorage and debt of the Swedish central government 1670–2011 in thousands of SEK. Abbreviations below.*

Year	G_t+I_t	i_tB_{t-1}	T_t	CBT_t	DEF_t	B_t	$i_tB^P_{t-1}$	S_t	DEF^C_t	B^P_t
1909	257,775	18,585	206,570	8,675	61,115	554,173	18,585	-21,944	91,734	554,173
1910	250,573	19,411	236,001	8,323	25,661	543,383	19,411	15,616	18,368	543,384
1911	251,235	19,140	235,768	6,256	28,350	611,959	19,140	8,340	26,266	611,959
1912	224,878	22,511	223,265	6,399	17,725	607,964	22,511	-19,113	43,237	607,964
1913	230,019	22,697	239,891	6,311	6,514	648,287	22,697	-16,288	29,113	648,287
1914	237,197	25,438	234,934	7,058	20,643	744,455	25,438	11,046	16,655	741,200
1915	375,554	30,840	356,682	8,800	40,912	854,871	30,631	-346	49,849	848,895
1916	391,638	36,193	406,547	8,760	12,525	993,246	35,862	-21,636	42,590	992,644
1917	598,720	44,056	618,007	8,120	16,648	1,149,226	44,024	-12,018	36,754	1,141,226
1918	1,490,966	59,391	817,905	-	732,451	1,656,179	58,898	56,321	675,637	1,653,450
1919	784,003	59,680	862,038	-	-18,555	1,566,998	59,237	-93,717	74,918	1,564,086
1920	844,366	61,874	834,563	-	71,677	1,496,524	61,746	50,289	21,261	1,494,149
1921	1,014,690	64,216	759,162	-	319,744	1,510,987	64,112	-165,983	485,622	1,507,335
1922	826,130	72,231	648,592	3,500	246,270	1,551,464	71,932	-59,973	309,444	1,548,290
1923	360,679	34,288	260,515	12,000	122,452	1,566,441	34,216	221,224	-86,844	1,555,751
1923/24	658,698	81,431	647,503	16,000	76,626	1,634,038	81,195	-29,291	121,681	1,620,273
1924/25	670,994	77,286	620,650	14,000	113,630	1,734,032	76,740	9,294	117,790	1,721,061
1925/26	661,909	81,072	638,167	15,500	89,313	1,735,286	80,308	108,792	-4,742	1,722,335
1926/27	681,977	83,372	656,938	16,000	92,411	1,812,799	82,666	20,146	87,559	1,802,063
1927/28	625,009	87,068	691,131	16,200	4,746	1,825,572	86,464	-50,148	70,489	1,814,554
1928/29	680,415	86,626	718,516	13,900	34,625	1,835,170	86,217	-5,803	53,918	1,829,122
1929/30	684,193	85,997	761,466	17,000	-8,277	1,800,846	85,176	59,654	-51,752	1,778,714
1930/31	704,202	82,439	763,844	19,000	3,797	1,845,644	81,624	-53,554	75,536	1,842,625
1931/32	774,045	81,258	720,482	16,000	118,821	2,155,333	80,970	287,465	-152,932	1,936,913
1932/33	967,400	91,650	726,946	14,000	318,105	2,358,532	86,920	-13,068	340,442	2,098,455
1933/34	842,101	99,296	755,551	27,000	158,846	2,348,962	91,674	-62,563	240,788	2,197,901
1934/35	1,004,607	97,881	895,847	7,000	199,640	2,487,099	92,906	-90,354	292,020	2,358,460
1935/36	962,583	94,457	991,005	4,250	61,784	2,387,183	92,191	-90,392	154,160	2,358,683
1936/37	1,009,475	91,928	1,146,952	2,750	-48,299	2,236,798	91,437	32,529	-78,569	2,234,798
1937/38	1,213,862	88,236	1,290,893	3,900	7,305	2,430,242	87,951	-136,984	147,904	2,389,142
1938/39	1,486,834	91,144	1,440,346	1,500	136,132	2,633,617	89,782	12,802	123,468	2,481,515
1939/40	2,786,450	98,286	1,849,329	-	1,035,407	3,625,020	92,010	910,985	118,146	2,957,677
1940/41	3,737,930	145,514	2,013,633	23,000	1,846,810	5,170,035	135,093	-155,715	2,015,105	4,334,086
1941/42	3,909,613	185,176	2,248,133	19,500	1,827,155	6,926,901	173,678	288,784	1,546,373	5,860,910
1942/43	4,276,544	226,727	2,684,105	20,000	1,799,166	8,731,848	217,210	-196,892	2,006,541	7,684,797
1943/44	4,356,234	265,213	3,096,647	9,500	1,515,300	9,773,651	259,024	6,189	1,512,422	8,652,414
1944/45	4,414,425	288,303	3,244,617	6,000	1,452,111	10,952,782	283,342	-705	1,453,855	9,757,954
1945/46	3,382,532	271,791	3,521,189	7,000	126,133	11,194,922	269,513	-438,317	569,173	10,255,515
1946/47	3,545,347	310,856	3,605,836		250,367	11,419,869	303,113	1,703,516	-1,460,892	9,047,745
1947/48	4,052,614	310,447	4,437,798		-74,737	11,486,857	268,834	196,750	-313,100	8,762,807
1948/49	4,827,908	321,157	4,953,957		195,108	11,861,090	257,740	-183,147	314,839	9,240,913
1949/50	4,999,799	315,265	4,829,105	10,000	475,960	12,072,926	261,370	-56,114	488,179	9,679,609
1950/51	5,813,800	330,521	5,805,598	15,000	323,722	12,420,618	268,920	529,244	-252,122	9,379,673
1951/52	7,229,516	342,794	7,492,224	15,000	65,087	12,329,381	283,690	-988,176	1,009,159	10,152,890
1952/53	8,506,164	297,767	7,793,157	15,000	995,774	12,531,548	255,360	-63,480	1,031,848	10,801,247
1953/54	8,843,610	339,157	8,519,693	15,000	648,074	13,586,656	309,324	50,163	583,078	11,689,988
1954/55	9,341,974	350,145	8,891,828	15,000	785,291	14,524,089	335,565	581,251	204,459	12,239,826
1955/56	10,237,843	432,214	10,056,572	15,000	598,485	15,477,181	419,482	989,722	-388,969	12,181,411

Table A5.1 (cont.). *Expenditures, revenues, interest payments, central bank transfers, seigniorage and debt of the Swedish central government 1670–2011 in thousands of SEK. Abbreviations below.*

Year	$G_t + I_t$	$i_t B_{t-1}$	T_t	CBT_t	DEF_t	B_t	$i_t B_{t-1}^P$	S_t	DEF_t^C	B_t^P
1956/57	11,348,296	456,252	10,676,207	15,000	1,113,341	16,818,171	437,957	792,802	317,245	12,830,345
1957/58	12,729,269	569,424	12,004,033	15,000	1,279,660	18,361,740	500,048	93,601	1,131,683	14,193,271
1958/59	13,474,962	598,587	12,589,548	15,000	1,469,001	19,173,374	491,835	-795,652	2,172,901	15,740,625
1959/60	14,600,219	735,612	13,607,010	50,000	1,678,821	20,660,080	624,204	254,219	1,363,194	16,821,757
1960/61	15,395,763	863,561	16,590,675	50,000	-381,351	20,410,939	728,328	306,333	-772,917	16,210,494
1961/62	16,608,275	871,394	17,956,848	50,000	-527,178	19,573,850	734,519	-877,587	263,533	16,138,374
1962/63	18,774,523	768,056	19,769,053	100,000	-326,474	19,075,002	675,597	-305,134	-13,800	16,019,489
1963/64	20,221,163	792,136	20,827,171	100,000	86,128	19,270,222	745,644	282,112	-142,477	15,993,390
1964/65	23,574,560	849,038	24,156,689	100,000	166,908	19,251,809	815,307	-757,393	990,570	16,775,401
1965/66	27,484,465	885,246	27,914,920	100,000	354,791	19,622,132	859,987	1,349,956	-920,424	15,913,711
1966/67	31,153,422	918,823	30,290,702	150,000	1,631,543	21,434,913	885,071	1,263,855	483,936	16,560,099
1967/68	33,956,816	1,075,168	31,951,424	150,000	2,930,560	25,033,906	981,686	617,882	2,369,196	19,609,935
1968/69	36,186,948	1,296,803	34,636,101	200,000	2,647,650	27,000,980	1,194,798	-40,448	2,786,093	21,736,121
1969/70	41,024,809	1,679,259	38,687,114	200,000	3,816,953	30,959,881	1,594,523	1,588,777	2,343,440	24,250,367
1970/71	44,989,486	2,019,802	44,177,767	200,000	2,631,522	33,401,947	1,811,152	768,937	1,853,934	25,821,598
1971/72	52,025,330	1,944,822	50,103,063	200,000	3,667,089	37,209,105	1,693,230	1,653,506	1,961,991	27,985,794
1972/73	56,616,829	2,234,942	52,446,738	200,000	6,205,033	43,211,336	2,077,132	-2,607,492	8,854,714	36,650,913
1973/74	65,828,865	2,696,469	58,882,620	250,000	9,392,714	52,675,454	2,505,662	1,925,462	7,526,445	44,128,532
1974/75	76,981,191	3,738,664	69,672,245	350,000	10,697,610	63,680,071	3,328,611	6,414,698	4,222,860	48,668,673
1975/76	90,958,446	4,133,185	90,917,610	450,000	3,724,021	68,759,943	3,245,746	-7,801,129	11,087,712	61,215,363
1976/77	107,042,809	5,416,337	101,424,916	550,000	10,484,230	82,340,463	4,079,064	-108,530	9,805,487	73,961,639
1977/78	127,549,487	6,915,824	108,636,130	650,000	25,179,180	105,237,931	5,279,391	-1,839,491	26,032,239	97,790,186
1978/79	146,139,105	8,802,487	115,613,786	650,000	38,677,806	139,086,309	6,873,123	1,454,017	35,944,425	128,970,281
1979/80	164,067,546	14,508,895	127,842,813	750,000	49,983,629	192,088,176	11,728,720	7,682,431	40,271,022	171,852,176
1980/81	191,473,091	23,765,021	154,436,801	850,000	59,951,311	252,967,984	20,010,457	6,777,437	50,269,311	223,390,984
1981/82	207,439,903	27,724,094	165,130,779	2,000,000	68,033,218	319,686,000	22,805,432	16,360,338	48,754,218	270,861,000
1982/83	229,683,531	48,195,980	187,280,186	4,000,000	86,599,325	407,325,000	42,787,702	-21,475,277	106,666,325	378,630,000
1983/84	237,878,006	60,386,504	217,165,492	4,000,000	77,099,019	482,636,000	54,858,086	6,327,582	69,243,019	446,110,000
1984/85	253,902,037	75,234,268	255,595,866	5,000,000	68,540,438	559,459,000	68,832,350	-528,918	67,667,438	517,369,000
1985/86	256,152,965	66,508,793	269,437,949	5,661,000	47,562,810	596,015,000	58,380,362	40,778,569	4,316,810	515,375,000
1986/87	272,748,544	63,812,064	312,751,208	7,354,000	16,455,401	609,248,000	54,634,064	-11,138,000	25,769,401	537,812,000
1987/88	284,819,070	53,410,443	326,440,915	6,111,000	5,677,598	597,621,000	45,041,943	-1,080,500	4,500,598	525,115,000
1988/89	299,770,624	53,178,902	361,107,401	6,600,000	-14,757,876	589,712,000	46,474,402	9,361,500	-24,223,876	507,775,000
1989/90	341,590,624	63,696,173	395,552,551	6,000,000	3,734,246	582,456,000	57,672,173	-17,500,000	21,210,246	517,995,000
1990/91	387,474,767	61,033,277	396,486,593	7,000,000	45,021,452	626,698,000	54,285,277	-19,873,000	65,146,452	582,362,000
1991/92	432,629,822	60,042,701	390,025,287	7,700,000	94,947,236	710,982,000	50,478,701	-12,213,000	105,296,236	676,995,000
1992/93	534,779,861	73,090,178	370,443,351	7,300,000	230,126,689	960,611,000	59,780,678	-76,359,500	300,476,689	996,974,000
1993/94	487,959,873	94,736,213	367,424,870	9,500,000	205,771,216	1,178,643,000	87,174,713	126,684,500	81,025,216	1,090,260,000
1994/95	482,689,118	123,200,957	416,983,612	6,200,000	182,706,464	1,370,401,000	117,271,457	-10,511,500	193,488,464	1,292,800,000
1995/96	728,674,864	123,757,585	808,878,360	8,100,000	35,454,089	1,411,632,000	108,514,085	-25,699,500	54,010,089	1,352,587,000
1997	556,840,000	98,360,000	648,900,000	8,100,000	6,228,000	1,432,076,000	98,360,000	-1,459,000	6,228,000	1,378,988,000
1998	583,389,000	113,311,000	706,300,000	9,300,000	-9,700,000	1,448,859,000	113,311,000	-13,379,000	-9,700,000	1,416,017,000
1999	553,275,000	89,825,000	725,100,000	7,600,000	-82,000,000	1,374,180,000	89,825,000	-52,000	-82,000,000	1,345,182,000
2000	607,909,000	90,191,000	800,000,000	9,800,000	-101,900,000	1,279,205,000	90,191,000	632,000	-101,900,000	1,258,477,000
2001	635,308,000	81,071,000	755,126,000	28,200,000,000	-38,747,000	1,156,827,000	81,071,000	6,126,000	-38,747,000	1,156,827,000
2002	659,815,000	67,183,000	730,488,000	27,300,000,000	-3,500,000	1,160,329,000	67,183,000	29,504,000	-3,500,000	1,160,329,000
2003	666,268,000	42,015,000	661,731,000	7,500,000,000	46,600,000	1,228,741,000	42,015,000	7,500,000,000	46,600,000	1,228,741,000
2004	692,334,577	52,596,423	694,418,000	6,100,000,000	50,500,000	1,257,326,000	52,596,423	6,100,000,000	50,500,000	1,257,326,000

Table A5.1 (cont.). *Expenditures, revenues, interest payments, central bank transfers, seigniorage and debt of the Swedish central government 1670–2011 in thousands of SEK. Abbreviations below.*

Year	$G_t + I_t$	$i_t B_{t-1}$	T_t	CBT_t	DEF_t	B_t	$i_t B^P_{t-1}$	S_t	DEF^C_t	B^P_t
2005	699,210,000	32,561,000	745,825,000	6,700,000,000	-14,054,000	1,308,572,000	32,561,000	6,700,000,000	-14,054,000	1,308,572,000
2006	742,567,724	49,374,070	810,314,986	5,300,000,000	-18,373,192	1,269,957,000	49,374,070	5,300,000,000	-18,373,192	1,269,957,000
2007	713,340,198	47,166,370	863,716,282	4,400,000,000	-103,210,000	1,168,013,206	47,166,370	4,400,000,000	-103,210,000	1,168,013,206
2008	733,000,000	33,100,000	901,300,000	3,600,000,000	-135,200,000	1,119,000,000	33,100,000	3,600,000,000	-135,200,000	1,119,000,000
2009	854,600,000	31,100,000	709,500,000	5,900,000,000	176,100,000	1,189,200,000	31,100,000	5,900,000,000	176,100,000	1,189,200,000
2010	757,321,000	23,252,000	779,520,000	5,800,000,000	1,052,000	1,151,468,000	23,252,000	5,800,000,000	1,052,000	1,151,468,000
2011	770,100,000	34,500,000	872,400,000	6,200,000,000	-67,800,000	1,107,700,000	34,500,000	6,200,000,000	-67,800,000	1,107,700,000

$G_t + I_t$ = government consumption and transfers, and government investment, $i_t B_{t-1}$ = interest payments on government bonds, T_t = government income, CBT_t = central bank transfers to the fiscal branch, DEF_t, = total budget deficit of the fiscal branch, B_t = government debt, $i_t B^P_{t-1}$, = interest payments on government debt held by the public, S_t = seigniorage, DEF^C_t, = total deficit of the consolidated government, B^P_t = government debt held by the public.

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6.
Swedish stock and bond returns, 1856–2012*

Daniel Waldenström

The American stock market crash in 1929 and early 1930s had serious repercussions for stocks around the world, including in Sweden.

This chapter presents historical evidence about Swedish stock prices, dividends, and yields on government fixed-interest securities. Monthly returns are presented since 1901 for stocks, since 1874 for government long-term bonds and since 1856 for short-term Treasury bills or central bank discount rates. Annual stock price and

returns indices from 1870 are also presented. Altogether, these series comprise the longest financial asset price database for Sweden to date.

An important ambition is to provide information about the quality of the financial data, how they are constructed and how they are modified so as to ensure consistency across time. The chapter also outlines the basic institutional and economic framework of the Swedish stock and money markets. Research has shown that asset prices are influenced by the extent of trading activity as well as by the legal setting and microstructural characteristics.

Finally, the chapter offers some initial analysis of the new evidence: calculation of returns for different periods, examination of trends and trend breaks in returns, dividends, volatility and cross-country returns correlations, and computation of equity risk premia across holding periods and historical eras.

6.1. Introduction

This chapter presents evidence about the long-run evolution of Swedish financial market returns over the past one hundred and fifty years. Specifically, monthly returns on stock investments on Sweden's dominant secondary stock market, the Stockholm Stock Exchange, are documented since 1901, the short-term risk-free rate of return is presented from 1856 and a representative long-term government bond yield from 1874. The chapter also contains a preliminary version of a new annual stock price and returns index for the period 1870–2012, using previously unexplored evidence of historical stock prices, dividends and equity capital from the last decades of the 19th century.

The main ambition with this chapter is to provide a basis for the construction of homogeneous long-term series of stock and bond returns in Sweden. This is an important task since not only have the actors providing financial price information changed over time, but so have their standards for defining key concepts such as a stock price index or the return on a long-term government bond. The institutional preconditions for trading and pricing financial instruments on the Swedish financial market differ across eras, which means that quoted prices may not necessarily be comparable across time periods. The chapter therefore contains a description of the main institutions surrounding secondary financial markets in Sweden since the beginning of the industrial era in the late 19th century.

In order to construct the basic long-run series, the chapter borrows from previous findings of Swedish scholars working on historical financial returns. In his ambitious treatment of the entire Swedish economy during and after the First World War, Anders Östlind analyzed activities on the Swedish stock market and even constructed the first stock price index that adjusted for new issues and stock splits (Östlind 1945). Later, Birger Möller presented a large investigation of the Swedish stock market during the first half of the 20th century and several new pieces of evidence (Möller 1962). Extending these contributions, Per Frennberg and Björn Hansson were the

first to compile a truly homogeneous set of long-run series of Swedish stock and bond market returns, spanning most of the 20th century (Frennberg and Hansson, 1992a). Their series in the first essays covered the period 1919–1990. Since then this dataset has been extended by Hossein Asgharian and Björn Hansson at Lund University. In addition, Waldenström (2002) studied stock market taxes using a stock market price index going back to 1906 that was based on an index created by the Stockholm Chamber of Commerce, published in its review *Kommersiella Meddelanden*. There are a few other attempts to generate stock indices going back to the beginning of the 20th century. In a study of whether stock prices tend to converge to certain levels that investors may deem affordable, Burnie and De Ridder (2011) use data on stock prices collected annually at year's end from the Stockholm Stock Exchange, beginning in 1900. Finally, the business magazine *Affärsvärlden*, which published the most important Swedish stock market index during the past century, included in its 90th anniversary edition a yearly series dating back to 1901. However, that series is based, not on systematic evidence but primarily on journalistic guesswork.[1]

The present chapter builds on these earlier contributions and extends the Swedish stock and bond market dataset by adding almost two decades of earlier historical monthly stock prices and returns, updating the series to the present day. Altogether, this adds about four new decades of monthly stock returns. In addition, the preliminary annual stock prices and returns dating back to 1870 result in a continuous stock market series that covers virtually the whole era of Sweden's industrialization and its aftermath.

The chapter also presents new evidence on bond and money markets. Specifically, prices on long-term government bonds are collected back to 1874, which is forty-five years earlier than the starting date of the yield series Frennberg-Hansson dataset. I have also compiled monthly short-term money market yields, proxied by the Riksbank discount rate for most of the period, going back to November 1856.

Internationally, there is a long-standing literature that describes and analyzes long-run financial market returns; see, e.g., Ibbotson and Sinquefield (1976) and Dimson, Marsh and Staunton (2001). Two previous contributions with specific relevance to this chapter are the studies of long-run stock and bond returns in Norway by Jan Tore Klovland (Klovland 2004a, 2004b). Another relevant contribution is the recent study of long-run stock and bond returns in Finland by Nyberg and Vaihekoski (2011).

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1 Nonetheless, this series has become widely used, also in academic studies such as Dimson, Marsh and Staunton (2001).

6.2. Historical development of Swedish financial markets

6.2.1. The Swedish stock market

The Stockholm Stock Exchange at its former location at Stortorget, Gamla Stan in 1896.
Source: Stockholm City Museum.

The Swedish stock market emerged gradually during the second half of the 19th century. One of the largest brokers in Stockholm was mandated by the City in 1863 to hold the first auction of securities; this is generally considered to be the foundation year of Sweden's largest stock exchange, the Stockholm Stock Exchange. At that time there was a growing demand for organized trading in financial securities, primarily stocks and corporate bonds. In the initial years, no governing authority closely directed the business activities on the Exchange. In 1866, however, the City of Stockholm set up the Trade and Shipping Commission (*Stockholm stads handels- och sjöfartsnämnd*), which exercised the supreme operative and regulatory control of the Exchange. Auctions were held only once a month until 1895, after which they

became weekly.[2] Securities auctions were also held in some other cities but, as shown by Algott (1963), these market-places never accounted for an important share of Sweden's total securities trading.

The trading framework on the securities auctions was such that buyers and sellers submitted their orders to the responsible broker in good time before the monthly auction. Then, at the auction, the broker declared the orders one at a time, followed by an opportunity for investors to either accept the trade or offer either higher or lower bid or sell orders. The broker then recorded the number and value of traded securities. Trading activity was relatively slight at first. Figure 6.1 shows the value of traded securities (stocks and bonds) as a share of market capitalization from the beginning of the Exchange's practices to the present day. As can be seen, trading activity was relatively low in the 19th century and in the middle of the 20th century, and relatively high during the early and late 20th century.

Figure 6.1: *Turnover rate at the Stockholm Stock Exchange, 1870–2012*
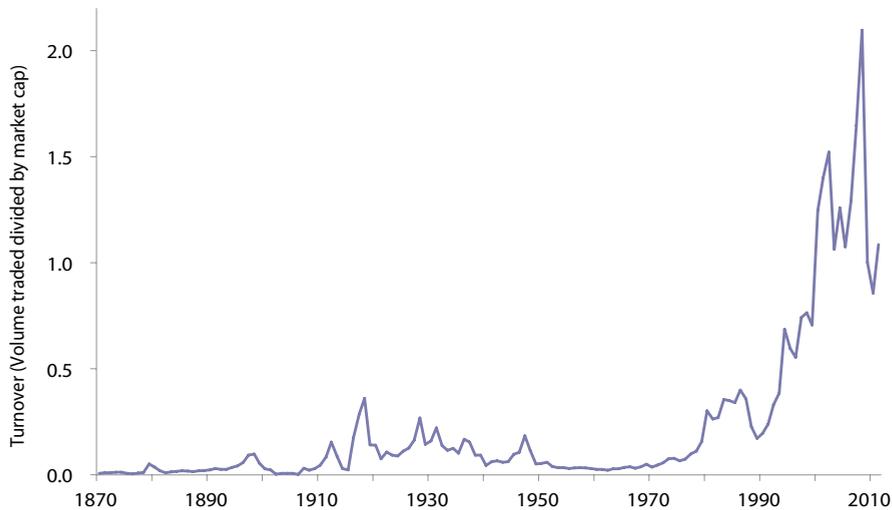
Note: Turnover rate is defined as the value of the total volume traded divided by market capitalization (value of listed shares). Sources: Table A6.1.

As Sweden's industrialization gradually took hold during the last decades of the 19th century, many new corporations issued stocks to a growing population of investors. This led to demands for a more organized market for securities trading. The monthly, and in the late 1890s weekly, auctions without a fixed list of shares or firm rules for pricing were clearly not sufficiently continuous for the market participants. Algott (1963) refers to the contemporary critical discussions. For this reason, the Stockholm Stock Exchange was thoroughly reorganized in 1901. The new trading struc-

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2   Longer descriptions (in Swedish) of the early development of the Stockholm Stock Exchange can be found in Belfrage (1917), Beije (1946) and Algott (1962).

ture was largely copied from the Copenhagen Stock Exchange, except that the existing auctioning system was retained, in contrast to Copenhagen's dealership market. Trading in Stockholm was conducted by the head of the Exchange, who called out the registered stocks in a predetermined order. When a stock was called out, all market participants were able to state the levels at which they were willing to buy/sell (bid and ask quotes). When a bid and an ask level matched, a trade was registered and the transaction was completed.

Under the new framework, trading was confined to listed securities. Listing was contingent on approval of a written application submitted to the board of the Stock Exchange, containing detailed information about the security (e.g., articles of association and the latest audit report). Moreover, only brokers certified by one of the City's councils were allowed to broker deals on the Exchange. The Exchange's membership was small initially, only a handful or so during the first five years, but when membership was extended to banks in 1907, it rose to more than 20. Trading initially took place three times a week; daily auctions were introduced in the 1910s.

Several stock price lists were published in this early era. Before 1912, the Exchange did not compile an official price list; instead, brokers and banks published their own lists in newspapers (Algott, 1963, pp. 121f).

When the First World War started in 1914, Sweden left the international gold standard and the Stockholm Exchange closed down for three months (August 3rd to November 3rd). Leaving the gold standard, combined with an initial boom in the export-oriented domestic industry, led to a higher rate of inflation in Sweden during the war. This inflation boom was one of the factors behind a remarkable increase in trading activity on the Exchange during these years; stocks are normally one of the few forms of inflation-proof investment. The increased economic activity spurred increased volumes of new equity issues, which were at century-high levels (2–4 per cent of total market capitalization) during this period (Waldenström, 2004). Figure 6.2 presents the evolution of market capitalization as a share of GDP from 1870 to 2012. The increased activity also attracted new market actors; the number of stock exchange member firms increased from 20 in 1908 to 28 in 1914 and 46 in 1921. After the war, however, the spectacular bull market turned into a devastating crash when Sweden joined the gold standard at the prewar parity, which set off a deflationary spiral and plummeting stock prices.[3]

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3   For an account of the Swedish economy during the First World War and the deflation crisis, see Haavisto and Jonung (1995).

Figure 6.2: *Market capitalization at the Stockholm Stock Exchange over GDP, 1870–2012.*
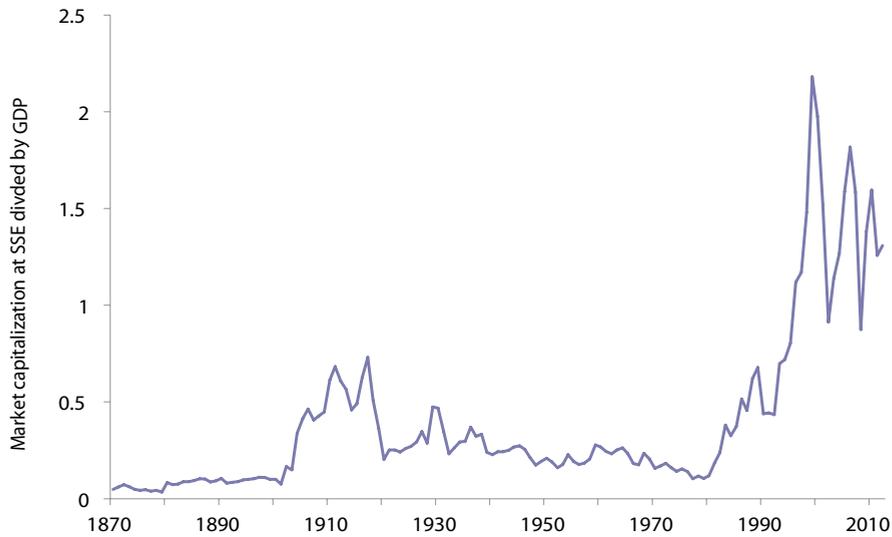
Sources: Table A6.1.

The spectacular wartime bull market also inspired politicians in Parliament and the liberal-socialist government to finally incorporate the Swedish stock market in the national legislation. Acts passed in 1919 and 1920 formally regulated both the financial intermediaries dealing and trading in stocks and the Stockholm Stock Exchange.[4] One important change was that the government took charge of appointing the Exchange's board. Moreover, the right to establish new stock exchanges was restricted. In practice, though not formally, the Stockholm Stock Exchange acquired a monopoly of organized securities trading in Sweden. This legislation remained intact until the end of the 1970s and the Exchange's monopoly status was not abolished until 1992. Thus, the legislative changes in 1920 were of immense importance in the long run.

Another consequence of the First World War and the postwar global depression, which greatly affected the Stockholm Stock Exchange, was the economic crisis in Sweden in the early 1920s, when industrial production almost halved. The government launched a devastating deflationary monetary policy in order to bring the exchange rate back to the same level in relation to gold as during the classic gold standard. On top of this, Swedish commercial banks faced a period of systemic financial distress caused by the economic depression.

The early 1930s was another turbulent period that affected the Stock Exchange. Great Britain's departure from the gold standard in September 1931 caused both

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4   Securities Intermediation and Stock Exchange Act (*Lag om fondkommissionsrörelse och fond-börsverksamhet*), SFS: 1919:240, Stockholm Stock Exchange Act (*Börsordning för Stockholms Fondbörs*), SFS: 1920:222.

economic and political problems in Sweden. The discount rated was doubled in a few days and the Stockholm Stock Exchange actually closed for three weeks. In 1932, by far the largest industrial conglomerate in Sweden failed in an enormous debt scandal with both governmental and international connections. This was the infamous "Kreuger Crash", named after the conglomerate's owner Ivar Kreuger, whose suicide in Paris on April 12th initiated the crisis. His holding company, Kreuger & Toll, owned large blocks of shares in all the main Swedish industrials.

After the Kreuger crash, the Swedish stock market was stagnant. Trading activity decreased and new listings were few. The Second World War put an end to Sweden's relatively unregulated financial markets. Wartime mobilization and the effect of disrupted patterns of trade gave rise to an increased need for public funds, which necessitated a series of new laws to regulate the credit and financial markets. Banks and other financial market actors were required to offer funds to the central government. Furthermore, strict controls were imposed on cross-border capital flows.

In the history of the Swedish stock market, the postwar period up to roughly 1980 was on the whole relatively quiet. The wartime credit and capital market regulations were intact. Credit markets were entirely controlled by state authorities, especially the Riksbank, Sweden's central bank. Stock-exchange trading activity was relatively low. For these reasons, the period is sometimes described as a "financial ice age". At the same time, the Swedish economy performed well, with annual real per capita GDP growth at 2–3 per cent. Swedish companies were highly profitable and could meet most of their financial needs from retained earnings. Consequently the stock market became relatively unimportant as a source of funds. About 40 new companies floated their stock on the exchange in the 1950s and early 1960s, which brought the total number of listed companies up to 115. In the following decade, however, the number decreased by 20 (Boman, 1988). In these decades the valuation of the Swedish stock market was very low. Some of the main factors behind this weak development were no doubt the strict rules for issuing and floating new shares, listing and participation in trading at the Stockholm Stock Exchange.[5]

In the 1970s, financial innovations aimed at increasing stock market turnovers were introduced in the Western world, including Sweden (see Werin, 1993). One of the major moves was the introduction of computers in trading systems. More trades were executed at a faster pace and more customers were able to acquire exchange information and submit trades thanks to the wider outreach of brokerage firms and banks.

In 1980 Sweden was still a highly regulated economy with virtually no stock market activity, regulated capital and credit markets, and a debate about "wage-earner funds", a scheme designed to shift corporate ownership to trade unions by way of higher corporate taxes. All this changed dramatically largely through a series of reforms, starting with the deregulation of capital markets and international capital

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5   For a description of how Swedish stock market regulations hampered activities and values and how developments from 1980 onwards changed all this, see Hägg (1989, p. 57–100).

movements in the 1980s, tax reforms in the mid-1980s and early 1990s and an end to the idea of wage-earner funds in the early 1990s. As a result of technological developments and the reforms of Swedish financial markets, of which the deregulation of credit and currency in the latter half of the 1980s was the most important, the Swedish stock market boomed. In the 1980s the stock market index rose twelvefold, or four times as much as the Dow stock index in the US. The boom attracted both new capital and new actors. By 1997, 352 IPOs were registered on the Stockholm Stock Exchange, a dramatic increase from the low levels in earlier decades (Holmén and Högfeldt, 2005). A derivatives market, OM ("Optionsmäklarna"), also emerged in Sweden in the second half of the 1980s. This market enabled investors to trade a number of new financial instruments, such as options and warrants, which offered insurance mechanisms as well as new investment opportunities that did not exist on the Stockholm Stock Exchange.

Further important changes occurred on the Swedish stock market in the 1990s. In 1993, trading was opened up for non-residents, which led to an increase in foreign ownership of the exchange-listed stocks from a few per cent to forty per cent in the course of a decade (Henrekson and Jakobsson, 2012). Another change was the formal end to the Exchange's trading monopoly, allowing securities trading to take place elsewhere. Other market actors organizing trading started to grow and in 1998 the Stockholm Stock Exchange was acquired by the largest of the private actors, OM, forming the OM Stockholm Stock Exchange ("OM Stockholmsbörsen"). As a consequence, the exchange ceased to be a semi-public market place and became a privately owned for-profit company selling products associated with securities trading.

In the early 21st century, the OM Stockholm Stock Exchange expanded by purchasing the Helsinki Stock Exchange in 2003 and changed its name to OMX. In 2005 OMX acquired the Copenhagen Stock Exchange and in 2006 the Iceland Stock Exchange. In 2008, OMX was itself purchased by Nasdaq, which gave the market-place its current name, NASDAQ OMX Nordic. These organizational changes have not involved any dramatic changes in securities trading on the Stockholm stock market. The new owners have, however, introduced several new features, including new lists containing various selections of Nordic securities as well as separate listings for small-, middle- and large-sized companies in terms of equity capital.

6.2.2. Swedish bond and money markets

The Swedish bond market emerged in the middle of the 19th century. At first, the most important borrowers on the domestic market were mortgage associations and industrial corporations (Gårdlund, 1942). The Swedish government did issue bonds, but these were floated almost exclusively in foreign markets up until the 1920s. From the interwar period onwards, the Swedish government has been the main borrower and almost all of its loans have been issued to the domestic market.

Secondary bond trading in Sweden has traditionally been conducted outside the organized stock exchange. Investors have traded bonds over the counter at banks or in bilateral block transactions. The Stockholm Stock Exchange has regularly listed bond prices since the late 19th century. Within the Exchange, however, bond trading takes place in several markets, depending on the type of loan. Convertible public sector loans are quoted alongside stocks on the A (main) and O (subsidiary) lists. Premium lottery bonds are traded separately. Finally, there is a retail market – the SOX market – in which bonds are transacted freely. The volume of secondary trading on the Exchange has generally been smaller for bonds than for stocks.

Although bonds were not always traded actively on the Stock Exchange, quoted bond market prices have been published in several listings by the Stock Exchange as well as by stockbrokers and banks. In the postwar period, the Swedish secondary bond market has been dominated by trading in government and mortgage loans. Corporate bonds have been relatively few and are normally held by investors until maturity.

Stock returns and bond prices and yields are reported in both nominal and real terms, using inflation data from various sources. Annual consumer price index data are collected from the Riksbank project on *Historical Monetary and Financial Statistics for Sweden*, described in Edvinsson and Söderberg (2010). A monthly price index does not exist for the entire period. Frennberg and Hansson (1992a) use the Swedish National Board of Health and Welfare's cost-of-living index to construct a monthly price index back to 1918.

6.3. Stock market data

6.3.1. Constructing stock market returns and indices

The monthly return R_t on an investment can be divided into two parts:[6] a capital gain component, $(P_t - P_{t-1})/P_{t-1}$, reflecting the change in the stock price P between two months divided by the initial month's price, and a dividend yield component, D_t/P_{t-1}, reflecting the cash-flow return on a stock investment:

$$R_t = \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}}.$$

Annual returns are compounded continuously, that is, they are computed as accumulated monthly returns over the year's span. Letting R_t^T denote the return of year T recorded in month t, the total return during one year can be written as:

$$R_t^T = \prod_{t=1}^{12}(1 + R_t).$$

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6   A broad returns concept could also include the yield from reinvested cash flows.

In this analysis, returns are typically expressed as annual returns to make them easily interpretable and comparable across securities. The annualized return is calculated as a geometric mean:

$$\text{Annualized return } R_t^T = \left(\prod_{j=1}^{12} (1 + R_t) \right)^{1/12} - 1.$$

The price index P is measured as the market value of listed stocks at the end of the measurement period. This analysis presents two different stock market indices: a *stock price index*, reflecting only the capital gain component, and a *stock return index*, in which both capital gain and dividend yield are included.

Taxes and transaction costs are not incorporated explicitly in this analysis. This means that returns are before taxes and transaction costs, and therefore higher than what the investor actually obtains in the end. Accounting for taxes is potentially important, not least in a historical perspective, as taxes on capital gains and dividend income have not been constant over time. For example, prior to 1991 the tax on capital gains depended on how long the transacted assets had been held, with tax rates typically decreasing as the duration of the holding increased (see Dahlquist and Sellin, 1996).

6.3.2. Sources for stock market data

The natural basis for analyzing stock returns in Sweden is market data from the country's prime market place, the Stockholm Stock Exchange. At times the Exchange has used more than one listing, the "A-list" for the largest and most traded companies, and the "B-list" for smaller and less frequently traded shares. For most of the studied period, the stock price indices are based on prices and capital data for companies in the A-list.

The stock price index of this study is value-weighted, i.e., the stock price of each firm is weighted with the size of the listed equity capital's current market value. Value-weighted indices are the most common variant in today's markets, but historically one may argue whether an equal-weighted or even a trading volume-weighted index would be more representative of markets where only a minority of listed shares are actually being traded.[7]

For the period October 1901–December 1918, the new Swedish stock price and returns indices constructed by Gernandt, Palm and Waldenström (2012) are used as the main source. These indices are based on manually collected firm-level stock price data from weekly periodicals and reprints from the official price list of the Stockholm Stock Exchange. The Exchange did not publish an official price list prior to 1912; listings supplied by other market actors have been used instead. The two most

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7   In an analysis of the early Stockholm Stock Exchange market, Gernandt, Palm and Waldenström (2012) find that the choice of price weighting scheme does affect the performance of indices, but hardly over the long run.

recognized sources from that period are *Arthur Mattssons fondnoteringar*, used for the period October 1901–April 1909, and a price list compiled by the largest Swedish commercial banks for May 1909–December 1911.[8] From 1912 onwards, the Exchange's official price list is used.

Specifically, the stock price lists provide information about bid and ask quotes, the close high/low (final close is the average of the high and the low), the dividend per share and the nominal price per share.[9] Dividend payments are reported for the current and the previous year, and monthly dividend payout-weights estimated for the Stockholm Exchange in the 1950s by Möller (1962) were used. Balance-sheet information was assembled from Key-Åberg's *Svenska aktiebolag och enskilda banker*, a yearly catalogue covering about half of Sweden's joint-stock companies. Standard balance-sheet items concerning assets and liabilities are reported, as are, in most cases, profit and loss accounts.[10]

Starting in December 1918, the weekly Swedish financial chronicle *Affärsvärlden* published a composite stock price index that was later named *Affärsvärldens Generalindex* (AFGX).[11] This index has ever since been one of the main Swedish stock price indices used, not least because of its long history. AFGX is a capital-weighted index and up to 1998 it only included firms on the Stockholm Stock Exchange's A-list. Frennberg and Hansson (1992) use AFGX as their base index. During the early period December 1918–December 1921, *Affärsvärlden's* index is headed "Changes in market value of the 41 most important industrial, transport and shipping firms".[12] The selection of firms was based on the premise that they belonged to the Exchange's A-list of most traded companies. Between 1934 and 1959 Frennberg and Hansson use Möller's (1962, pp. 185–187) slightly modified version, which also includes insurance companies.

Frennberg and Hansson make some additional adjustments to render the indices fully comparable over time. These adjustments differ somewhat between sub-periods depending on changes in the methods for calculating the published indices.

First, Frennberg and Hansson include banking companies, which for some reason were left out of the composite stock index up to 1941. To do this, they use a sepa-

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8 The banks' list was published in a leading daily newspaper, *Svenska Dagbladet*, up to April 1910 and thereafter in the weekly periodical of the Swedish Bankers' Association, *Ekonomiska Meddelanden*.

9 Note that the bid and ask quotes reflect the final positions of buyers and sellers after the auctions ended and are not the type of bids and asks quoted by market makers in continuous dealership markets.

10 See Gernandt, Palm and Waldenström (2012) for further details on the prices and balance sheets during 1901–1919.

11 Strictly speaking, AFGX was introduced in 1937; its predecessors had other names, as mentioned in the main text.

12 In Swedish: *värdeförändringar i milj. kr å de 41 viktigaste industri-, trafik- och rederipappren* (*Affärsvärlden* 1920, p. 4220).

rately listed banking stock index reported from 1921 and data on relative market capitalization weights in Möller (1962, p. 187).

Second, a major adjustment is made concerning the role of dividends. Notably, the early version of AFGX was not a pure price index; it included dividends paid out during the year. To arrive at a pure stock price index, Frennberg and Hansson (1992) adjust for this by using data on dividend payouts at the end of each year and subtracting the monthly (one twelfth) accrued dividends from the index. During December 1921–December 1923, *Affärsvärlden*'s index was a pure price index and therefore needs no adjustment with respect to dividends.

A third adjustment was made for the period December 1927–December 1934 with respect to the role of the dominant Krueger companies. During this sub-period, *Affärsvärlden* reported two distinct stock indices; one included and the other excluded the two firms dominated by the Swedish industrial magnate Ivar Kreuger: Svenska Tändsticksaktiebolaget (later Swedish Match) and the telephone company L. M. Ericsson. The final index uses the former up to and including March 1932 and the latter thereafter. The reason for this is the dramatic collapse of the Kreuger empire in mid-March 1932 following Ivar Kreuger's suicide in Paris on March 12, 1932. The switch results in the final index capturing the entire price fall occasioned by the "Kreuger crash" while avoiding the problems generated by the fact that the two companies were not listed for many years after the crash. Besides this measure, Frennberg

Ivar Kreuger (1880–1932) around 1930, before take off for a business trip in a passenger plane. In 1932 he committed suicide.
Source: Wikimedia.

and Hansson adjust for an awkward correction for accrued dividends which *Affärsvärlden*'s published index contains.[13]

For the period December 1959–December 1986, Frennberg and Hansson (1992) use the published AFGX and adjust it by subtracting paid out dividends and adding accrued dividends. Thereafter, AFGX was calculated as a pure stock price index and is therefore used without any adjustments.

From 1995 up until 2012, the updated version of Frennberg and Hansson's stock price index and the extension made for this chapter are based on the stock price index computed by the Scandinavian Information Exchange, SIXGX. The reason for switching from AGFX to SIXGX is mainly practical, more precisely that only the latter index has a readily available corresponding stock returns index during this period.

This chapter also presents new evidence about Swedish stock returns during the initial phase of Sweden's industrialization, the period 1870–1901. The evidence is based on a new market dataset from the Stockholm Stock Exchange. However, these early stock market data, and the resultant stock price and returns indices, are kept somewhat separate from the main analysis on account of the greater uncertainty about their overall quality. As the historical overview above showed, secondary securities trading in Stockholm was organized in monthly auctions, with no official listing or regular pricing of a fixed set of listed corporate stocks. Trading activity was quite low, at least before the 1890s, and the low level of liquidity makes quoted market prices uncertain. Nonetheless, there was recurrent trading in a number of stocks and the indices created rely on the same approach as in 1901–19, namely price changes on repeatedly traded and quoted stocks. Furthermore, although the new indices are indeed capital-weighted, information about book equity of traded stocks is only available for single years, so new issues, splits and other company events may be missing in the database.

The source for market prices, book equity and dividends for the period 1870–91 is Aurell (1892), a report containing bi-monthly prices and company information for all stocks and bonds traded in Stockholm. The number of companies with recurrent bi-monthly pricing ranged from 10 to 30 in the 1870s, and from 40 to 50 during the 1880s and early 1890s.

During the decade 1891–1901, i.e., between the Aurell (1892) source and Gernandt, Palm and Waldenström's (2012) index, which starts in 1901, a preliminary capital-weighted index was created based on the ten most traded (and also among the largest in terms of book equity) stocks on the exchange. They are companies engaged in manufacturing (Stora Kopparbergs Bergslags AB, Uddeholms AB), railways (Stockholm-Västerås-Bergslagens Järnvägs AB, Gefle-Dala Järnvägs AB), shipping (Göta kanalbolag 1:a klass), banking (Skånes Enskilda Bank, Industrikreditaktiebolaget i Stockholm, Stockholms Handelsbank) and insurance (Försäkringsaktiebolaget Skandia). For these ten corporations, year-end market prices and information about the

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13   Specifically, the index makers subtracted a twelfth of a standard annual interest rate of five per cent instead of the actual dividends paid out.

latest dividend were collected from the Stockholm Stock Exchange's stock price listings, collated and published by the local stockbrokers John Håkansson and J. H. Zethræus.

6.3.3. Dividends

A dividend index is calculated by taking each year's dividend yield, published at year end as a percentage of the stock price level, and dividing it by the stock price index presented above.

Data on dividends come from various sources. The period up to 1919 is based on the information from stock price listings used by Gernandt, Palm and Waldenström (2012). For the period 1870–1901, the source is the same as for market prices described above.

For the period 1919–1995, data collected by Frennberg and Hansson (1992) are used. Specifically, data were reported as annual dividend yields in Möller (1962) for 1919–1959, in the Riksbank's Statistical Yearbooks for 1960–1972 and in the Swedish chronicle *Veckans Affärer* thereafter.

For the period since 1995, the dividend yield is calculated from the difference in percentage change between the stock return index and the stock price index. Specifically, the difference between the monthly total return $R_t = (P_t - P_{t-1} + D_t)/P_{t-1}$ and the monthly capital gain $(P_t - P_{t-1})/P_{t-1}$ is D_t/P_{t-1}. Multiplying the dividend yield by P_{t-1} gives the dividend income. This dividend income each month is aggregated at the annual level and a dividend index point is computed, from which the current monthly dividend yield D_t/P_t can be retrieved.

6.3.4. Inflation

Annual consumer price index data are collected from the Riksbank project *Historical Monetary and Financial Statistics for Sweden*, described in Edvinsson and Söderberg (2010). A monthly price index does not exist for the entire period. Frennberg and Hansson (1992) construct a monthly index by using the Swedish National Board of Health and Welfare's quarterly cost-of-living index, which was available back to the late 1910s, amended by a monthly wholesale price index reported by Statistics Sweden. I extend the monthly price index back to 1901 by linearly interpolating yearly consumer prices.

The quality of monthly inflation series is generally poorer than that of the stock and bond market observations. Consumer prices have not been tracked carefully at the monthly level in Sweden for most of the studied period and are therefore imputed by using time series properties of other data-generating processes (wholesale prices, time). Consequently, monthly inflation is by construction less volatile and not as representative of the actual fluctuations as are the other series in the dataset.

6.4. Bond and money market data

6.4.1. Short-term government bill returns

The short-term yield on a government bill is often used as a measure of the risk-free rate of return in the economy. Today, governments continuously issue treasury bills with different maturities, from 30 to 120 days. Historically, however, no such market rates are available for Sweden before the 1980s. The Swedish government issued longer term fixed-interest securities to the capital market, with time to maturities down to two years. In the absence of a standard short-term market interest rate, this study uses the discount rate (*diskonto*) as a proxy for the risk-free rate for most of the studied period.

The discount rate was set by the central bank, the Riksbank, from November 1856 until the early 1980s. It has been an important market interest rate in Sweden in the sense that banking laws stipulated that commercial banks had to follow it when setting their own borrowing and lending rates. Frennberg and Hansson (1992) compare the discount rate with the interest rates paid by banks for deposits in the postwar period. They find that the discount rate was roughly the same as these deposit rates in the period as a whole, though somewhat higher until the 1970s and somewhat lower thereafter. However, the discount rate is by no means a perfect variable for our purposes. It is set statutorily by the central bank with reference to a number of considerations, including monetary policy objectives. It does not fluctuate in the short-term in relation to general economic conditions and therefore does not reflect the fluctuations in the true risk-free market rate.

In 1983 the Swedish National Debt Office started floating Treasury bills (*statsskuldsväxlar*) at different maturities, which were thus the first official money market bills in Sweden. Here we use the 30-day bill as proxy for a risk-free market rate of return, starting from January 1983. The source for these bills is the Riksbank website.[14]

The monthly risk-free return is calculated as a simple yield of the annualized discount rate (up to 1983) or the 30-day Treasury bill (thereafter):

$$R_t^f = \frac{Discount\ rate_t\ or\ Treasury\ bill_t}{12}.$$

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14 In the early 1980s commercial banks issued short-term bank certificates in a specific auction market. This market yield is used by Frennberg and Hansson (1992) instead of the discount rate for the early years in the 1980s before the introduction of Treasury bills ("statsskuldsväxel"). Since these bank certificates come from the private market, whereas the discount rate and Treasury bills are linked to the public sector, this project does not use the yields on bank certificates.

6.4.2. Long-term government bond returns

Two series associated with the return on a long-term government bond are presented. The *yield to maturity* reflects the return on a bond that is held until it matures. In the case of an eternal government bond without a maturity date, a consol, the yield to maturity is simply the flat yield defined as $Y = Coupon / Bond\ Price$, where *Coupon* denotes the bond's fixed cash flow and *Bond Price* is the market-quoted price. Bonds with a fixed maturity date have slightly more complicated yield expressions (see Campbell, Lo and McKinlay, 1997, ch. 10).

The other bond return series presented here uses *holding period returns* of bonds as a basis. A holding period return is defined as the sum of the capital gain associated with bond price changes and the accrued interest associated with the coupon payment. The monthly holding period return, HPR_t, of a government consol can thus be defined as:

$$HPR_t = \frac{P_t - P_{t-1}}{P_{t-1}} + \frac{Coupon}{12}.$$

Frennberg and Hansson (1992) show how the holding period return expression differs for bonds with limited maturity.

This chapter presents forty-five years of new evidence on long-term government bond yields and their associated holding period returns, covering the period 1874–1918. The main source of these new observations is stock price lists for the Stockholm Stock Exchange, where government bonds were regularly listed and traded throughout this period. Specifically, the stockbrokers John Håkansson and J. H. Zethreaus published price lists in the local newspapers.[15] Government bonds of 1872 (4 per cent coupon), 1880 (4 per cent), 1887 (3.6 per cent) and 1914 (5 per cent) were used. The lists contain bid and sell prices, and sometimes buy prices, reported for each bond. Yields are based as far as possible on bid (or buy) prices. There are, however, many occasions when no prices are reported and the series therefore have missing values. To get continuous series, bid prices were imputed using sell prices (typically about 10 basis points higher) or interpolated using a linear time trend.[16]

For the period 1919–1983, yields and holding period returns are reported by Frennberg and Hansson (1992). Up to the end of 1949 they use month-end prices on government consols collected from the monthly magazine *Ekonomiska Meddelanden* and the Riksbank's yearbooks. For the period 1950–1982 they retrieve prices and coupons from published yields to maturity on government bonds with approxi-

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15 The listings are also kept on microfilms at the Stockholm Stock Exchange, from which they were retrieved for this chapter.

16   Two longer periods were imputed using other bonds. First, during May 1879–December 1880 the 1872 bond had bid prices imputed from the 5 per cent government bond of 1870. Second, during August 1886–February 1888, the 1880 bond had its bid prices imputed from the 4 per cent bond issued by the state-controlled Swedish Public Mortgage Association (*Sveriges Allmänna Hypoteksförening*).

mately 10 years to maturity, using information in the Riksbank's yearbooks and the Swedish National Debt Office (*Riksgäldskontoret*).

From January 1983 onwards, yields on 10-year government bonds are collected from the Riksbank's statistical databases. The calculation of the monthly long-term government bond yield index is based on the monthly holding period return. For the period before 1987 this is the percentage change in the bond price level and a twelfth of the annual coupon. For the period thereafter the calculation is done by assuming that the bond is a zero coupon bond, following the methodology of Frennberg and Hansson (1992).

6.5. Descriptive analysis

Figure 6.3 presents stock returns on the Swedish stock market since 1901. The series are indexed so that they all equal one in October 1901, the starting date for the stock price index at the reorganized Stockholm Stock Exchange. Several interesting patterns emerge. First, the long-run picture differs quite markedly between prices and returns. Real prices were virtually unchanged throughout the 20th century up to 1980, when they started to increase. In contrast, real returns steadily increased, which emphasizes the historical importance of dividends to Swedish investors.

Figure 6.3: *Stock prices and returns in Stockholm, 1901–2012*
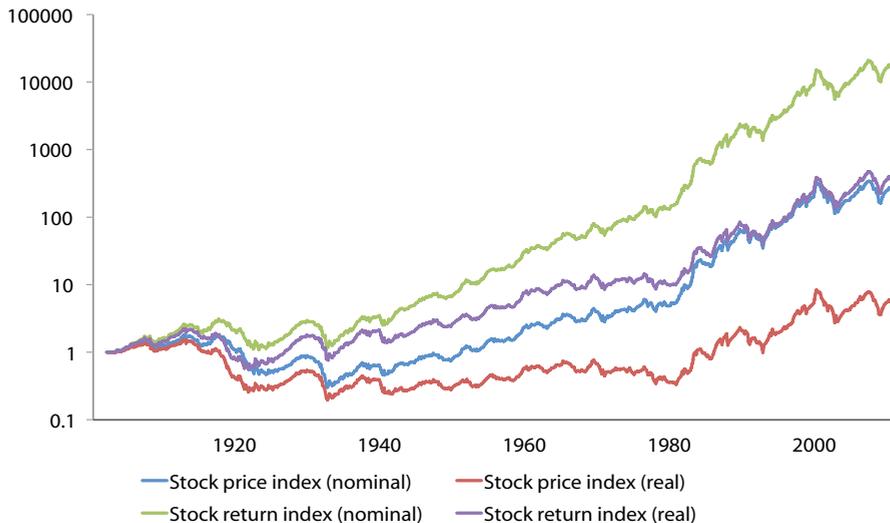
The level of stock returns has not been constant over time. Business cycles and periods of financial and economic crisis have led to fluctuations in corporate profits as well as in investors' income and wealth returns. This warrants an investigation into the extent to which stock returns in Sweden have varied over time. Table 6.1 pro-

vides a set of summary statistics of Swedish stock market returns for different sub-periods. Using the arithmetic average to calculate the mean return since 1901 gives an annual real return of 7.6 per cent. There were, however, some decades when the real market return was much higher than this; in the 1950s it was almost 13 per cent and in the 1980s and 1990s it was 20–25 per cent. In other decades it was lower and in the 1910s and the 1970s the average return was even negative.

Table 6.1 decomposes the stock returns into the price change, or capital gain, component and the dividend income component. The average nominal annual continuously compounded stock return over the entire study period, 1901–2012, is 7.8 per cent. Adjusting for consumer prices almost halves the return to 4.2 per cent. Decomposing the total nominal return of 7.8 per cent, about half comes from nominal capital gains (3.8 per cent) and half from the dividend yield (3.9 per cent). What the table also shows, however, is a considerable variation in stock returns across eras. Investing in the stock market portfolio in either 1930 or 2000, and then selling a decade later, resulted in losses. In contrast, an investment in the portfolio in 1980 yielded an average return of almost 30 per cent each year! It is also noteworthy that almost all of the variation across decades comes from differences in stock prices, whereas dividends have been fairly stable over time (see further on dividends below).

Another way of assessing the variation in stock market returns is to look at the individual months and years when returns were extremely high or low. Table 6.2 provides such evidence by listing the top and bottom ten months (Panel a) and years (Panel b) based on a ranking of all returns during the entire period studied. The list of dates in the table also provides a snapshot of the historically important events in the history of the Swedish stock market.

Looking at the highest returns, it is striking that most of them stem from the period after 1980. Nine out of ten top years and eight out of ten top months occurred during the 1980s, 1990s or the 2000s. This reflects the long boom on the Swedish stock market that occurred after 1980. However, some of the top months represent bounce-backs during recessions. The highest monthly return, on November 1992, occurred in the middle of the 1990s financial crisis but reflects the sudden drop in the Swedish exchange rate after the Riksbank decided to leave the ERM's fixed exchange rate system. The high returns in single months during the banking crisis of 1921 and 1922 likewise reflect bounce-backs.

Looking at extremely bad months and years, the share of years from earlier historical eras is higher. The worst month on the Swedish stock market over the past 112 years was March 1932, when the industrialist Ivar Keuger committed suicide and his conglomerate collapsed. The other bottom return months also reflect important economic or political events, including collapses of financial firms that mark the beginning of financial crises (November 1907, September 1990, October 2008), global stock market crashes (October and November 1987) or political events such as Germany's invasion of Denmark and Norway during the Second World War (April 1940). The pic-

ture of the lowest yearly returns is similar; they are typically associated with the major economic crises and political turbulence during the historical period under study.

Table 6.1: *Stock market returns in Sweden (per cent)*

	Nominal total stock return		Real total stock return		Nominal total capital gain		Real total capital gain		Divi-dend yield
	A	G	A	G	A	G	A	G	A
1901–2012	10.1	7.8	6.5	4.2	6.0	3.8	2.5	0.2	3.9
	(0.2)		(0.2)		(0.2)		(0.2)		(0)
1900–1909	5.5	5.1	4.2	3.8	2.5	2.2	1.3	0.9	2.9
	(8.6)		(9.4)		(8.1)		(8.9)		(1.5)
1910–1919	2.7	1.1	−4.9	−7.1	−1.3	−2.9	−8.7	−10.8	4.1
	(18.6)		(20.2)		(18.3)		(19.6)		(0.6)
1920–1929	3.6	2.2	8.0	7.0	−1.8	−3.2	2.3	1.4	5.5
	(17.8)		(14.4)		(17)		(13.7)		(0.8)
1930–1939	0.8	−1.9	0.2	−2.6	−4.0	−6.7	−4.6	−7.4	5.0
	(24.4)		(24.6)		(23.5)		(23.6)		(0.9)
1940–1949	10.1	9.7	5.5	5.1	5.0	4.8	0.7	0.4	4.7
	(8.6)		(9.5)		(7.9)		(9.1)		(0.9)
1950–1959	17.0	15.7	12.2	10.8	12.3	11.0	7.7	6.3	4.2
	(18.2)		(18.9)		(17.6)		(18.3)		(0.2)
1960–1969	8.7	7.5	4.8	3.5	5.0	3.9	1.3	0.1	3.4
	(16.7)		(17)		(16.1)		(16.3)		(0.3)
1970–1979	6.7	5.4	−1.8	−3.1	2.4	1.2	−5.8	−7.0	4.1
	(16.9)		(16.5)		(16.3)		(16)		(0.4)
1980–1989	32.1	29.4	22.9	20.3	28.6	26.0	19.6	17.1	2.7
	(26.7)		(25.1)		(26)		(24.6)		(1.1)
1990–1999	18.9	15.5	15.9	12.1	16.1	12.8	13.2	9.4	2.5
	(28.8)		(29.8)		(28.2)		(29.1)		(0.5)
2000–2009	5.2	−0.1	3.6	−1.6	1.4	−3.4	0.0	−4.9	3.5
	(33.6)		(33.5)		(31.3)		(31.2)		(4.2)
2010–2012	8.6	7.1	7.1	5.7	4.9	3.5	3.5	2.1	3.2
	(20.9)		(20.8)		(20.3)		(20.2)		(1.2)
1870–2012	10.9	9.0	7.9	6.1	6.6	4.8	3.7	2.0	4.3
	(0.2)		(0.2)		(0.2)		(0.2)		(0)
1870–1901	8.2	7.8	7.9	7.6	3.7	3.4	3.5	3.1	4.5
	(9.8)		(9.5)		(8.9)		(8.6)		(1.8)

Note: "A" stands for arithmetic mean and "G" for geometric mean. Standard deviations in parentheses.

Table 6.2: *Extreme years and months on the Swedish stock market*
Panel a) Months with highest and lowest nominal returns

Months with highest returns			Months with lowest returns		
Rank	Month	Return	Rank	Month	Return
1	1992:11	24.8	1	1932:3	−31.9
2	2009:4	19.5	2	1990:9	−25.3
3	1922:5	17.4	3	1987:10	−23.3
4	1983:2	17.3	4	2008:10	−19.9
5	1921:7	15.8	5	2002:9	−17.1
6	1999:12	14.8	6	1907:11	−16.2
7	2000:2	14.2	7	1987:11	−15.7
8	1922:4	13.7	8	2008:6	−15.7
9	1994:1	13.1	9	1940:4	−15.5
10	1986:3	12.8	10	1998:8	−15.1

Panel b) Years with highest and lowest nominal returns

Years with highest returns			Years with lowest returns		
Rank	Year	Return	Rank	Year	Return
1	1999	63.8	1	1918	−43.9
2	1983	50.1	2	2008	−43.3
3	2009	47.4	3	2002	−40.8
4	1986	46.2	4	1990	−40.1
5	1981	46.2	5	1931	−34.8
6	1993	46.0	6	1932	−28.3
7	1988	44.8	7	1970	−27.2
8	1959	44.7	8	1939	−26.2
9	2003	43.0	9	1914	−25.1
10	1996	42.2	10	1966	−24.8

The volatility of stock prices is one of the most distinct features of this form of investment, distinguishing it from most other forms of financial investment such as bonds or bank deposits. Figure 6.4 shows the evolution of stock market volatility on the Stockholm Stock Exchange since 1901. Volatility is calculated as the 12-month standard deviation of the nominal capital gain, presented as a rolling window over the entire period. There are three peaks in volatility: the early 1920s (deflation and a banking crisis), the early 1930s (international financial crisis and the Kreuger crash) and the early 1980s (devaluations and stock market boom).

As can be seen from Figure 6.4, stock market volatility varies over time. Determining whether this variability is significant or merely a matter of nuances requires a more systematic take. I therefore applied the estimation methodology for detecting and measuring structural breaks in time series proposed by Bai and Perron (1998,

2003). The results of this estimation are indicated by the horizontal solid line.[17] Stock price volatility on the Swedish stock market did indeed increase significantly from the early 1980s onwards. In this estimation the recent era been the most volatile in the modern history of Swedish stock markets, which may contradict some preconceptions about the role of technological development in stock market volatility. The second most volatile period was the interwar era, which is hardly surprising considering the extreme economic and political turbulence in this period. The quietest periods were the early 1900s and the postwar era up to 1980.

Figure 6.4: *Stock price volatility on the Stockholm Stock Exchange*
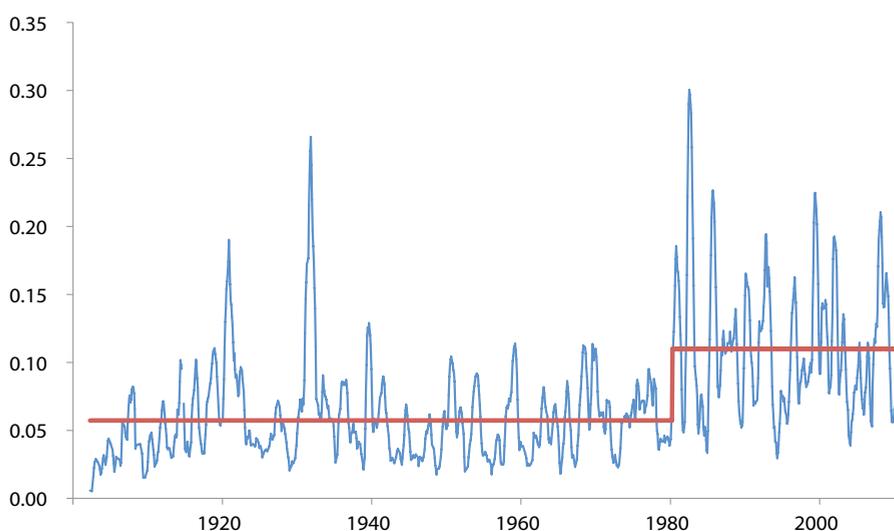
Note: Volatility is measured as the 12-month standard deviation in monthly nominal capital gains, measured at the middle of the period. The solid horizontal line shows the fitted values of a linear model with a structural break in mean volatility, dated July 1980, with statistical significance at the 5-per cent level. The structural break was estimated using the Bai and Perron (1998, 2003) methodology.

As apparent from the analysis above, dividends have been a significant part of total stock returns in Swedish stock markets. Figure 6.5 displays the evolution since 1901

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17 In short, Bai and Perron's (1998, 2003) method has three main steps. First, it tests for the existence of one or more structural breaks. All tests signaled that the time series contained one or several structural breaks. Second, the exact number of statistically significant breaks is estimated. All tests (in particular the Bai and Perron sequential method and the Bayes Information Criterion) suggested that there is one break. Third, a linear regression model of the kind $y_t = a + \Sigma_i^k b_i D_i$ is fitted, where D_i denotes the ith time dummy after an estimated break. Fitted values $\hat{a}$ and $\hat{b}_i$ accordingly represent the levels of volatility before and after each estimated break. One model parameter to set before testing is that the length of segments separated by a break has to be at least 20 per cent of the total segment length, resulting in a maximum number of breaks of three.

of dividend yields on the Stockholm Stock Exchange, calculated as the annual average dividend level divided by monthly stock prices. Although the monthly variation in the series is considerable, dividend yields follow a fairly clear secular decreasing trend. An application of the Bai and Perron (1998, 2003) time series method for estimating structural breaks revealed two significant breaks in the mean dividend yield. Dividends hovered around five per cent up to the early 1940s; they were somewhat lower, around four per cent, in the postwar period up to around 1980 and then decreased again to a level of around three per cent. It is difficult to tell just what explains the level of dividends. One hypothesis, put forward by Baskin (1988), is that in early financial markets firms used dividends to overcome information asymmetries vis-à-vis stock investors. By making stocks more similar to fixed-interest securities, e.g., bonds, a smaller premium was sufficient when firms acquired external finance.

Figure 6.5: *Dividend yield on the Stockholm Stock Exchange, 1901–2012*
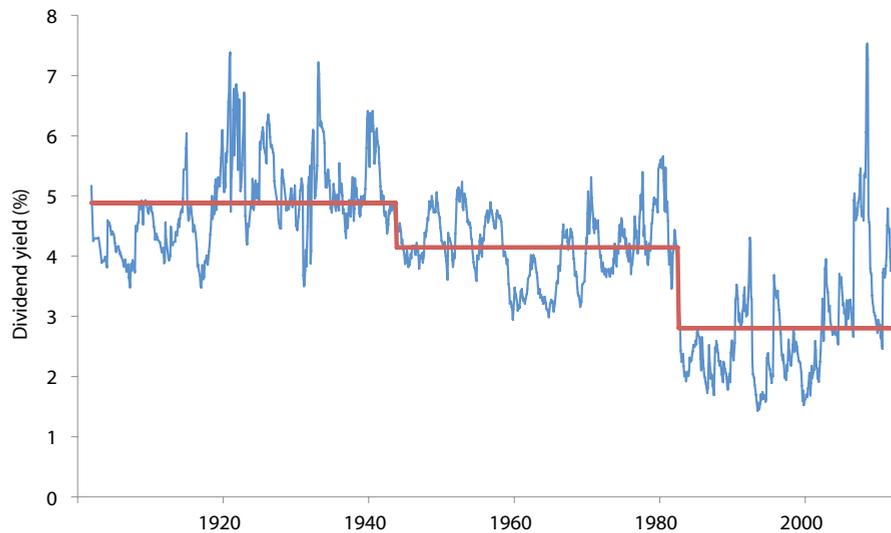
Note: The dividend yield reflects the dividend payout as a share of the stock price. The solid horizontal line shows the fitted values of a linear model with two structural breaks in the mean dividend yield, with statistical significance at the 5 per cent level. The structural break was estimated using the Bai and Perron (1998, 2003) methodology. In the first period, ending with a break in December 1943, the average dividend yield was 4.9 per cent – in the second period, between December 1943 and November 1982, it was 4.1 per cent; thereafter, it was 2.8 per cent.

Turning to fixed income returns, Figure 6.6 shows the evolution of the yield on two securities: a long-term government bond and a short-term Treasury bill (actually, the Riksbank's official discount rate) going back to the middle of the 19th century. As can be seen from the figure, there has been a high degree of correlation in the yield levels of these two instruments. The short-term rate lies somewhat below the long-term government bond rate in the latter part of the 20th century, except during the turbulent era in the 1990s when the Riksbank raised its short-term rates to dramatic levels in an attempt to support the fixed exchange rate (which was abolished after a short time).

Figure 6.6: *Nominal yields on long- and short-term government bonds and bills*
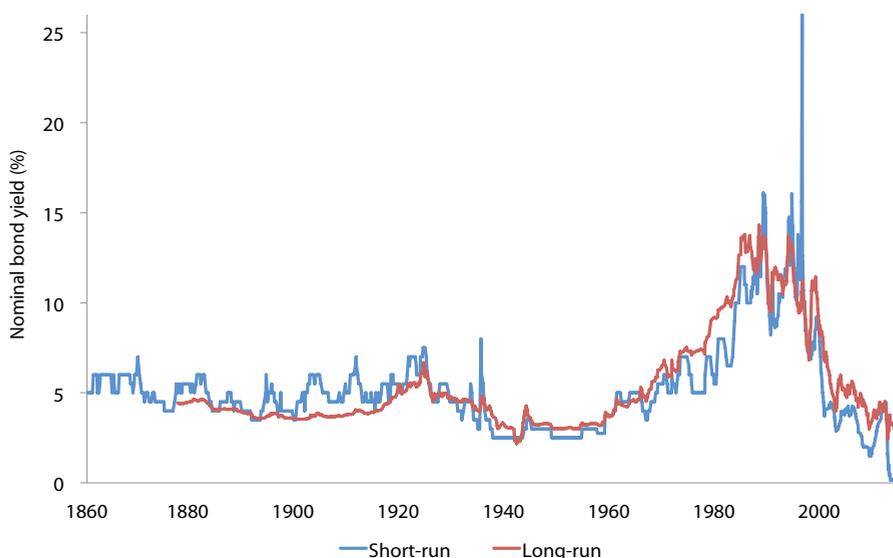
A comparative view of the long-run evolution of inflation-adjusted returns on stocks, bonds and bills is provided in Figure 6.7. The main message is that stock investments have performed dramatically better over the course of the past 112 years than any of the fixed-interest securities. Note, however, that this only holds when dividend yields are incorporated; by themselves, stock price gains do not outperform yields on government bonds or bills. The order of magnitude is of interest. A stock investment of 100 SEK in 1901 rendered a portfolio worth 44,200 SEK in 2012 when dividends were reinvested and only 900 SEK when they were not. For government bonds, the same investment would give a portfolio of 1,300 SEK and for short-term Treasury bills 700 SEK. Note that these ex post comparisons do not take into account the additional risk associated with stock investments.

While stocks outperformed fixed-interest securities over the period as a whole, this was not the case in the first half of the 20th century. Up to 1950 both government bonds and bills represented a better investment than a stock purchase regard-

A share issued in 1921 to the nominal value of 1 000 SEK in the company AB Kreuger & Toll, a building company that was founded by Ivar Kreuger and Paul Toll in 1908.
Source: The Royal Coin Cabinet.

A share issued in 1909 to the nominal value of 200 SEK in the company AB Göteborgs Automobildroskor.
Source: The Royal Coin Cabinet.

less of how dividends are treated. This is explained by the dramatic collapse of stock prices during the financial crises in the 1920s and 1930s. The total value of the stocks on the Stockholm Stock Exchange dropped by two thirds between December 1917 and December 1920 and by half between December 1930 and December 1932.

Figure 6.7: *Stock, bill and bond returns indices, inflation adjusted, 1901–2012*
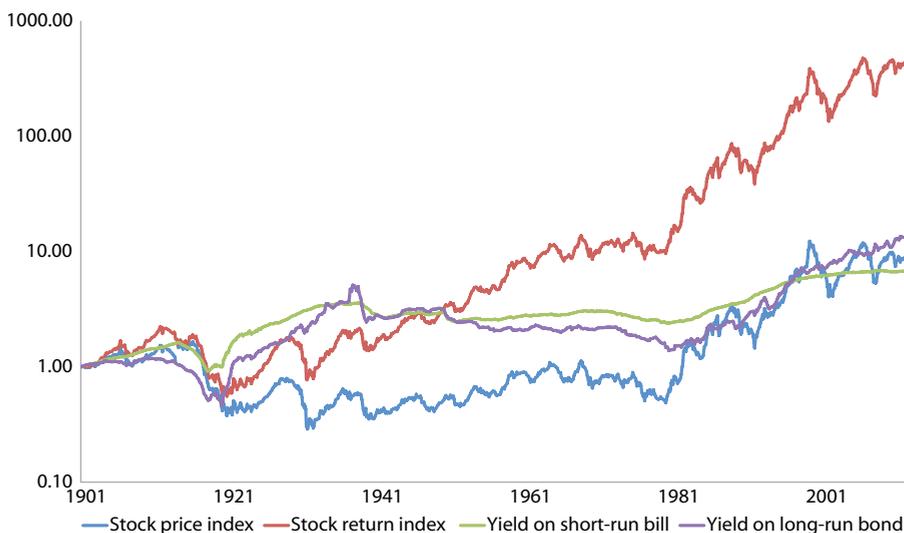
As already mentioned in the introduction and data sections above, this chapter also presents a new stock price index and a new stock returns index for Sweden beginning in 1870, which allows an analysis of the entire era up to modern times. Due to a scarcity of data, at present these indices are only available annually. Furthermore, one sub-period (1892–1901) is based on a relatively small set of traded stocks and is therefore potentially less representative than both earlier and latter periods. Figure 6.8 displays the evolution of nominal and inflation-adjusted stock prices and returns on the Stockholm Stock Exchange during the late 19th century. There were two boom years, 1871–1872, when prices rose by a total of 56 per cent and returns by almost 80 per cent. This was followed by an international financial panic and long depression, when prices fell and even total returns were negative for a few years. In the period as a whole, it can be seen that capital gains were modest and most of the total return came from the dividend yield. As reported in Table 6.1, total returns averaged eight per cent a year between 1870 and 1901 and capital gains were some-what over three per cent.[18]

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18   The share of dividend yields in total returns was 54 per cent during 1870–1901, but 66 per cent when the two boom years of 1871–72 are excluded.

Figure 6.8: *Stock prices and returns in Stockholm, 1870–1901*
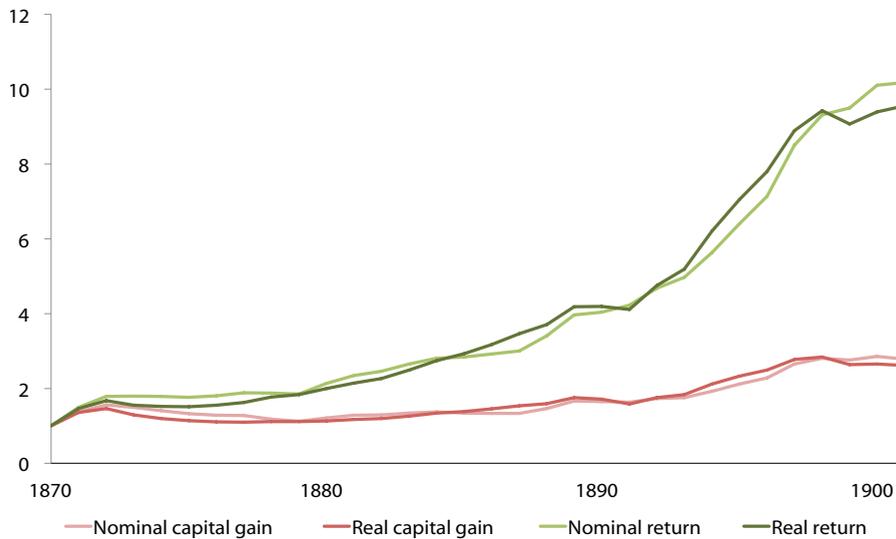
Table 6.3 presents summary statistics for bond and bill returns, both for the entire period and for the same sub-periods as for stock returns in Table 6.1. The average annual real return on a Swedish government short-term security was 1.7 per cent over the entire 20th century and up to 2012. For long-term government bonds the average annual real return was only marginally higher, 2.1 per cent. There is, however, a considerable variation across decades. Nominal yields were highest in the early era up to 1930 and in the 1980s and 1990s, largely due to relatively high inflation. Overall, comparing long-term and short-term yields suggests that the term premium, i.e., the return to investors for holding securities with longer maturities, has been significantly positive in almost every period in the past.

The last column of Table 6.3 presents estimates of the *equity risk premium,* that is, the return on equity (capital gains plus dividends) in excess of the return on safe assets such as government bonds or treasury bills. The equity risk premium (ERP) at time period *t* can be defined as:

$$ERP_t = \frac{(1 + R_t)}{(1 + R_{f,t})} - 1$$

Using this equation, the formula for calculating the annualized equity risk premium based on compounded monthly returns and premia is:

$$Annualized\ ERP_t = \left(\prod_{t=1}^{12}(1 + ERP_t)\right)^{1/12} - 1.$$

The typical argument for the existence of an equity risk premium is that investors demand compensation for holding volatile and risky corporate stocks instead of fixed-interest securities with lower returns, volatility and default risk.[19] Table 6.3 shows the equity risk premium calculated as the difference between the nominal stock market return and the nominal short-term bond, both over a holding period of one year. Looking at the entire period 1901–2012, the equity risk premium is 2.5 per cent per year using geometric average returns and 4.7 per year using arithmetic average returns. Extending the period back to 1870 increases the premia to 3.8 per cent and 5.6 per cent, respectively. Interestingly, these premia are closer to what Frennberg and Hansson (1992b) found for the period 1919–1990: 3.6 and 5.5 per cent, respectively. In other words, the historical time dimension matters for the estimation of equity premia, as has been found for other countries (see Goetzmann and Ibbotson, 2006) and now also for Sweden.

A closer look at the equity premia across time periods reveals a striking degree of variation. There are decades when the equity premium is virtually zero (e.g., the 1900s and 1970s) or even negative (the 1910s through the 1930s and the 2000s), and decades when it is substantial (the 1950s, 1980s, 1990s). Holding stocks for one year has thus not been a universally successful strategy, not even when averaged over a decade.

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19   For an extensive discussion of the equity risk premium, see Goetzmann and Ibbotson (2006).

Table 6.3: *Fixed income returns and the equity risk premium in Sweden*

| | Return on short-term bill | | | | Return on long-term bond | | | | Equity risk premium | |
| | Nominal | | Real | | Nominal | | Real | | | |
	A	G	A	G	A	G	A	G	A	G
1901–2012	5.4	5.3	1.9	1.7	6.2	5.8	2.8	2.1	4.7	2.5
	(0)		(0.1)		(0.1)		(0.1)			
1900–1909	5.2	5.2	3.7	3.7	3.4	3.3	2.0	1.9	0.3	−0.1
	(0.6)		(1.7)		(3.8)		(5.2)			
1910–1919	5.6	5.6	−2.5	−3.0	1.3	1.2	−6.4	−7.1	−2.9	−4.5
	(0.8)		(10.9)		(3.7)		(11.4)			
1920–1929	5.2	5.2	10.6	10.1	7.4	7.0	13.5	11.8	−1.6	−3.1
	(1)		(11.9)		(9.9)		(21.9)			
1930–1939	3.1	3.1	2.5	2.5	6.4	4.6	5.9	3.9	−2.3	−5.1
	(0.8)		(3.7)		(18.8)		(19.9)			
1940–1949	2.8	2.8	−1.3	−1.5	5.5	5.4	1.2	1.0	7.2	6.9
	(0.3)		(5.4)		(5)		(6.2)			
1950–1959	3.6	3.6	−0.8	−0.9	0.4	0.4	−3.8	−3.9	13.4	12.1
	(0.8)		(4.5)		(3.4)		(5.2)			
1960–1969	5.2	5.2	1.3	1.3	3.7	3.7	−0.1	−0.2	3.5	2.3
	(0.7)		(1.4)		(3.6)		(3.6)			
1970–1979	6.6	6.6	−2.1	−2.1	6.0	6.0	−2.5	−2.6	0.1	−1.1
	(1)		(1.5)		(2.5)		(3.5)			
1980–1989	11.5	11.5	3.7	3.6	11.2	11.0	3.3	3.0	20.6	17.9
	(1.6)		(3.4)		(7.2)		(8.5)			
1990–1999	8.4	8.3	5.2	5.2	14.7	13.9	11.4	10.6	10.5	7.2
	(4.1)		(3.1)		(14)		(13.7)			
2010–2012	1.2	1.2	−0.2	−0.2	8.4	8.1	6.8	6.6	7.3	5.9
	(0.7)		(1.7)		(10.2)		(9.7)			
1870–2012	5.2	5.2	2.3	2.2	5.3	5.3	2.3	2.3	5.6	3.8
	(0.0)		(0.1)		(0.0)		(0.0)			
1870–1901	4.8	4.8	4.6	4.6	4.0	4.0	3.8	3.8	3.4	3.0
	(0.0)		(0.0)		(0.0)		(0.0)			

Note: "A" stands for arithmetic mean and "G" for geometric mean. Standard deviations in parentheses. The equity premium is calculated as the difference between the nominal stock return and the nominal yield on a short-term government bill.

It is not sufficient to evaluate the premium for holding risky assets at just the annual level. Most people's investment horizons are much longer than that. When saving for retirement, the relevant time horizons are a matter of decades rather than years. Figure 6.9 presents further evidence on the evolution of the equity risk premium by presenting the premium when holding periods are extended from 1 year to 5, 10 and

30 years. The lines show monthly observations of excess nominal stock returns that are held for 1, 5, 10 and 30 years ahead. For this reason, the picture with a 30-year horizon ends in 1982 as that is the latest year for which a 30-year period of returns is observable in the data.

Looking first at the 1-year horizon, the premium oscillates around the zero line and is positive in about two thirds of the months (478 out of 744). For 5-year holding periods, the share of months with a positive equity premium increases to three fourths (938 out of 1,271). This share, about three fourths, of months with a positive premium is also true for the 10- and 30-year investment horizons. However, the historical pattern shows that many of the negative premia emanate from the negative stock returns of the 1920s and 1930s. Turning instead to just the postwar era, the share of positive months rises to 92 per cent for a 10-year holding period and to 100 per cent for a 30-year period. No such increase in the share of positive months can be discerned for the shorter holding periods.

Figure 6.9: *Equity risk premia across holding periods in Sweden, 1901–2012*
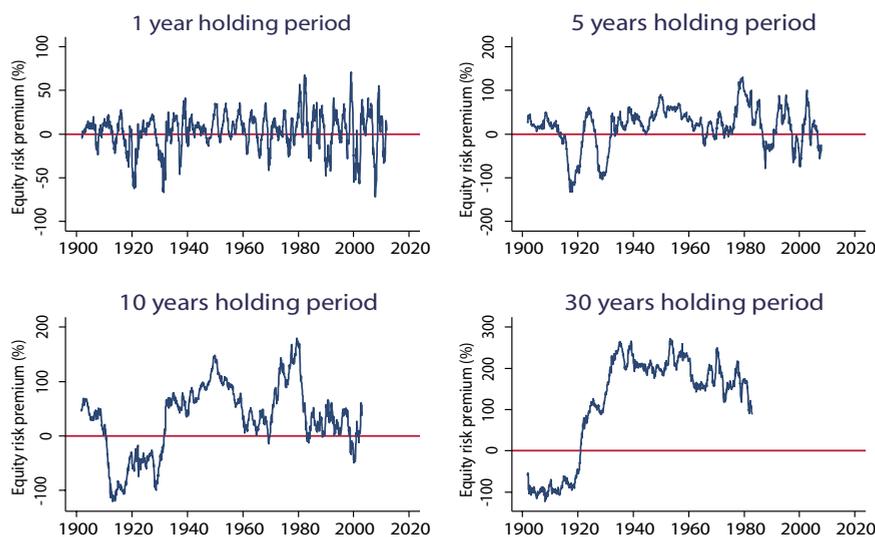
Note: The equity risk premium is measured as the return on equity (capital gains plus dividends) in excess of the return on safe assets such as government bonds or Treasury bills.

How internationally integrated are Swedish financial markets and how has this changed in the long run? There are many ways to assess this question. This study offers two intuitive yet simplistic approaches. In Figure 6.10, the stock price and stock returns indices on the Stockholm Stock Exchange are compared with the equivalent index for financial markets in the United States, namely Standard and

Poor's composite stock price index at the New York Stock Exchange. Data on U.S. stock prices and returns come from Robert Shiller's book *Irrational Exuberance* and updated versions of the database presented in that book (Shiller, 2000). As the figure indicates, the long-run investment outcomes in these two markets are both similar and different. Looking at the temporal variation, both markets exhibit the same major downturns and increases in the past century. Still, the period before 1980 was much more favorable for American stock market investors than it was for Swedish. The total return in the U.S. was higher than in Sweden by one order of magnitude. Real stock prices were almost constant in Sweden up to 1980 and only marginally positive in the U.S.

Figure 6.10: *Stock prices and returns in Stockholm and New York, 1901–2012*
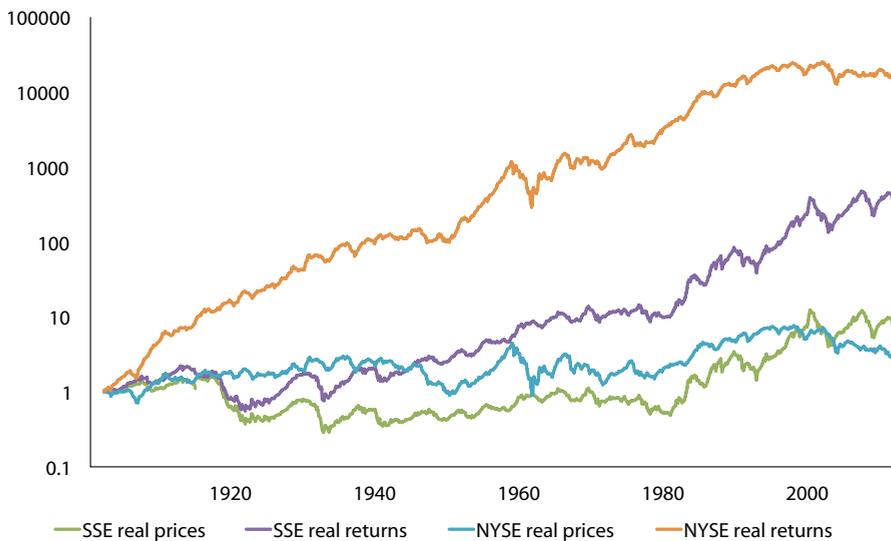
Another way of assessing the international integration of Swedish financial markets is to look at co-movements of stock returns across markets. Figure 6.11 shows rolling 36-month correlations of nominal stock returns in Stockholm and New York since 1901. There is a considerable variation in co-movements over time, with virtually no correlation in many periods and almost 0.8 in other periods. The level seems to increase slightly after 1980; particularly after 1990 the correlation has hovered between 0.5 and 0.8. Possibly, this change reflects the impact of developments in information technology as well as the financial liberalizations and deregulations that the world has seen since the 1980s.

Figure 6.11: *Moving correlations between Stockholm and New York returns, 1901–2012*
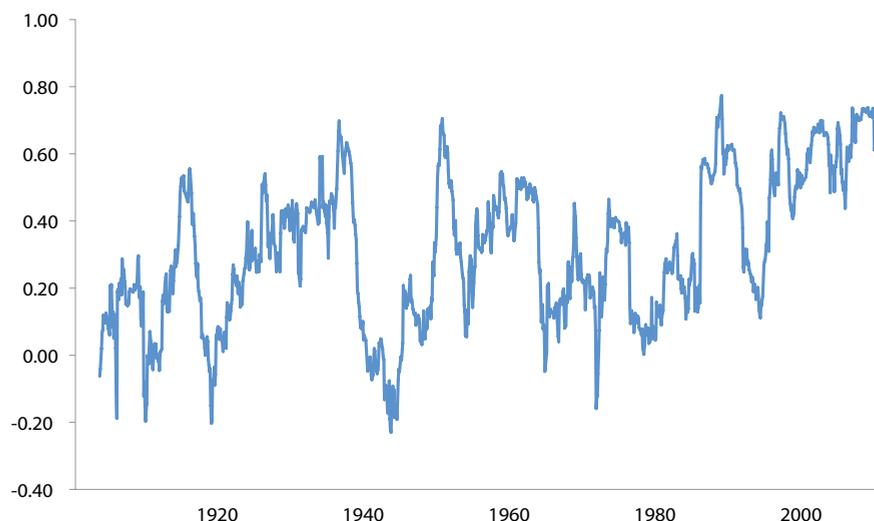
Note: The figure shows 36-month rolling correlations (date at the 18th month) between monthly stock returns in New York (Shiller, 2000, and updates at Robert Shiller's webpage) and in Stockholm (this dataset).

6.6. Concluding remarks

This chapter presents historical evidence about Swedish stock prices, dividends, and yields on government fixed-interest securities. The monthly stock returns series spans the latest 112 years, from 1901 to 2012, and the new evidence on annual stock prices and returns back to 1870 gives time series covering more than 140 years. The government long-term bond series dates back to 1874 and the short-term bill returns back to 1856. Altogether, the series presented in this chapter represent the longest financial asset price database available for Sweden to date.

An important contribution of the chapter is the information about the quality of the statistical evidence, how the series are constructed and how they have been adjusted to be comparable over time. Furthermore, the chapter describes the institutional context of the stock and money markets at which the asset prices were quoted.

The chapter's final sections present a set of preliminary analyses of the new evidence. Returns are calculated for different periods, trends in returns, dividends and volatility are examined, correlations with other countries' financial markets are computed and the equity risk premium is presented across several dimensions. Among the most significant findings are those which show how asset returns and equity risk premia differ considerably across both historical eras and holding periods. Although holding stocks with returns equal to the whole market index typically generate better return than bonds over the long run, there are several examples from history when this is not the case.

Appendix

Table A6.1: *Market data of the Stockholm Stock Exchange, 1863–2012.*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total trading volume	Stock trading volume	Bond trading volume	Market capitalization	GDP by activity	Turnover	Trading volume / GDP	Market cap / GDP
	(MSEK)	(MSEK)	(MSEK)	(MSEK)	(MSEK)	(1)/(4) (%)	(1)/(5) (%)	(2)/(5) (%)
1863	0.240				892		0.03	
1864	0.207				874		0.02	
1865	0.504				864		0.06	
1866	0.399				898		0.04	
1867	0.523				919		0.06	
1868	0.814				916		0.09	
1869	0.584				931		0.06	
1870	0.378			49	988	0.78	0.04	4.91
1871	0.627			63	1,035	1.00	0.06	6.07
1872	0.815			84	1,164	0.97	0.07	7.24
1873	1.069			86	1,372	1.25	0.08	6.23
1874	0.886			69	1,411	1.29	0.06	4.87
1875	0.460			60	1,382	0.76	0.03	4.38
1876	0.332			68	1,435	0.49	0.02	4.74
1877	0.470			57	1,431	0.83	0.03	3.96
1878	0.676			59	1,326	1.15	0.05	4.44
1879	2.212			43	1,278	5.09	0.17	3.40
1880	4.241			113	1,356	3.74	0.31	8.37
1881	1.924			100	1,379	1.93	0.14	7.24
1882	1.015			107	1,421	0.95	0.07	7.54
1883	1.857			127	1,431	1.47	0.13	8.85
1884	2.073			128	1,436	1.63	0.14	8.88
1885	2.467			131	1,396	1.88	0.18	9.39
1886	2.516			136	1,316	1.85	0.19	10.32
1887	1.958			128	1,254	1.53	0.16	10.24
1888	2.250			117	1,346	1.93	0.17	8.68
1889	2.752			133	1,417	2.08	0.19	9.36
1890	3.586			156	1,488	2.30	0.24	10.46
1891	3.772			125	1,563	3.02	0.24	8.00
1892	3.441			132	1,544	2.60	0.22	8.58
1893	3.608			135	1,528	2.68	0.24	8.82
1894	5.134			147	1,505	3.48	0.34	9.79
1895	6.939			162	1,601	4.28	0.43	10.13
1896	10.210			175	1,694	5.84	0.60	10.32
1897	18.920			203	1,821	9.32	1.04	11.15
1898	21.129			215	1,959	9.82	1.08	10.98

Table A6.1 (cont.): *Market data of the Stockholm Stock Exchange, 1863–2012.*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total trading volume	Stock trading volume	Bond trading volume	Market capitali zation	GDP by activity	Turnover	Trading volume / GDP	Market cap / GDP
	(MSEK)	(MSEK)	(MSEK)	(MSEK)	(MSEK)	(1)/(4) (%)	(1)/(5) (%)	(2)/(5) (%)
1899	11.505			212	2,118	5.44	0.54	9.99
1900	6.378			219	2,185	2.91	0.29	10.02
1901	3.915			213	2,125	1.84	0.18	10.03
1902	1.302			210	2,107	0.62	0.06	9.98
1903	2.524			228	2,288	1.11	0.11	9.96
1904	6.324			245	2,331	2.58	0.27	10.51
1905	7.184			271	2,390	2.65	0.30	11.34
1906	2.847			1,240	2,670	0.23	0.11	46.44
1907	36.50			1,178	2,889	3.10	1.26	40.76
1908	28.56			1,255	2,931	2.28	0.97	42.82
1909	38.66			1,301	2,899	2.97	1.33	44.88
1910	87.40			1,917	3,118	4.56	2.80	61.47
1911	180.53			2,173	3,178	8.31	5.68	68.38
1912	318.25			2,059	3,388	15.46	9.39	60.76
1913	180.02			2,061	3,636	8.74	4.95	56.67
1914	51.60			1,730	3,762	2.98	1.37	45.99
1915	50.92			2,135	4,349	2.39	1.17	49.08
1916	604.75			3,430	5,472	17.63	11.05	62.67
1917	1,322			4,624	6,329	28.59	20.89	73.06
1918	1,586	1,581	5	4,392	8,611	36.11	18.42	51.01
1919	526	520	7	3,734	10,243	14.09	5.14	36.46
1920	328	324	4	2,352	11,566	13.96	2.84	20.33
1921	162	146	16	2,133	8,477	7.59	1.91	25.16
1922	195	146	49	1,809	7,153	10.78	2.73	25.29
1923	161	114	47	1,724	7,145	9.35	2.25	24.12
1924	170	127	43	1,916	7,384	8.85	2.30	25.95
1925	233	179	53	2,076	7,646	11.20	3.04	27.15
1926	285	201	84	2,259	7,674	12.62	3.72	29.43
1927	444	350	94	2,705	7,790	16.40	5.69	34.73
1928	621	507	115	2,317	8,058	26.81	7.71	28.75
1929	576	492	84	3,985	8,407	14.45	6.85	47.40
1930	638	512	126	3,975	8,488	16.05	7.52	46.83
1931	602	531	72	2,708	7,796	22.24	7.72	34.74
1932	240	162	78	1,728	7,437	13.88	3.22	23.24
1933	226	135	91	1,954	7,399	11.58	3.06	26.41
1934	301	200	101	2,389	8,137	12.59	3.70	29.36
1935	264	184	81	2,580	8,670	10.25	3.05	29.76
1936	575	487	87	3,421	9,244	16.81	6.22	37.01

Table A6.1 (cont.): *Market data of the Stockholm Stock Exchange, 1863–2012.*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total trading volume	Stock trading volume	Bond trading volume	Market capitalization	GDP by activity	Turnover	Trading volume / GDP	Market cap / GDP
	(MSEK)	(MSEK)	(MSEK)	(MSEK)	(MSEK)	(1)/(4) (%)	(1)/(5) (%)	(2)/(5) (%)
1937	511	438	72	3,299	10,239	15.48	4.99	32.22
1938	334	265	69	3,569	10,685	9.37	3.13	33.40
1939	266	192	73	2,835	11,830	9.37	2.25	23.96
1940	129	84	45	2,881	12,632	4.47	1.02	22.81
1941	211	132	79	3,362	13,831	6.27	1.52	24.31
1942	245	169	75	3,683	15,105	6.64	1.62	24.38
1943	243	109	133	4,068	16,258	5.97	1.49	25.02
1944	281	125	156	4,498	16,763	6.24	1.67	26.83
1945	464	188	276	4,784	17,515	9.70	2.65	27.31
1946	536	188	348	5,040	19,764	10.64	2.71	25.50
1947	868	222	646	4,699	22,034	18.48	3.94	21.33
1948	490	132	358	4,263	24,465	11.49	2.00	17.42
1949	249	188	61	4,888	25,340	5.10	0.98	19.29
1950	319	218	101	5,901	28,276	5.40	1.13	20.87
1951	406	223	183	6,758	35,508	6.01	1.14	19.03
1952	249	168	82	6,359	39,611	3.92	0.63	16.05
1953	236	153	84	7,015	39,703	3.37	0.59	17.67
1954	325	240	85	9,591	42,119	3.39	0.77	22.77
1955	260	189	72	8,680	45,130	3.00	0.58	19.23
1956	286	160	125	8,740	49,371	3.27	0.58	17.70
1957	336	220	115	9,808	52,962	3.42	0.63	18.52
1958	380	261	119	11,412	55,116	3.33	0.69	20.71
1959	496	358	138	16,137	58,013	3.07	0.85	27.82
1960	442	342	100	16,981	63,275	2.60	0.70	26.84
1961	433	318	115	16,980	69,442	2.55	0.62	24.45
1962	384	277	107	17,600	75,648	2.18	0.51	23.27
1963	583	428	155	20,550	81,257	2.83	0.72	25.29
1964	689	601	89	24,075	91,343	2.86	0.75	26.36
1965	846	735	111	23,770	101,342	3.56	0.84	23.46
1966	754	656	98	20,000	109,586	3.77	0.69	18.25
1967	652	506	146	21,000	119,583	3.10	0.55	17.56
1968	1,159	891	268	30,000	127,784	3.86	0.91	23.48
1969	1,425	912	231	28,200	137,947	5.05	1.03	20.44
1970	883	708	175	24,000	152,975	3.68	0.58	15.69
1971	1,311	1,062	249	28,400	167,126	4.61	0.78	16.99
1972	1,881	1,602	279	32,900	179,643	5.72	1.05	18.31
1973	2,410	2,034	376	32,100	200,265	7.51	1.20	16.03

Table A6.1 (cont.): *Market data of the Stockholm Stock Exchange, 1863–2012.*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total trading volume	Stock trading volume	Bond trading volume	Market capitali zation	GDP by activity	Turnover	Trading volume / GDP	Market cap / GDP
	(MSEK)	(MSEK)	(MSEK)	(MSEK)	(MSEK)	(1)/(4) (%)	(1)/(5) (%)	(2)/(5) (%)
1974	2,639	2,111	528	33,500	236,884	7.88	1.11	14.14
1975	2,842	2,061	781	42,700	276,086	6.65	1.03	15.47
1976	3,270	2,146	1,123	43,800	311,851	7.46	1.05	14.05
1977	3,432	1,751	1,681	35,000	336,939	9.81	1.02	10.39
1978	4,947	1,817	3,131	44,000	373,436	11.24	1.32	11.78
1979	6,899	1,900	4,999	44,000	420,438	15.68	1.64	10.47
1980	17,041	7,598	9,443	56,461	475,040	30.18	3.59	11.89
1981	25,262	18,580	6,682	95,909	517,326	26.34	4.88	18.54
1982	36,555	29,054	7,501	135,691	569,881	26.94	6.41	23.81
1983	86,000	75,000	11,000	241,960	634,618	35.54	13.55	38.13
1984	81,000	71,000	9,919	231,000	708,723	35.06	11.43	32.59
1985	97,000	83,358	14,586	284,641	763,610	34.08	12.70	37.28
1986	173,000	141,660	31,000	433,000	840,304	39.95	20.59	51.53
1987	147,700	124,566	22,700	412,051	904,392	35.85	16.33	45.56
1988	139,400	115,000	24,400	614,000	988,046	22.70	14.11	62.14
1989	128,200	113,000	15,200	744,000	1,096,193	17.23	11.70	67.87
1990	102,300	94,000	8,300	525,000	1,196,088	19.49	8.55	43.89
1991	133,200	125,000	8,200	558,000	1,255,284	23.87	10.61	44.45
1992	182,500	166,000	16,500	552,000	1,269,103	33.06	14.38	43.50
1993	343,700	321,000	22,700	892,000	1,276,770	38.53	26.92	69.86
1994	670,500	628,000	42,500	977,000	1,355,746	68.63	49.46	72.06
1995	703,100	664,800	38,300	1,180,000	1,468,283	59.58	47.89	80.37
1996	936,200	918,100	18,100	1,688,000	1,509,366	55.46	62.03	111.84
1997	1,362,000	1,345,600	16,400	1,838,000	1,570,262	74.10	86.74	117.05
1998	1,845,800	1,829,900	15,900	2,413,000	1,630,486	76.49	113.21	147.99
1999	2,624,700	2,608,900	15,800	3,717,000	1,704,541	70.61	153.98	218.06
2000	4,469,300	4,455,900	14,400	3,583,400	1,813,900	124.72	246.39	197.55
2001	4,000,500	3,994,400	6,100	2,855,700	1,876,741	140.09	213.16	152.16
2002	2,707,400	2,701,800	5,600	1,779,700	1,950,718	152.13	138.79	91.23
2003	2,459,000	2,453,200	5,800	2,314,200	2,032,805	106.26	120.97	113.84
2004	3,397,900	3,390,700	7,200	2,699,100	2,128,951	125.89	159.60	126.78
2005	3,768,241	3,763,500	4,741	3,507,300	2,208,465	107.44	170.63	158.81
2006	5,528,876	5,521,000	7,876	4,275,000	2,351,089	129.33	235.16	181.83
2007	6,542,076	6,523,670	18,405	3,958,690	2,498,031	165.26	261.89	158.47
2008	4,705,292	4,693,974	11,318	2,239,352	2,561,909	210.12	183.66	87.41
2009	3,434,024	3,417,100	16,924	3,412,566	2,471,261	100.63	138.96	138.09
2010	3,640,265	3,627,000	13,265	4,229,605	2,650,126	86.07	137.36	159.60

Table A6.1 (cont.): *Market data of the Stockholm Stock Exchange, 1863–2012.*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total trading volume	Stock trading volume	Bond trading volume	Market capitali zation	GDP by activity	Turnover	Trading volume / GDP	Market cap / GDP
	(MSEK)	(MSEK)	(MSEK)	(MSEK)	(MSEK)	(1)/(4) (%)	(1)/(5) (%)	(2)/(5) (%)
2011	3,807,619	3,798,500	9,119	3,496,356	2,778,941	108.90	137.02	125.82
2012	2,904,196	2,892,000	12,196	3,739,806	2,914,017	77.66	99.66	128.34

Note: All values in columns 1–5 are in current prices. GDP by activity from Edvinsson (2014) in this volume.

Table A6.2: *Stock price and return indices, 1870–2012.*

	Nominal stock price index	Real stock price index	Nominal stock return index	Real stock return index	CPI	Dividend index	Dividend yield
	(1901 = 1)	(1901 = 1)	(1901 = 1)	(1901 = 1)	(1901 = 1)		
1870	0.359	0.385	0.098	0.105	0.934		
1871	0.497	0.521	0.147	0.154	0.953	0.092	6.07
1872	0.561	0.564	0.175	0.176	0.995	0.087	5.11
1873	0.538	0.497	0.176	0.163	1.083	0.088	5.34
1874	0.507	0.461	0.175	0.160	1.099	0.082	5.28
1875	0.477	0.438	0.173	0.159	1.088	0.073	5.00
1876	0.462	0.425	0.177	0.163	1.087	0.078	5.58
1877	0.460	0.424	0.185	0.170	1.085	0.054	3.89
1878	0.425	0.430	0.185	0.187	0.989	0.051	3.91
1879	0.403	0.428	0.182	0.193	0.944	0.047	3.82
1880	0.436	0.436	0.210	0.210	1.000	0.089	6.69
1881	0.461	0.452	0.230	0.226	1.021	0.053	3.77
1882	0.466	0.459	0.242	0.238	1.014	0.054	3.78
1883	0.483	0.486	0.261	0.262	0.993	0.061	4.15
1884	0.493	0.516	0.276	0.289	0.956	0.054	3.61
1885	0.483	0.533	0.279	0.308	0.907	0.048	3.26
1886	0.481	0.559	0.287	0.334	0.860	0.048	3.31
1887	0.479	0.591	0.295	0.364	0.810	0.047	3.25
1888	0.527	0.613	0.335	0.389	0.860	0.050	3.11
1889	0.599	0.676	0.390	0.440	0.886	0.046	2.50
1890	0.594	0.660	0.397	0.441	0.901	0.046	2.52
1891	0.587	0.611	0.415	0.432	0.960	0.058	5.92
1892	0.622	0.676	0.460	0.500	0.920	0.048	4.55
1893	0.632	0.707	0.488	0.545	0.894	0.046	4.36
1894	0.692	0.816	0.553	0.652	0.848	0.042	3.65
1895	0.761	0.897	0.629	0.741	0.848	0.042	3.29
1896	0.821	0.959	0.701	0.819	0.855	0.047	3.38
1897	0.953	1.066	0.835	0.935	0.894	0.042	2.61
1898	1.009	1.093	0.915	0.990	0.924	0.058	3.40
1899	0.992	1.014	0.933	0.953	0.979	0.062	3.71
1900	1.027	1.022	0.993	0.987	1.006	0.049	2.82
1901	1.000	1.004	1.000	1.004	0.996	0.052	5.17
1902	0.986	0.982	1.002	0.998	1.004	0.043	4.31
1903	1.069	1.047	1.100	1.077	1.021	0.041	3.82
1904	1.150	1.140	1.226	1.215	1.009	0.049	4.30
1905	1.272	1.235	1.406	1.365	1.030	0.051	3.98
1906	1.397	1.328	1.596	1.518	1.052	0.051	3.64
1907	1.204	1.089	1.424	1.287	1.106	0.054	4.51

Table A6.2 (cont.): *Stock price and return indices, 1870–2012.*

	Nominal stock price index	Real stock price index	Nominal stock return index	Real stock return index	CPI	Dividend index	Dividend yield
	(1901 = 1)	(1901 = 1)	(1901 = 1)	(1901 = 1)	(1901 = 1)		
1908	1.232	1.098	1.519	1.353	1.123	0.056	4.53
1909	1.263	1.135	1.628	1.463	1.113	0.061	4.81
1910	1.400	1.259	1.881	1.692	1.112	0.060	4.30
1911	1.547	1.351	2.161	1.887	1.145	0.061	3.91
1912	1.673	1.430	2.426	2.074	1.170	0.071	4.22
1913	1.613	1.375	2.428	2.070	1.173	0.072	4.49
1914	1.181	0.994	1.855	1.561	1.188	0.071	6.04
1915	1.352	0.990	2.201	1.612	1.365	0.061	4.52
1916	1.729	1.122	2.919	1.893	1.542	0.060	3.48
1917	1.674	0.861	2.934	1.509	1.945	0.065	3.88
1918	1.281	0.473	2.351	0.867	2.711	0.068	5.27
1919	1.011	0.390	1.959	0.755	2.593	0.059	5.79
1920	0.778	0.294	1.594	0.603	2.642	0.057	7.38
1921	0.570	0.288	1.244	0.629	1.977	0.038	6.67
1922	0.503	0.292	1.164	0.676	1.722	0.032	6.33
1923	0.481	0.282	1.161	0.682	1.703	0.023	4.80
1924	0.533	0.304	1.369	0.782	1.752	0.026	4.85
1925	0.579	0.340	1.578	0.927	1.703	0.032	5.54
1926	0.631	0.379	1.826	1.097	1.664	0.036	5.67
1927	0.756	0.457	2.308	1.396	1.654	0.034	4.46
1928	0.880	0.532	2.812	1.700	1.654	0.043	4.83
1929	0.828	0.510	2.754	1.695	1.624	0.043	5.16
1930	0.731	0.467	2.548	1.627	1.566	0.038	5.15
1931	0.458	0.300	1.669	1.092	1.528	0.025	5.50
1932	0.334	0.218	1.302	0.849	1.534	0.018	5.50
1933	0.373	0.249	1.550	1.032	1.502	0.022	5.88
1934	0.463	0.305	2.009	1.320	1.522	0.022	4.72
1935	0.488	0.317	2.213	1.437	1.540	0.023	4.76
1936	0.651	0.420	3.097	1.999	1.549	0.028	4.30
1937	0.621	0.385	3.078	1.906	1.615	0.031	5.00
1938	0.646	0.400	3.350	2.073	1.616	0.030	4.68
1939	0.493	0.284	2.688	1.552	1.732	0.032	6.41
1940	0.519	0.259	2.999	1.495	2.006	0.029	5.62
1941	0.606	0.268	3.730	1.648	2.263	0.031	5.08
1942	0.665	0.273	4.274	1.752	2.439	0.031	4.70
1943	0.709	0.292	4.778	1.970	2.426	0.032	4.50
1944	0.783	0.324	5.511	2.279	2.418	0.032	4.06
1945	0.828	0.345	6.066	2.524	2.403	0.033	3.97

Table A6.2 (cont.): *Stock price and return indices, 1870–2012.*

	Nominal stock price index	Real stock price index	Nominal stock return index	Real stock return index	CPI	Dividend index	Dividend yield
	(1901 = 1)	(1901 = 1)	(1901 = 1)	(1901 = 1)	(1901 = 1)		
1946	0.909	0.364	6.931	2.774	2.499	0.036	4.01
1947	0.846	0.336	6.688	2.654	2.520	0.037	4.32
1948	0.771	0.287	6.387	2.379	2.685	0.038	4.91
1949	0.840	0.317	7.292	2.752	2.650	0.038	4.48
1950	1.035	0.370	9.369	3.345	2.801	0.037	3.61
1951	1.222	0.372	11.539	3.512	3.286	0.048	3.97
1952	1.044	0.308	10.265	3.027	3.391	0.055	5.23
1953	1.182	0.349	12.146	3.582	3.391	0.053	4.51
1954	1.566	0.457	16.794	4.898	3.429	0.056	3.59
1955	1.466	0.403	16.352	4.499	3.635	0.063	4.28
1956	1.442	0.383	16.775	4.455	3.766	0.068	4.73
1957	1.500	0.384	18.192	4.652	3.911	0.072	4.78
1958	1.758	0.436	22.260	5.516	4.036	0.072	4.09
1959	2.515	0.615	33.011	8.073	4.089	0.074	2.94
1960	2.526	0.595	34.263	8.072	4.245	0.080	3.15
1961	2.510	0.578	35.104	8.085	4.342	0.087	3.45
1962	2.301	0.504	33.324	7.303	4.563	0.091	3.96
1963	2.850	0.606	42.739	9.087	4.703	0.095	3.32
1964	3.313	0.678	51.259	10.490	4.886	0.099	2.98
1965	3.549	0.686	56.646	10.941	5.178	0.113	3.19
1966	2.743	0.504	45.268	8.315	5.444	0.124	4.53
1967	2.851	0.506	48.964	8.696	5.630	0.127	4.45
1968	3.823	0.666	68.291	11.888	5.745	0.129	3.38
1969	3.911	0.656	72.092	12.087	5.964	0.140	3.58
1970	3.025	0.469	58.324	9.044	6.449	0.150	4.96
1971	3.683	0.533	74.012	10.714	6.908	0.152	4.12
1972	4.062	0.556	84.779	11.604	7.306	0.152	3.75
1973	4.046	0.515	87.621	11.147	7.860	0.158	3.91
1974	3.952	0.451	88.960	10.158	8.757	0.183	4.63
1975	5.112	0.535	119.519	12.517	9.549	0.200	3.91
1976	5.171	0.494	125.321	11.967	10.472	0.223	4.32
1977	4.360	0.370	109.700	9.304	11.791	0.218	4.99
1978	5.069	0.400	133.151	10.516	12.661	0.207	4.09
1979	5.005	0.360	138.118	9.936	13.901	0.237	4.73
1980	6.118	0.386	177.404	11.191	15.853	0.290	4.74
1981	9.631	0.557	289.913	16.754	17.304	0.339	3.52
1982	13.014	0.686	406.709	21.445	18.965	0.392	3.01
1983	21.619	1.044	688.889	33.270	20.706	0.433	2.00

Table A6.2 (cont.): *Stock price and return indices, 1870–2012.*

	Nominal stock price index	Real stock price index	Nominal stock return index	Real stock return index	CPI	Dividend index	Dividend yield
	(1901 = 1)	(1901 = 1)	(1901 = 1)	(1901 = 1)	(1901 = 1)		
1984	19.196	0.856	624.256	27.843	22.421	0.481	2.51
1985	24.121	1.019	803.508	33.960	23.661	0.507	2.10
1986	36.320	1.485	1234.301	50.479	24.452	0.656	1.81
1987	33.462	1.301	1160.709	45.132	25.718	0.806	2.41
1988	50.822	1.865	1803.934	66.196	27.252	0.970	1.91
1989	63.264	2.174	2292.398	78.764	29.105	1.207	1.91
1990	43.613	1.351	1619.800	50.165	32.290	1.488	3.41
1991	45.999	1.321	1758.852	50.510	34.822	1.600	3.48
1992	45.748	1.293	1803.842	50.986	35.379	1.503	3.29
1993	70.321	1.908	2825.601	76.662	36.858	1.022	1.45
1994	73.729	1.950	3010.548	79.610	37.816	1.196	1.62
1995	87.009	2.250	3631.703	93.934	38.662	1.746	2.01
1996	120.072	3.128	5179.898	134.962	38.380	3.257	2.71
1997	150.030	3.846	6626.042	169.843	39.013	3.156	2.10
1998	165.857	4.299	7493.292	194.247	38.576	4.054	2.44
1999	274.896	7.033	12720.402	325.430	39.088	4.376	1.59
2000	241.198	6.102	11346.166	287.066	39.525	4.966	2.06
2001	201.287	4.960	9662.145	238.109	40.579	4.303	2.14
2002	126.363	3.051	6193.143	149.514	41.422	3.739	2.96
2003	163.725	3.903	9128.919	217.620	41.949	4.610	2.82
2004	192.360	4.572	10414.523	247.557	42.069	4.839	2.52
2005	253.196	5.967	14194.425	334.532	42.431	7.171	2.83
2006	314.607	7.294	18199.402	421.950	43.132	8.380	2.66
2007	292.672	6.560	17733.182	397.464	44.616	15.969	5.46
2008	170.320	3.783	10758.766	238.989	45.018	12.368	7.26
2009	250.168	5.507	16429.821	361.651	45.430	7.534	3.01
2010	308.325	6.632	20801.469	447.425	46.492	7.586	2.46
2011	257.025	5.423	17952.052	378.747	47.398	11.356	4.42
2012	287.765	6.075	20964.224	442.586	47.368	10.849	3.77

Table A6.3: *Yields on short- and long-term government securities, 1856–2012.*

	Short-term government bill yield (%)	Short-term government bill yield index (1901 = 1)	Long-term government bond yield (%)	Long-term government bond yield index (1901 = 1)
1856	5.00	0.11		
1857	5.00	0.12		
1858	5.00	0.12		
1859	6.00	0.13		
1860	6.00	0.14		
1861	6.00	0.15		
1862	6.00	0.16		
1863	6.00	0.17		
1864	6.00	0.18		
1865	6.00	0.19		
1866	6.00	0.20		
1867	4.50	0.21		
1868	4.50	0.22		
1869	4.50	0.23		
1870	4.50	0.24		
1871	4.00	0.25		
1872	4.00	0.26		
1873	5.50	0.27		
1874	5.50	0.29	4.40	0.32
1875	5.50	0.30	4.48	0.33
1876	5.50	0.32	4.59	0.34
1877	6.00	0.34	4.55	0.35
1878	6.00	0.36	4.63	0.36
1879	5.00	0.38	4.36	0.40
1880	4.00	0.39	4.09	0.44
1881	4.00	0.41	4.06	0.46
1882	4.50	0.43	4.11	0.48
1883	5.00	0.45	4.09	0.50
1884	4.50	0.47	4.12	0.51
1885	4.50	0.49	3.98	0.54
1886	4.00	0.51	3.87	0.58
1887	4.00	0.53	3.87	0.60
1888	3.50	0.55	3.60	0.65
1889	4.00	0.57	3.58	0.68
1890	6.00	0.60	3.68	0.68
1891	5.50	0.63	3.84	0.68
1892	4.50	0.66	3.86	0.70
1893	4.00	0.69	3.74	0.75
1894	4.00	0.71	3.60	0.81

Table A6.3 (cont.): *Yields on short- and long-term government securities, 1856–2012.*

	Short-term government bill yield	Short-term government bill yield index	Long-term government bond yield	Long-term government bond yield index
	(%)	(1901 = 1)	(%)	(1901 = 1)
1895	4.00	0.74	3.58	0.84
1896	4.50	0.77	3.55	0.88
1897	5.00	0.81	3.55	0.91
1898	5.50	0.85	3.62	0.93
1899	6.00	0.90	3.78	0.92
1900	6.00	0.95	3.87	0.93
1901	5.00	1.01	3.75	1.00
1902	4.50	1.06	3.66	1.06
1903	4.50	1.11	3.66	1.09
1904	5.00	1.16	3.67	1.13
1905	5.50	1.22	3.79	1.14
1906	6.00	1.28	3.87	1.15
1907	7.00	1.36	4.14	1.12
1908	5.50	1.44	3.93	1.22
1909	5.00	1.51	3.83	1.30
1910	5.00	1.58	3.95	1.31
1911	5.00	1.66	3.98	1.34
1912	5.50	1.74	4.09	1.36
1913	5.50	1.84	4.39	1.31
1914	6.00	1.93	4.77	1.25
1915	5.50	2.04	5.37	1.31
1916	5.50	2.15	5.05	1.39
1917	7.00	2.28	5.45	1.39
1918	7.00	2.44	5.52	1.38
1919	6.00	2.61	5.46	1.48
1920	7.50	2.79	6.49	1.32
1921	5.50	2.98	5.47	1.66
1922	4.50	3.13	4.76	2.00
1923	5.50	3.28	4.83	2.07
1924	5.50	3.46	5.00	2.10
1925	4.50	3.64	4.78	2.30
1926	4.50	3.81	4.73	2.44
1927	4.00	3.97	4.58	2.64
1928	4.50	4.14	4.65	2.72
1929	5.00	4.34	4.46	2.97
1930	3.50	4.51	4.11	3.36
1931	6.00	4.70	4.80	3.00
1932	3.50	4.92	4.01	3.75
1933	2.50	5.08	3.71	4.21

Table 6.3 (cont.): *Yields on short- and long-term government securities, 1856–2012.*

	Short-term government bill yield (%)	Short-term government bill yield index (1901 = 1)	Long-term government bond yield (%)	Long-term government bond yield index (1901 = 1)
1934	2.50	5.21	3.01	5.38
1935	2.50	5.34	3.32	5.03
1936	2.50	5.47	3.03	5.69
1937	2.50	5.61	2.98	5.96
1938	2.50	5.75	2.46	7.39
1939	3.00	5.90	3.75	4.99
1940	3.50	6.10	3.66	5.32
1941	3.00	6.29	3.22	6.26
1942	3.00	6.49	3.24	6.42
1943	3.00	6.68	3.29	6.53
1944	3.00	6.89	3.24	6.85
1945	2.50	7.07	3.01	7.61
1946	2.50	7.24	3.02	7.81
1947	2.50	7.43	3.04	8.00
1948	2.50	7.62	3.09	8.12
1949	2.50	7.81	3.02	8.56
1950	3.00	8.01	3.32	8.20
1951	3.00	8.25	3.20	8.48
1952	3.00	8.50	3.30	8.29
1953	2.75	8.76	3.21	8.43
1954	2.75	9.00	3.37	8.24
1955	3.75	9.31	3.75	7.93
1956	4.00	9.67	4.05	7.97
1957	5.00	10.11	4.46	8.15
1958	4.50	10.59	4.27	8.60
1959	4.50	11.08	4.44	8.93
1960	5.00	11.64	4.44	8.99
1961	5.00	12.24	4.55	9.29
1962	4.00	12.79	4.83	10.21
1963	4.00	13.28	5.22	10.38
1964	5.00	13.89	5.87	10.42
1965	5.50	14.65	6.38	10.68
1966	6.00	15.52	6.35	11.21
1967	6.00	16.34	6.80	12.20
1968	5.00	17.26	6.19	12.95
1969	7.00	18.38	7.27	12.85
1970	7.00	19.70	7.32	13.83
1971	5.00	20.94	7.14	15.10
1972	5.00	22.02	7.34	16.07

Table 6.3 (cont.): *Yields on short- and long-term government securities, 1856–2012.*

	Short-term government bill yield (%)	Short-term government bill yield index (1901 = 1)	Long-term government bond yield (%)	Long-term government bond yield index (1901 = 1)
1973	5.00	23.14	7.37	17.32
1974	7.00	24.57	8.17	17.75
1975	6.00	26.26	9.15	18.09
1976	8.00	27.91	9.61	19.15
1977	8.00	30.23	9.84	20.63
1978	6.50	32.43	10.09	22.25
1979	9.00	34.79	10.91	23.16
1980	10.00	38.40	12.61	23.54
1981	11.00	43.13	12.80	26.42
1982	10.00	47.76	13.01	29.52
1983	11.80	53.36	12.44	34.32
1984	11.50	60.14	12.25	39.12
1985	12.65	69.39	12.59	43.42
1986	9.30	76.71	10.58	54.20
1987	9.00	84.21	11.74	56.75
1988	10.40	92.97	10.93	66.53
1989	12.30	104.10	12.55	67.68
1990	14.15	118.85	12.35	77.47
1991	13.77	133.26	10.00	99.02
1992	10.68	152.53	9.91	110.20
1993	7.27	166.48	7.27	142.84
1994	7.91	178.90	10.89	126.30
1995	8.61	194.79	8.60	160.72
1996	3.71	206.95	6.85	196.92
1997	4.34	215.51	5.97	224.17
1998	3.46	224.76	4.17	272.07
1999	3.38	231.78	5.72	257.04
2000	4.11	240.79	4.86	294.10
2001	3.73	250.61	5.35	295.09
2002	3.62	260.96	4.71	330.18
2003	2.73	269.22	4.78	343.17
2004	1.99	275.06	4.03	385.18
2005	1.62	279.85	3.34	425.46
2006	2.97	286.07	3.81	421.72
2007	4.03	295.97	4.35	417.15
2008	1.60	308.10	2.43	521.22
2009	0.20	309.85	3.30	494.60
2010	1.30	311.17	3.28	510.07
2011	1.70	316.70	1.62	615.07
2012	1.05	321.37	1.53	629.91

Table A6.4. *Real stock price index, 1901–2012 (1901:10=1)*

year	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1901										1.000	1.002	1.004
1902	1.003	1.005	0.999	0.991	0.991	0.990	0.989	0.988	0.985	0.986	0.986	0.982
1903	0.993	0.986	1.041	1.040	1.038	1.029	1.033	1.027	1.007	1.021	1.040	1.047
1904	1.056	1.052	1.074	1.069	1.082	1.099	1.120	1.115	1.111	1.115	1.124	1.140
1905	1.187	1.213	1.225	1.199	1.204	1.196	1.190	1.208	1.223	1.211	1.227	1.235
1906	1.243	1.252	1.274	1.282	1.267	1.240	1.272	1.302	1.295	1.286	1.254	1.328
1907	1.413	1.469	1.344	1.310	1.345	1.280	1.287	1.283	1.304	1.326	1.127	1.089
1908	1.144	1.128	1.104	1.095	1.038	1.037	1.046	1.042	1.014	1.023	1.057	1.098
1909	1.128	1.134	1.107	1.100	1.105	1.120	1.124	1.147	1.158	1.142	1.130	1.135
1910	1.106	1.138	1.145	1.154	1.154	1.208	1.222	1.268	1.250	1.240	1.245	1.259
1911	1.273	1.267	1.263	1.274	1.291	1.288	1.316	1.312	1.287	1.316	1.363	1.351
1912	1.349	1.436	1.455	1.459	1.452	1.536	1.547	1.530	1.516	1.349	1.423	1.430
1913	1.478	1.463	1.464	1.465	1.456	1.404	1.407	1.422	1.398	1.363	1.337	1.375
1914	1.314	1.286	1.279	1.268	1.279	1.220	1.109			1.106	1.038	0.994
1915	1.036	1.029	1.080	1.061	1.014	1.008	0.968	0.990	0.978	0.999	1.028	0.990
1916	0.973	0.958	0.975	0.960	1.013	1.082	1.061	1.076	1.059	1.081	1.123	1.122
1917	1.142	1.050	1.066	1.072	1.042	0.953	0.942	0.930	0.880	0.881	0.882	0.861
1918	0.824	0.778	0.727	0.688	0.638	0.581	0.612	0.585	0.559	0.557	0.495	0.473
1919	0.452	0.434	0.428	0.424	0.429	0.437	0.442	0.418	0.402	0.402	0.382	0.390
1920	0.439	0.438	0.426	0.437	0.387	0.394	0.378	0.348	0.318	0.311	0.283	0.294
1921	0.328	0.300	0.298	0.292	0.272	0.256	0.300	0.286	0.279	0.272	0.275	0.288
1922	0.301	0.269	0.259	0.295	0.345	0.344	0.328	0.315	0.300	0.295	0.275	0.292
1923	0.291	0.301	0.318	0.330	0.319	0.304	0.307	0.287	0.291	0.291	0.277	0.282
1924	0.287	0.287	0.321	0.309	0.297	0.296	0.303	0.308	0.298	0.279	0.283	0.304
1925	0.309	0.317	0.312	0.312	0.310	0.302	0.300	0.320	0.322	0.332	0.332	0.340
1926	0.335	0.336	0.336	0.340	0.343	0.358	0.366	0.368	0.368	0.371	0.374	0.379
1927	0.386	0.395	0.397	0.397	0.413	0.420	0.425	0.440	0.443	0.452	0.449	0.457
1928	0.485	0.471	0.479	0.484	0.488	0.485	0.485	0.515	0.534	0.523	0.522	0.532
1929	0.540	0.529	0.522	0.514	0.506	0.525	0.539	0.541	0.532	0.520	0.506	0.510
1930	0.516	0.519	0.529	0.516	0.505	0.495	0.494	0.465	0.462	0.451	0.455	0.467
1931	0.437	0.460	0.459	0.431	0.397	0.426	0.394	0.367	0.321	0.312	0.322	0.300
1932	0.311	0.293	0.211	0.204	0.196	0.196	0.218	0.241	0.239	0.234	0.226	0.218
1933	0.210	0.200	0.206	0.222	0.236	0.234	0.234	0.236	0.238	0.241	0.242	0.249
1934	0.270	0.283	0.270	0.281	0.273	0.265	0.273	0.275	0.283	0.302	0.298	0.305
1935	0.314	0.308	0.293	0.301	0.303	0.313	0.317	0.306	0.303	0.312	0.314	0.317
1936	0.327	0.344	0.353	0.360	0.350	0.364	0.387	0.381	0.385	0.394	0.411	0.420
1937	0.425	0.436	0.444	0.420	0.399	0.402	0.418	0.418	0.392	0.378	0.364	0.385
1938	0.409	0.393	0.356	0.375	0.366	0.375	0.383	0.382	0.381	0.398	0.403	0.400
1939	0.391	0.403	0.395	0.390	0.398	0.388	0.393	0.377	0.354	0.324	0.295	0.284
1940	0.263	0.278	0.297	0.251	0.260	0.259	0.252	0.240	0.246	0.247	0.266	0.259

Table A6.4 (cont.). *Real stock price index, 1901–2012 (1901:10=1)*

year	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1941	0.258	0.242	0.238	0.243	0.243	0.246	0.256	0.262	0.272	0.288	0.270	0.268
1942	0.280	0.273	0.285	0.287	0.286	0.280	0.287	0.297	0.290	0.285	0.269	0.273
1943	0.270	0.269	0.276	0.276	0.269	0.268	0.269	0.275	0.288	0.289	0.288	0.292
1944	0.291	0.294	0.297	0.293	0.288	0.288	0.297	0.311	0.307	0.314	0.320	0.324
1945	0.333	0.351	0.346	0.348	0.332	0.341	0.356	0.355	0.354	0.347	0.338	0.345
1946	0.367	0.360	0.361	0.361	0.357	0.365	0.369	0.362	0.349	0.356	0.352	0.364
1947	0.392	0.379	0.370	0.374	0.370	0.364	0.379	0.378	0.363	0.331	0.330	0.336
1948	0.336	0.322	0.312	0.313	0.302	0.292	0.300	0.295	0.289	0.282	0.287	0.287
1949	0.300	0.301	0.298	0.299	0.288	0.279	0.288	0.290	0.299	0.298	0.303	0.317
1950	0.319	0.330	0.331	0.334	0.331	0.335	0.329	0.342	0.347	0.353	0.366	0.370
1951	0.382	0.385	0.370	0.365	0.363	0.358	0.367	0.385	0.394	0.387	0.365	0.372
1952	0.378	0.357	0.332	0.317	0.322	0.312	0.322	0.327	0.320	0.319	0.316	0.308
1953	0.326	0.330	0.317	0.312	0.313	0.318	0.327	0.333	0.344	0.341	0.347	0.349
1954	0.362	0.368	0.382	0.384	0.398	0.408	0.421	0.429	0.431	0.436	0.454	0.457
1955	0.457	0.457	0.463	0.448	0.426	0.414	0.429	0.437	0.443	0.407	0.408	0.403
1956	0.418	0.414	0.400	0.400	0.391	0.388	0.406	0.405	0.398	0.391	0.373	0.383
1957	0.395	0.401	0.407	0.411	0.420	0.415	0.417	0.415	0.394	0.386	0.384	0.384
1958	0.392	0.389	0.384	0.387	0.392	0.406	0.426	0.432	0.448	0.444	0.438	0.436
1959	0.464	0.473	0.464	0.488	0.519	0.532	0.573	0.572	0.561	0.576	0.584	0.615
1960	0.607	0.579	0.544	0.558	0.562	0.563	0.583	0.610	0.604	0.590	0.599	0.595
1961	0.595	0.591	0.585	0.607	0.618	0.613	0.611	0.626	0.609	0.605	0.592	0.578
1962	0.566	0.569	0.563	0.552	0.524	0.500	0.530	0.530	0.512	0.500	0.503	0.504
1963	0.531	0.544	0.540	0.550	0.562	0.583	0.604	0.600	0.590	0.613	0.602	0.606
1964	0.643	0.632	0.648	0.648	0.624	0.621	0.639	0.655	0.653	0.652	0.660	0.678
1965	0.743	0.721	0.713	0.698	0.708	0.699	0.705	0.719	0.701	0.686	0.689	0.686
1966	0.666	0.654	0.658	0.608	0.604	0.616	0.602	0.552	0.557	0.545	0.518	0.504
1967	0.536	0.531	0.531	0.530	0.517	0.512	0.533	0.549	0.535	0.536	0.523	0.506
1968	0.513	0.519	0.527	0.550	0.575	0.583	0.614	0.612	0.604	0.617	0.649	0.666
1969	0.725	0.729	0.728	0.761	0.761	0.741	0.681	0.673	0.668	0.672	0.659	0.656
1970	0.613	0.568	0.575	0.514	0.476	0.511	0.545	0.512	0.493	0.444	0.471	0.469
1971	0.489	0.510	0.519	0.494	0.511	0.513	0.510	0.502	0.487	0.503	0.533	0.533
1972	0.552	0.545	0.570	0.580	0.555	0.550	0.566	0.576	0.567	0.559	0.579	0.556
1973	0.572	0.573	0.563	0.571	0.577	0.572	0.567	0.545	0.540	0.551	0.511	0.515
1974	0.548	0.567	0.574	0.584	0.546	0.540	0.550	0.503	0.483	0.498	0.467	0.451
1975	0.501	0.523	0.512	0.521	0.498	0.514	0.519	0.500	0.530	0.530	0.529	0.535
1976	0.548	0.549	0.562	0.608	0.574	0.574	0.577	0.536	0.511	0.464	0.474	0.494
1977	0.466	0.496	0.499	0.484	0.466	0.416	0.402	0.380	0.395	0.372	0.344	0.370
1978	0.398	0.379	0.403	0.420	0.397	0.403	0.429	0.435	0.418	0.393	0.399	0.400
1979	0.431	0.406	0.402	0.383	0.373	0.363	0.368	0.361	0.356	0.353	0.357	0.360
1980	0.372	0.365	0.359	0.359	0.350	0.353	0.355	0.343	0.331	0.351	0.371	0.386

Table A6.4 (cont.). *Real stock price index, 1901–2012 (1901:10=1)*

year	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1981	0.384	0.415	0.433	0.415	0.441	0.491	0.517	0.513	0.479	0.525	0.563	0.557
1982	0.548	0.535	0.519	0.489	0.496	0.496	0.516	0.514	0.545	0.584	0.648	0.686
1983	0.774	0.919	0.920	0.985	0.961	0.920	0.996	1.075	1.050	1.026	1.098	1.044
1984	1.127	1.106	1.129	1.074	0.967	1.001	1.004	0.977	0.931	0.909	0.865	0.856
1985	0.904	0.878	0.853	0.871	0.798	0.787	0.813	0.813	0.821	0.849	0.937	1.019
1986	1.035	1.069	1.211	1.276	1.353	1.374	1.425	1.454	1.447	1.556	1.494	1.485
1987	1.293	1.465	1.529	1.652	1.588	1.620	1.736	1.777	1.870	1.481	1.265	1.301
1988	1.450	1.474	1.514	1.544	1.625	1.608	1.669	1.608	1.688	1.758	1.764	1.865
1989	1.951	1.956	2.034	2.026	2.088	2.169	2.320	2.379	2.248	2.089	2.029	2.174
1990	2.067	1.952	1.847	1.866	2.036	2.109	2.097	1.837	1.425	1.401	1.306	1.351
1991	1.472	1.579	1.608	1.530	1.620	1.654	1.633	1.608	1.500	1.466	1.373	1.321
1992	1.400	1.357	1.436	1.406	1.420	1.310	1.238	1.110	0.987	0.999	1.280	1.293
1993	1.234	1.375	1.361	1.405	1.499	1.485	1.652	1.757	1.736	1.933	1.766	1.908
1994	2.174	2.079	1.890	1.989	1.979	1.836	1.959	1.943	1.872	1.923	1.996	1.950
1995	1.999	1.989	1.911	2.048	2.055	2.138	2.228	2.244	2.387	2.215	2.250	2.250
1996	2.298	2.429	2.453	2.495	2.543	2.569	2.472	2.618	2.717	2.779	3.012	3.128
1997	3.353	3.505	3.622	3.456	3.658	3.896	4.120	3.922	4.154	3.683	3.867	3.846
1998	4.009	4.315	4.583	4.624	4.786	4.838	4.830	4.161	3.717	3.864	4.346	4.299
1999	4.397	4.455	4.526	4.734	4.726	4.976	4.964	5.057	5.008	5.412	6.067	7.033
2000	7.250	8.358	7.984	8.063	7.765	7.420	7.517	7.641	6.982	6.727	6.250	6.102
2001	6.476	5.746	4.966	5.439	5.415	5.139	5.065	4.661	4.090	4.368	4.896	4.960
2002	4.684	4.702	4.775	4.326	4.039	3.750	3.359	3.256	2.749	3.092	3.488	3.051
2003	2.931	2.854	2.772	3.120	3.105	3.244	3.479	3.600	3.465	3.767	3.789	3.903
2004	4.142	4.304	4.211	4.197	4.110	4.264	4.185	4.169	4.273	4.261	4.540	4.572
2005	4.629	4.820	4.820	4.656	4.880	5.081	5.354	5.281	5.540	5.422	5.635	5.967
2006	6.100	6.286	6.654	6.554	5.990	6.045	5.975	6.230	6.517	6.811	6.735	7.294
2007	7.559	7.351	7.672	7.957	8.009	7.817	7.712	7.507	7.401	7.243	6.706	6.560
2008	5.796	5.966	5.806	5.870	5.954	5.097	5.070	5.122	4.444	3.649	3.600	3.783
2009	3.583	3.677	3.716	4.406	4.489	4.523	5.011	5.167	5.183	5.416	5.417	5.507
2010	5.586	5.519	5.965	6.116	5.656	5.737	6.016	5.823	6.259	6.242	6.310	6.632
2011	6.610	6.459	6.521	6.641	6.520	6.304	6.011	5.377	5.024	5.468	5.377	5.423
2012	5.793	6.113	5.977	5.876	5.413	5.592	5.849	5.710	5.857	5.778	5.970	6.075

Table A6.5. *Nominal stock price index, 1901–2012*

year	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1901										1.000	1.000	1.000
1902	1.000	1.002	0.997	0.990	0.990	0.990	0.990	0.990	0.988	0.988	0.989	0.986
1903	0.998	0.993	1.050	1.050	1.050	1.042	1.048	1.043	1.024	1.040	1.061	1.069
1904	1.077	1.072	1.094	1.087	1.100	1.116	1.135	1.129	1.124	1.127	1.135	1.150
1905	1.199	1.228	1.243	1.218	1.225	1.219	1.215	1.236	1.253	1.244	1.262	1.272
1906	1.283	1.294	1.320	1.330	1.316	1.291	1.327	1.361	1.356	1.348	1.317	1.397
1907	1.492	1.559	1.432	1.401	1.445	1.381	1.394	1.396	1.425	1.454	1.241	1.204
1908	1.266	1.251	1.226	1.217	1.155	1.155	1.167	1.164	1.134	1.145	1.185	1.232
1909	1.265	1.272	1.240	1.231	1.236	1.252	1.256	1.280	1.291	1.273	1.259	1.263
1910	1.230	1.266	1.274	1.284	1.284	1.343	1.359	1.410	1.390	1.379	1.384	1.400
1911	1.419	1.416	1.415	1.431	1.453	1.454	1.489	1.488	1.464	1.500	1.557	1.547
1912	1.548	1.650	1.675	1.683	1.677	1.778	1.794	1.777	1.764	1.573	1.662	1.673
1913	1.729	1.712	1.714	1.715	1.705	1.644	1.649	1.666	1.639	1.597	1.567	1.613
1914	1.543	1.511	1.505	1.493	1.508	1.441	1.311			1.311	1.232	1.181
1915	1.247	1.253	1.332	1.323	1.280	1.287	1.250	1.293	1.292	1.335	1.388	1.352
1916	1.343	1.337	1.375	1.367	1.457	1.573	1.558	1.595	1.586	1.635	1.714	1.729
1917	1.799	1.690	1.751	1.797	1.781	1.661	1.674	1.683	1.622	1.654	1.685	1.674
1918	1.656	1.612	1.553	1.513	1.443	1.352	1.464	1.436	1.408	1.438	1.311	1.281
1919	1.228	1.156	1.140	1.103	1.106	1.128	1.135	1.081	1.039	1.002	0.960	1.011
1920	1.101	1.133	1.097	1.118	1.007	1.032	1.001	0.947	0.875	0.859	0.786	0.778
1921	0.802	0.714	0.697	0.664	0.592	0.561	0.670	0.633	0.598	0.555	0.553	0.570
1922	0.586	0.509	0.482	0.545	0.627	0.619	0.602	0.578	0.541	0.517	0.474	0.503
1923	0.495	0.509	0.542	0.551	0.528	0.508	0.514	0.499	0.499	0.496	0.470	0.481
1924	0.490	0.488	0.543	0.532	0.498	0.493	0.500	0.521	0.507	0.498	0.499	0.533
1925	0.544	0.556	0.547	0.537	0.529	0.523	0.532	0.553	0.554	0.561	0.568	0.579
1926	0.576	0.572	0.563	0.572	0.579	0.598	0.613	0.616	0.612	0.619	0.625	0.631
1927	0.642	0.653	0.653	0.653	0.679	0.691	0.703	0.733	0.741	0.753	0.747	0.756
1928	0.803	0.782	0.796	0.808	0.818	0.817	0.814	0.863	0.894	0.872	0.867	0.880
1929	0.893	0.876	0.863	0.848	0.833	0.863	0.887	0.889	0.874	0.851	0.826	0.828
1930	0.835	0.836	0.849	0.826	0.808	0.790	0.787	0.740	0.732	0.712	0.715	0.731
1931	0.685	0.720	0.714	0.669	0.614	0.659	0.606	0.561	0.489	0.474	0.490	0.458
1932	0.474	0.450	0.326	0.313	0.302	0.303	0.337	0.371	0.368	0.358	0.347	0.334
1933	0.319	0.304	0.312	0.334	0.356	0.352	0.354	0.358	0.359	0.361	0.364	0.373
1934	0.407	0.426	0.407	0.426	0.414	0.403	0.414	0.416	0.428	0.457	0.452	0.463
1935	0.479	0.469	0.447	0.459	0.464	0.482	0.489	0.470	0.463	0.478	0.483	0.488
1936	0.505	0.529	0.543	0.554	0.538	0.559	0.595	0.586	0.593	0.610	0.635	0.651
1937	0.661	0.682	0.696	0.661	0.631	0.637	0.664	0.668	0.630	0.607	0.586	0.621
1938	0.660	0.633	0.573	0.605	0.589	0.604	0.617	0.614	0.613	0.642	0.651	0.646
1939	0.633	0.653	0.640	0.633	0.646	0.631	0.641	0.617	0.585	0.545	0.503	0.493
1940	0.463	0.496	0.533	0.458	0.478	0.481	0.475	0.455	0.473	0.484	0.528	0.519
1941	0.537	0.509	0.504	0.522	0.522	0.530	0.556	0.571	0.598	0.635	0.607	0.606

Table A6.5 (cont.). *Nominal stock price index, 1901–2012*

year	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1942	0.637	0.626	0.660	0.670	0.670	0.661	0.687	0.714	0.702	0.691	0.657	0.665
1943	0.657	0.656	0.672	0.672	0.655	0.651	0.654	0.666	0.698	0.700	0.697	0.709
1944	0.708	0.713	0.721	0.710	0.699	0.700	0.721	0.754	0.744	0.760	0.774	0.783
1945	0.805	0.849	0.836	0.840	0.803	0.825	0.860	0.857	0.853	0.835	0.815	0.828
1946	0.888	0.873	0.877	0.880	0.872	0.894	0.906	0.894	0.864	0.886	0.879	0.909
1947	0.964	0.930	0.911	0.921	0.912	0.902	0.939	0.937	0.911	0.832	0.831	0.846
1948	0.856	0.837	0.817	0.822	0.795	0.771	0.793	0.785	0.773	0.757	0.771	0.771
1949	0.796	0.799	0.789	0.796	0.769	0.743	0.769	0.773	0.798	0.800	0.811	0.840
1950	0.849	0.878	0.881	0.889	0.886	0.899	0.883	0.917	0.935	0.953	0.993	1.035
1951	1.106	1.138	1.126	1.134	1.138	1.133	1.166	1.230	1.269	1.266	1.199	1.222
1952	1.247	1.183	1.105	1.070	1.091	1.062	1.098	1.113	1.089	1.083	1.073	1.044
1953	1.107	1.117	1.076	1.058	1.060	1.077	1.105	1.128	1.166	1.157	1.178	1.182
1954	1.231	1.256	1.304	1.313	1.365	1.402	1.442	1.471	1.475	1.490	1.552	1.566
1955	1.565	1.569	1.589	1.552	1.479	1.441	1.512	1.545	1.573	1.460	1.476	1.466
1956	1.519	1.507	1.464	1.467	1.442	1.434	1.494	1.498	1.467	1.440	1.393	1.442
1957	1.505	1.527	1.549	1.565	1.602	1.589	1.609	1.595	1.526	1.506	1.500	1.500
1958	1.551	1.556	1.540	1.562	1.573	1.631	1.719	1.737	1.796	1.784	1.764	1.758
1959	1.875	1.913	1.874	1.964	2.092	2.138	2.307	2.312	2.281	2.347	2.380	2.515
1960	2.551	2.432	2.286	2.343	2.367	2.379	2.460	2.571	2.546	2.490	2.535	2.526
1961	2.536	2.522	2.507	2.604	2.660	2.646	2.633	2.699	2.629	2.619	2.569	2.510
1962	2.512	2.523	2.503	2.473	2.367	2.268	2.406	2.413	2.328	2.268	2.284	2.301
1963	2.426	2.498	2.488	2.544	2.602	2.710	2.808	2.790	2.746	2.862	2.823	2.850
1964	3.036	2.987	3.082	3.077	2.973	2.965	3.068	3.161	3.163	3.168	3.220	3.313
1965	3.640	3.535	3.523	3.460	3.510	3.482	3.611	3.678	3.595	3.525	3.546	3.549
1966	3.490	3.461	3.499	3.239	3.235	3.308	3.221	2.973	3.006	2.952	2.819	2.743
1967	2.942	2.934	2.952	2.949	2.885	2.862	2.994	3.088	3.022	3.024	2.942	2.851
1968	2.902	2.944	2.998	3.130	3.266	3.315	3.512	3.496	3.454	3.537	3.707	3.823
1969	4.180	4.217	4.219	4.431	4.426	4.318	3.991	3.960	3.934	3.962	3.910	3.911
1970	3.708	3.488	3.555	3.182	2.957	3.191	3.429	3.233	3.122	2.823	3.019	3.025
1971	3.245	3.389	3.462	3.285	3.387	3.411	3.408	3.404	3.304	3.449	3.650	3.683
1972	3.829	3.797	3.981	4.071	3.911	3.889	4.028	4.120	4.065	4.024	4.170	4.062
1973	4.192	4.230	4.176	4.265	4.319	4.327	4.310	4.155	4.130	4.260	3.993	4.046
1974	4.348	4.621	4.720	4.775	4.450	4.433	4.526	4.180	4.050	4.311	4.074	3.952
1975	4.374	4.603	4.542	4.635	4.496	4.666	4.781	4.659	4.934	4.995	5.042	5.112
1976	5.307	5.359	5.527	6.031	5.756	5.795	5.827	5.454	5.201	4.794	4.938	5.171
1977	4.916	5.298	5.383	5.281	5.151	4.694	4.577	4.342	4.564	4.316	4.034	4.360
1978	4.785	4.604	4.906	5.152	4.891	4.973	5.313	5.380	5.219	4.925	5.016	5.069
1979	5.493	5.218	5.179	4.969	4.864	4.759	4.862	4.832	4.786	4.792	4.912	5.005
1980	5.338	5.319	5.250	5.291	5.179	5.237	5.307	5.163	5.124	5.514	5.857	6.118
1981	6.197	6.824	7.165	6.910	7.393	8.243	8.776	8.767	8.258	9.095	9.788	9.631

Table A6.5 (cont.). *Nominal stock price index, 1901–2012*

year	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1982	9.683	9.601	9.315	8.847	9.013	9.038	9.474	9.459	10.09	10.95	12.25	13.01
1983	15.05	17.82	17.91	19.34	18.98	18.27	19.94	21.61	21.27	20.95	22.56	21.62
1984	23.67	23.13	23.97	22.94	20.78	21.48	21.59	21.18	20.30	19.93	19.08	19.20
1985	20.35	19.95	19.52	20.03	18.56	18.26	18.83	18.83	19.09	19.90	22.09	24.12
1986	24.77	25.59	28.95	30.70	32.55	33.06	34.37	35.03	35.14	37.93	36.41	36.32
1987	32.02	36.28	37.90	41.09	39.50	40.26	43.63	44.91	47.71	37.92	32.52	33.46
1988	37.47	38.38	39.63	40.73	43.04	42.70	44.54	43.00	45.48	47.71	47.96	50.82
1989	53.79	54.23	56.60	56.92	58.93	61.41	65.68	67.63	64.42	60.36	58.74	63.26
1990	62.10	58.91	57.26	57.79	63.45	65.66	65.91	58.13	45.62	45.14	42.22	43.61
1991	48.66	53.64	54.83	52.45	55.58	56.69	55.97	55.02	51.90	50.92	47.86	46.00
1992	48.63	47.14	50.12	49.20	49.70	45.77	43.20	38.74	34.92	35.44	45.19	45.75
1993	44.87	50.13	49.85	51.65	54.99	54.29	60.31	64.24	64.06	71.49	65.35	70.32
1994	80.40	77.14	70.36	74.36	74.14	68.80	73.40	72.81	70.80	72.81	75.53	73.73
1995	75.87	75.79	73.12	78.86	79.24	82.36	85.73	86.27	92.35	85.93	87.27	87.01
1996	88.45	93.57	94.91	96.75	98.54	99.16	95.17	100.3	104.7	107.1	115.8	120.1
1997	128.6	134.2	139.2	133.7	141.5	151.0	159.6	152.0	162.5	144.0	150.9	150.0
1998	155.1	166.7	177.3	179.4	186.0	187.7	186.9	160.2	143.7	149.7	168.0	165.9
1999	169.6	171.9	175.3	183.8	183.8	193.8	192.5	196.1	195.6	211.6	236.6	274.9
2000	281.1	325.6	312.4	315.6	305.5	291.8	294.3	299.4	275.4	266.0	247.2	241.2
2001	255.2	227.2	197.9	218.6	219.1	207.6	203.6	187.8	166.2	177.0	198.5	201.3
2002	189.6	190.7	195.4	177.8	166.4	154.3	137.7	133.5	113.6	128.2	144.3	126.4
2003	121.8	119.6	116.8	131.0	130.2	135.6	145.0	150.0	145.4	158.2	158.8	163.7
2004	173.4	179.7	177.2	176.6	173.3	179.1	175.5	174.7	180.3	180.3	191.0	192.4
2005	193.7	202.6	203.1	196.4	206.0	214.5	225.2	222.6	235.2	230.5	239.0	253.2
2006	256.8	265.9	283.4	280.6	256.8	259.1	255.7	266.8	280.7	293.3	290.5	314.6
2007	324.4	317.1	333.1	347.2	349.1	341.3	336.1	327.1	325.8	319.5	298.7	292.7
2008	256.7	265.3	260.6	264.7	269.5	231.8	230.1	232.9	204.1	167.9	164.3	170.3
2009	160.7	165.0	167.2	198.5	202.4	204.4	225.4	233.0	234.4	245.5	245.5	250.2
2010	252.2	250.6	271.6	278.4	258.0	261.7	273.6	264.8	287.1	287.2	291.3	308.3
2011	304.7	299.6	304.5	311.4	306.4	295.5	281.6	252.0	237.1	258.0	254.4	257.0
2012	272.0	288.9	283.3	279.1	256.9	264.8	275.8	269.6	277.6	273.7	282.1	287.8

Table A.6.6. *Nominal stock returns index, 1901–2012 (1901:10=1)*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1901										1.000	1.000	1.000
1902	1.000	1.004	1.003	1.001	1.005	1.005	1.005	1.005	1.003	1.004	1.006	1.002
1903	1.015	1.011	1.075	1.075	1.075	1.069	1.075	1.071	1.052	1.069	1.091	1.100
1904	1.109	1.105	1.133	1.134	1.167	1.187	1.207	1.201	1.196	1.200	1.209	1.226
1905	1.279	1.313	1.335	1.319	1.348	1.345	1.340	1.363	1.383	1.374	1.395	1.406
1906	1.420	1.435	1.470	1.491	1.498	1.472	1.512	1.552	1.547	1.539	1.504	1.596
1907	1.706	1.785	1.649	1.624	1.700	1.628	1.645	1.647	1.682	1.718	1.468	1.424
1908	1.498	1.484	1.463	1.462	1.417	1.421	1.435	1.432	1.396	1.411	1.461	1.519
1909	1.561	1.574	1.544	1.546	1.585	1.610	1.614	1.647	1.662	1.639	1.622	1.628
1910	1.587	1.637	1.657	1.683	1.718	1.801	1.823	1.892	1.865	1.852	1.860	1.881
1911	1.909	1.909	1.917	1.954	2.020	2.026	2.075	2.074	2.041	2.094	2.175	2.161
1912	2.164	2.313	2.361	2.389	2.421	2.572	2.596	2.572	2.554	2.279	2.410	2.426
1913	2.509	2.491	2.505	2.524	2.554	2.469	2.476	2.503	2.462	2.402	2.359	2.428
1914	2.324	2.282	2.286	2.286	2.360	2.260	2.057			2.057	1.935	1.855
1915	1.959	1.973	2.108	2.109	2.076	2.090	2.030	2.100	2.100	2.171	2.259	2.201
1916	2.187	2.182	2.256	2.259	2.449	2.650	2.624	2.688	2.674	2.758	2.894	2.919
1917	3.039	2.863	2.981	3.080	3.107	2.905	2.928	2.945	2.839	2.898	2.953	2.934
1918	2.905	2.835	2.748	2.700	2.633	2.474	2.678	2.628	2.579	2.636	2.405	2.351
1919	2.256	2.130	2.117	2.068	2.128	2.177	2.189	2.087	2.008	1.939	1.860	1.959
1920	2.135	2.204	2.149	2.213	2.048	2.108	2.044	1.935	1.789	1.759	1.611	1.594
1921	1.646	1.471	1.447	1.393	1.282	1.220	1.456	1.377	1.302	1.211	1.208	1.244
1922	1.280	1.118	1.079	1.232	1.440	1.424	1.386	1.330	1.246	1.193	1.096	1.164
1923	1.144	1.182	1.276	1.306	1.267	1.222	1.237	1.201	1.201	1.197	1.135	1.161
1924	1.199	1.199	1.356	1.338	1.272	1.260	1.278	1.334	1.298	1.277	1.283	1.369
1925	1.400	1.437	1.438	1.423	1.428	1.414	1.438	1.498	1.501	1.526	1.547	1.578
1926	1.570	1.565	1.571	1.610	1.658	1.718	1.761	1.772	1.763	1.789	1.808	1.826
1927	1.859	1.899	1.928	1.945	2.051	2.089	2.136	2.229	2.256	2.299	2.281	2.308
1928	2.444	2.388	2.462	2.521	2.598	2.602	2.594	2.750	2.850	2.784	2.769	2.812
1929	2.859	2.810	2.783	2.756	2.760	2.865	2.942	2.949	2.902	2.830	2.748	2.754
1930	2.810	2.820	2.876	2.817	2.802	2.746	2.736	2.573	2.547	2.482	2.494	2.548
1931	2.421	2.547	2.536	2.391	2.227	2.390	2.199	2.037	1.779	1.727	1.786	1.669
1932	1.768	1.681	1.225	1.187	1.170	1.179	1.309	1.442	1.430	1.395	1.351	1.302
1933	1.262	1.207	1.249	1.350	1.471	1.457	1.465	1.483	1.486	1.500	1.512	1.550
1934	1.688	1.772	1.704	1.794	1.779	1.736	1.785	1.796	1.847	1.975	1.954	2.009
1935	2.068	2.031	1.951	2.019	2.090	2.181	2.212	2.126	2.096	2.167	2.190	2.213
1936	2.286	2.404	2.484	2.559	2.547	2.651	2.821	2.781	2.818	2.898	3.022	3.097
1937	3.126	3.236	3.321	3.183	3.107	3.147	3.277	3.299	3.114	3.003	2.902	3.078
1938	3.258	3.133	2.855	3.047	3.037	3.121	3.192	3.178	3.175	3.326	3.374	3.350
1939	3.292	3.407	3.359	3.351	3.503	3.428	3.485	3.357	3.182	2.969	2.745	2.688
1940	2.521	2.713	2.934	2.553	2.742	2.769	2.735	2.623	2.728	2.792	3.048	2.999
1941	3.122	2.970	2.965	3.102	3.190	3.253	3.407	3.502	3.669	3.904	3.731	3.730

Table A.6.6 (cont.). *Nominal stock returns index, 1901–2012 (1901:10=1)*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1942	3.914	3.858	4.094	4.191	4.284	4.234	4.401	4.581	4.505	4.438	4.220	4.274
1943	4.224	4.232	4.363	4.401	4.388	4.375	4.392	4.476	4.695	4.712	4.695	4.778
1944	4.770	4.823	4.902	4.867	4.895	4.913	5.060	5.298	5.225	5.350	5.446	5.511
1945	5.672	5.998	5.938	6.013	5.855	6.031	6.284	6.265	6.237	6.118	5.970	6.066
1946	6.506	6.412	6.475	6.553	6.622	6.801	6.891	6.803	6.575	6.750	6.701	6.931
1947	7.332	7.092	6.981	7.114	7.173	7.115	7.406	7.394	7.192	6.578	6.571	6.688
1948	6.774	6.643	6.528	6.625	6.550	6.365	6.547	6.486	6.392	6.267	6.389	6.387
1949	6.592	6.634	6.595	6.709	6.631	6.433	6.652	6.691	6.910	6.937	7.038	7.292
1950	7.381	7.652	7.719	7.849	7.981	8.114	7.972	8.283	8.447	8.616	8.987	9.369
1951	10.02	10.34	10.29	10.45	10.70	10.67	10.99	11.59	11.97	11.95	11.33	11.54
1952	11.69	11.12	10.45	10.22	10.67	10.41	10.76	10.92	10.68	10.64	10.55	10.26
1953	10.84	10.98	10.64	10.56	10.83	11.04	11.32	11.56	11.96	11.88	12.10	12.15
1954	12.68	12.97	13.55	13.75	14.56	15.00	15.43	15.74	15.79	15.97	16.63	16.79
1955	16.76	16.85	17.15	16.88	16.41	16.03	16.82	17.20	17.51	16.28	16.46	16.35
1956	16.88	16.80	16.43	16.60	16.68	16.63	17.33	17.38	17.03	16.74	16.21	16.78
1957	17.46	17.78	18.14	18.48	19.33	19.22	19.46	19.30	18.47	18.25	18.19	18.19
1958	18.79	18.91	18.83	19.26	19.82	20.61	21.71	21.94	22.71	22.58	22.34	22.26
1959	23.75	24.30	23.94	25.26	27.35	28.01	30.22	30.29	29.91	30.80	31.25	33.01
1960	33.49	31.98	30.21	31.16	31.98	32.20	33.30	34.81	34.49	33.76	34.38	34.26
1961	34.35	34.24	34.19	35.72	37.06	36.94	36.75	37.69	36.73	36.61	35.93	35.10
1962	35.06	35.31	35.20	35.01	34.12	32.77	34.77	34.87	33.67	32.82	33.07	33.32
1963	35.11	36.24	36.28	37.34	38.86	40.55	42.02	41.76	41.12	42.89	42.32	42.74
1964	45.50	44.86	46.49	46.69	45.82	45.78	47.38	48.82	48.87	48.99	49.81	51.26
1965	56.29	54.79	54.84	54.18	55.81	55.46	57.51	58.61	57.30	56.22	56.60	56.65
1966	55.51	55.18	56.05	52.26	53.14	54.45	53.03	48.96	49.53	48.69	46.52	45.27
1967	48.43	48.43	49.02	49.36	49.28	49.03	51.27	52.92	51.80	51.89	50.51	48.96
1968	49.84	50.71	51.93	54.64	58.08	59.07	62.58	62.32	61.61	63.15	66.21	68.29
1969	74.69	75.51	75.88	80.15	81.26	79.42	73.42	72.87	72.42	72.99	72.08	72.09
1970	68.22	64.36	65.97	59.56	56.67	61.33	65.91	62.16	60.07	54.38	58.20	58.32
1971	62.45	65.40	67.19	64.31	67.71	68.36	68.31	68.26	66.29	69.26	73.36	74.01
1972	77.00	76.54	80.65	83.05	81.26	81.00	83.88	85.82	84.72	83.94	87.04	84.78
1973	87.57	88.57	87.89	90.38	93.10	93.48	93.10	89.79	89.30	92.19	86.47	87.62
1974	94.12	100.29	102.98	104.91	99.67	99.52	101.62	93.89	91.02	96.97	91.72	88.96
1975	98.03	103.4	102.7	105.6	104.6	108.8	111.5	108.7	115.2	116.7	117.9	119.5
1976	123.8	125.4	130.0	142.8	138.8	140.0	140.8	131.8	125.8	116.1	119.7	125.3
1977	118.7	128.3	131.0	129.5	128.9	117.7	114.8	109.0	114.6	108.5	101.5	109.7
1978	120.7	116.4	124.8	132.0	127.9	130.3	139.2	141.0	136.9	129.3	131.7	133.2
1979	144.7	137.9	137.7	133.3	133.4	130.9	133.8	133.0	131.8	132.2	135.6	138.1
1980	146.7	146.7	145.9	148.5	149.2	151.4	153.4	149.3	148.3	159.8	169.8	177.4
1981	178.4	197.1	208.2	202.6	221.5	247.6	263.6	263.4	248.2	273.6	294.6	289.9

Table A.6.6 (cont.). *Nominal stock returns index, 1901–2012 (1901:10=1)*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1982	290.3	288.6	281.6	269.6	280.3	281.8	295.4	295.0	314.9	341.9	382.9	406.7
1983	468.9	556.2	560.7	608.1	603.2	581.4	634.5	687.8	677.3	667.2	718.8	688.9
1984	753.2	737.2	765.8	735.8	674.0	697.3	701.1	687.9	659.7	647.8	620.5	624.3
1985	660.8	648.8	637.0	656.6	616.3	607.3	626.4	626.4	635.4	662.5	735.8	803.5
1986	824.9	853.6	968.5	1031	1104	1122	1167	1189	1193	1289	1237	1234
1987	1089	1236	1294	1408	1367	1395	1511	1556	1653	1315	1128	1161
1988	1301	1334	1382	1427	1524	1514	1579	1525	1613	1693	1702	1804
1989	1911	1929	2019	2038	2130	2223	2377	2448	2332	2186	2129	2292
1990	2252	2139	2087	2116	2349	2434	2443	2155	1692	1676	1568	1620
1991	1809	1998	2050	1972	2118	2164	2136	2100	1982	1946	1830	1759
1992	1861	1808	1930	1905	1951	1800	1699	1524	1375	1397	1782	1804
1993	1770	1980	1975	2053	2205	2179	2421	2579	2572	2872	2626	2826
1994	3232	3104	2837	3008	3021	2806	2994	2971	2889	2972	3084	3011
1995	3100	3101	3001	3250	3299	3434	3574	3597	3852	3586	3643	3632
1996	3695	3904	3972	4086	4251	4279	4102	4328	4516	4618	4993	5180
1997	5545	5798	6016	5882	6261	6680	7057	6717	7172	6367	6681	6626
1998	6857	7376	7868	8080	8405	8483	8444	7226	6480	6767	7599	7493
1999	7673	7786	7991	8486	8484	8952	8897	9067	9056	9789	10944	12720
2000	13003	15055	14485	14755	14346	13670	13788	14043	12885	12473	11610	11346
2001	11968	10677	9294	10430	10512	9947	9748	8996	7953	8502	9505	9662
2002	9089	9153	9403	8678	8158	7547	6720	6541	5558	6274	7078	6193
2003	6193	6095	6155	6852	6839	7127	7627	7903	7649	8331	8366	9129
2004	8625	9473	9363	9484	9371	9688	9509	9459	9768	9768	10346	10415
2005	10499	10976	11012	10865	11498	11976	12577	12418	13133	12884	13411	14194
2006	14397	14915	15943	16099	14831	14948	14753	15414	16214	16941	16802	18199
2007	18804	18396	19412	20719	21071	20620	20323	19778	19705	19349	18102	17733
2008	15583	16103	15796	16603	17072	14659	14556	14745	12911	10602	10376	10759
2009	10110	10386	10592	12899	13273	13397	14763	15298	15371	16100	16110	16430
2010	16549	17979	17892	18657	17366	17625	18430	17823	19341	19367	19644	20802
2011	20593	20265	20711	21537	21412	20660	19694	17623	16566	18030	17772	17952
2012	19021	20208	20003	19974	18657	19202	20017	19580	20208	19905	20543	20964

Table A6.7. *Real stock returns index, 1901–2012 (1901:10=1)*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1901										1.000	1.002	1.004
1902	1.003	1.006	1.005	1.003	1.006	1.005	1.005	1.004	1.001	1.001	1.002	0.998
1903	1.010	1.004	1.066	1.064	1.063	1.056	1.060	1.054	1.034	1.050	1.070	1.077
1904	1.087	1.084	1.113	1.115	1.148	1.169	1.191	1.186	1.182	1.187	1.198	1.215
1905	1.266	1.297	1.317	1.299	1.324	1.319	1.312	1.333	1.350	1.338	1.356	1.365
1906	1.376	1.388	1.420	1.437	1.442	1.414	1.450	1.485	1.478	1.468	1.432	1.518
1907	1.615	1.683	1.548	1.518	1.583	1.509	1.518	1.514	1.540	1.566	1.332	1.287
1908	1.353	1.338	1.318	1.316	1.273	1.275	1.286	1.282	1.248	1.260	1.303	1.353
1909	1.391	1.404	1.379	1.381	1.417	1.440	1.445	1.475	1.490	1.471	1.457	1.463
1910	1.426	1.471	1.489	1.512	1.544	1.619	1.639	1.701	1.677	1.665	1.673	1.692
1911	1.713	1.708	1.712	1.740	1.794	1.795	1.834	1.829	1.795	1.837	1.904	1.887
1912	1.886	2.012	2.050	2.071	2.096	2.222	2.239	2.214	2.195	1.955	2.064	2.074
1913	2.144	2.128	2.140	2.156	2.181	2.108	2.113	2.136	2.101	2.049	2.012	2.070
1914	1.980	1.942	1.943	1.941	2.002	1.915	1.741			1.735	1.630	1.561
1915	1.628	1.620	1.710	1.691	1.645	1.637	1.571	1.608	1.590	1.625	1.673	1.612
1916	1.585	1.565	1.600	1.586	1.702	1.823	1.787	1.813	1.785	1.823	1.895	1.893
1917	1.929	1.779	1.815	1.837	1.817	1.667	1.648	1.626	1.540	1.544	1.545	1.509
1918	1.446	1.368	1.286	1.227	1.163	1.063	1.120	1.070	1.024	1.021	0.908	0.867
1919	0.830	0.800	0.795	0.796	0.825	0.843	0.854	0.807	0.777	0.777	0.741	0.755
1920	0.851	0.852	0.835	0.864	0.788	0.804	0.771	0.711	0.651	0.636	0.579	0.603
1921	0.672	0.618	0.618	0.612	0.588	0.556	0.651	0.623	0.608	0.592	0.599	0.629
1922	0.658	0.591	0.580	0.665	0.791	0.791	0.756	0.725	0.692	0.681	0.635	0.676
1923	0.672	0.698	0.749	0.783	0.766	0.730	0.739	0.692	0.701	0.702	0.668	0.682
1924	0.702	0.705	0.801	0.776	0.759	0.757	0.774	0.788	0.763	0.717	0.728	0.782
1925	0.796	0.818	0.821	0.827	0.835	0.816	0.812	0.866	0.872	0.903	0.903	0.927
1926	0.913	0.919	0.939	0.957	0.982	1.027	1.052	1.058	1.060	1.073	1.082	1.097
1927	1.118	1.148	1.173	1.183	1.246	1.271	1.291	1.339	1.348	1.379	1.373	1.396
1928	1.475	1.439	1.480	1.509	1.550	1.546	1.544	1.640	1.703	1.670	1.667	1.700
1929	1.728	1.698	1.683	1.671	1.676	1.743	1.790	1.794	1.765	1.728	1.685	1.695
1930	1.737	1.749	1.792	1.759	1.753	1.722	1.718	1.619	1.607	1.572	1.585	1.627
1931	1.546	1.630	1.631	1.539	1.438	1.545	1.430	1.332	1.167	1.137	1.174	1.092
1932	1.158	1.095	0.796	0.772	0.759	0.764	0.846	0.938	0.930	0.910	0.879	0.849
1933	0.828	0.792	0.825	0.894	0.975	0.967	0.968	0.978	0.988	1.000	1.007	1.032
1934	1.120	1.176	1.131	1.184	1.174	1.143	1.178	1.185	1.221	1.306	1.287	1.320
1935	1.356	1.332	1.280	1.324	1.365	1.416	1.433	1.382	1.371	1.414	1.425	1.437
1936	1.482	1.561	1.613	1.662	1.657	1.725	1.834	1.808	1.830	1.875	1.955	1.999
1937	2.010	2.067	2.117	2.019	1.967	1.987	2.063	2.065	1.938	1.870	1.804	1.906
1938	2.018	1.944	1.774	1.889	1.888	1.939	1.981	1.974	1.972	2.062	2.091	2.073
1939	2.033	2.104	2.074	2.064	2.157	2.111	2.134	2.052	1.926	1.767	1.608	1.552
1940	1.430	1.522	1.635	1.400	1.491	1.488	1.453	1.383	1.420	1.427	1.537	1.495
1941	1.497	1.411	1.397	1.447	1.483	1.511	1.572	1.606	1.671	1.770	1.663	1.648

Table A6.7 (cont.). *Real stock returns index, 1901–2012 (1901:10=1)*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1942	1.722	1.685	1.767	1.794	1.826	1.794	1.840	1.906	1.863	1.828	1.729	1.752
1943	1.736	1.737	1.793	1.809	1.806	1.799	1.809	1.847	1.938	1.945	1.938	1.970
1944	1.964	1.986	2.022	2.007	2.019	2.026	2.087	2.183	2.158	2.211	2.255	2.279
1945	2.346	2.481	2.454	2.487	2.418	2.496	2.602	2.599	2.587	2.538	2.480	2.525
1946	2.691	2.647	2.668	2.690	2.713	2.777	2.806	2.758	2.659	2.715	2.688	2.774
1947	2.985	2.888	2.835	2.889	2.911	2.870	2.986	2.981	2.868	2.618	2.612	2.654
1948	2.660	2.556	2.492	2.518	2.486	2.412	2.475	2.439	2.393	2.337	2.381	2.379
1949	2.488	2.504	2.489	2.517	2.488	2.414	2.496	2.511	2.593	2.588	2.626	2.752
1950	2.770	2.871	2.896	2.945	2.978	3.027	2.974	3.090	3.134	3.197	3.315	3.345
1951	3.465	3.503	3.382	3.367	3.412	3.371	3.457	3.630	3.711	3.653	3.447	3.512
1952	3.541	3.354	3.137	3.027	3.145	3.057	3.160	3.206	3.137	3.138	3.112	3.027
1953	3.196	3.237	3.139	3.114	3.195	3.255	3.352	3.409	3.527	3.503	3.568	3.582
1954	3.728	3.804	3.966	4.018	4.248	4.369	4.499	4.590	4.614	4.671	4.866	4.898
1955	4.897	4.913	4.996	4.876	4.724	4.602	4.773	4.866	4.929	4.533	4.548	4.499
1956	4.645	4.615	4.483	4.524	4.521	4.506	4.704	4.699	4.624	4.540	4.335	4.455
1957	4.589	4.666	4.771	4.861	5.062	5.017	5.046	5.017	4.771	4.680	4.662	4.652
1958	4.750	4.726	4.697	4.776	4.933	5.127	5.375	5.455	5.657	5.618	5.550	5.516
1959	5.880	6.015	5.932	6.275	6.783	6.964	7.503	7.498	7.350	7.564	7.662	8.073
1960	7.973	7.612	7.190	7.418	7.596	7.623	7.891	8.259	8.176	8.001	8.121	8.072
1961	8.062	8.018	7.975	8.324	8.613	8.558	8.530	8.738	8.509	8.461	8.277	8.085
1962	7.906	7.955	7.911	7.811	7.553	7.220	7.652	7.657	7.410	7.244	7.280	7.303
1963	7.676	7.892	7.874	8.073	8.389	8.726	9.042	8.974	8.828	9.181	9.031	9.087
1964	9.636	9.492	9.780	9.828	9.616	9.588	9.875	10.11	10.08	10.09	10.22	10.49
1965	11.48	11.17	11.10	10.93	11.25	11.13	11.23	11.46	11.18	10.94	10.99	10.94
1966	10.59	10.42	10.55	9.812	9.927	10.14	9.907	9.085	9.172	8.981	8.552	8.315
1967	8.826	8.764	8.809	8.863	8.831	8.769	9.131	9.403	9.178	9.204	8.979	8.696
1968	8.811	8.932	9.135	9.606	10.22	10.39	10.95	10.92	10.78	11.01	11.60	11.89
1969	12.95	13.05	13.09	13.76	13.97	13.63	12.53	12.38	12.29	12.37	12.16	12.09
1970	11.27	10.49	10.67	9.619	9.121	9.825	10.48	9.846	9.484	8.548	9.080	9.044
1971	9.401	9.834	10.08	9.666	10.21	10.28	10.22	10.07	9.772	10.11	10.71	10.71
1972	11.10	10.99	11.55	11.84	11.54	11.46	11.78	12.01	11.81	11.66	12.09	11.60
1973	11.94	11.99	11.86	12.11	12.43	12.35	12.26	11.78	11.67	11.93	11.08	11.15
1974	11.85	12.30	12.51	12.83	12.23	12.13	12.35	11.30	10.85	11.21	10.51	10.16
1975	11.23	11.74	11.58	11.88	11.59	11.99	12.11	11.67	12.37	12.39	12.38	12.52
1976	12.79	12.84	13.21	14.40	13.85	13.86	13.94	12.95	12.36	11.23	11.49	11.97
1977	11.25	12.01	12.15	11.86	11.66	10.43	10.08	9.54	9.92	9.35	8.67	9.30
1978	10.03	9.57	10.24	10.76	10.38	10.56	11.23	11.40	10.97	10.32	10.47	10.52
1979	11.36	10.73	10.67	10.27	10.22	9.99	10.12	9.93	9.80	9.73	9.85	9.94
1980	10.22	10.08	9.96	10.07	10.08	10.21	10.26	9.93	9.59	10.18	10.77	11.19
1981	11.05	11.97	12.59	12.17	13.22	14.73	15.54	15.41	14.41	15.79	16.95	16.75

Table A6.7 (cont.). *Real stock returns index, 1901–2012 (1901:10=1)*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1982	16.43	16.09	15.68	14.90	15.42	15.46	16.09	16.03	17.01	18.23	20.24	21.44
1983	24.12	28.69	28.80	30.98	30.53	29.27	31.69	34.22	33.43	32.68	34.98	33.27
1984	35.87	35.25	36.07	34.44	31.35	32.52	32.61	31.73	30.24	29.55	28.14	27.84
1985	29.33	28.54	27.82	28.55	26.49	26.19	27.05	27.05	27.31	28.29	31.20	33.96
1986	34.48	35.64	40.53	42.86	45.88	46.65	48.39	49.38	49.13	52.88	50.77	50.48
1987	43.97	49.89	52.20	56.62	54.95	56.13	60.13	61.58	64.82	51.34	43.87	45.13
1988	50.32	51.25	52.82	54.09	57.53	57.00	59.18	57.02	59.88	62.37	62.61	66.20
1989	69.30	69.58	72.56	72.54	75.50	78.52	83.97	86.11	81.41	75.67	73.52	78.76
1990	74.95	70.89	67.29	68.32	75.39	78.18	77.73	68.12	52.87	52.01	48.52	50.16
1991	54.73	58.82	60.13	57.51	61.72	63.14	62.31	61.37	57.28	56.02	52.51	50.51
1992	53.58	52.02	55.29	54.44	55.75	51.54	48.71	43.68	38.84	39.37	50.47	50.99
1993	48.68	54.33	53.93	55.85	60.13	59.62	66.33	70.55	69.73	77.64	70.95	76.66
1994	87.40	83.67	76.20	80.45	80.65	74.88	79.89	79.27	76.39	78.49	81.51	79.61
1995	81.67	81.38	78.45	84.39	85.57	89.12	92.87	93.59	99.55	92.42	93.92	93.93
1996	96.02	101.4	102.6	105.4	109.7	110.9	106.5	113.0	117.2	119.9	129.9	135.0
1997	144.6	151.5	156.6	152.0	161.8	172.4	182.2	173.3	183.3	162.9	171.2	169.8
1998	177.3	190.9	203.3	208.2	216.3	218.7	218.2	187.7	167.6	174.7	196.6	194.2
1999	198.9	201.8	206.3	218.5	218.1	229.8	229.4	233.8	231.9	250.3	280.6	325.4
2000	335.4	386.5	370.1	376.9	364.6	347.6	352.2	358.4	326.6	315.5	293.5	287.1
2001	303.7	270.0	233.3	259.5	259.8	246.2	242.6	223.3	195.7	209.8	234.5	238.1
2002	224.6	225.6	229.8	211.2	198.0	183.5	163.9	159.5	134.5	151.3	171.1	149.5
2003	149.0	145.4	146.1	163.2	163.1	170.5	183.0	189.7	182.3	198.4	199.6	217.6
2004	206.0	226.9	222.6	225.4	222.2	230.7	226.8	225.8	231.5	230.9	245.9	247.6
2005	250.9	261.1	261.4	257.5	272.4	283.7	299.0	294.7	309.4	303.0	316.2	334.5
2006	342.0	352.6	374.3	376.0	345.9	348.7	344.8	359.9	376.5	393.3	389.5	422.0
2007	438.2	426.5	447.1	474.8	483.4	472.3	466.3	453.9	447.7	438.6	406.5	397.5
2008	351.9	362.1	351.9	368.2	377.2	322.3	320.7	324.3	281.1	230.4	227.4	239.0
2009	225.4	231.5	235.5	286.3	294.4	296.4	328.2	339.3	339.9	355.1	355.4	361.7
2010	366.6	395.9	393.0	409.8	380.7	386.4	405.2	391.9	421.7	421.0	425.5	447.4
2011	446.7	437.0	443.5	459.3	455.7	440.8	420.4	376.1	351.0	382.1	375.7	378.7
2012	405.1	427.5	422.0	420.5	393.0	405.6	424.4	414.7	426.3	420.2	434.7	442.6

Table A6.8. *Dividend yield, 1901–2012*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1901										5.169	5.169	5.169
1902	4.251	4.241	4.264	4.294	4.294	4.294	4.294	4.294	4.304	4.301	4.296	4.310
1903	4.089	4.109	3.887	3.887	3.887	3.918	3.896	3.913	3.987	3.923	3.847	3.817
1904	4.592	4.614	4.522	4.549	4.498	4.433	4.357	4.380	4.401	4.390	4.359	4.300
1905	4.217	4.118	4.069	4.151	4.128	4.147	4.162	4.092	4.036	4.066	4.008	3.976
1906	3.965	3.931	3.855	3.826	3.865	3.940	3.836	3.740	3.753	3.774	3.865	3.641
1907	3.637	3.482	3.789	3.873	3.756	3.931	3.892	3.887	3.808	3.732	4.372	4.507
1908	4.406	4.460	4.551	4.583	4.829	4.829	4.781	4.793	4.919	4.871	4.706	4.528
1909	4.799	4.773	4.895	4.930	4.911	4.847	4.834	4.741	4.700	4.769	4.822	4.806
1910	4.897	4.759	4.729	4.692	4.691	4.485	4.431	4.271	4.333	4.369	4.352	4.303
1911	4.262	4.274	4.277	4.228	4.165	4.162	4.063	4.066	4.134	4.034	3.885	3.911
1912	4.559	4.275	4.211	4.191	4.206	3.968	3.932	3.969	3.999	4.486	4.245	4.216
1913	4.184	4.225	4.221	4.218	4.244	4.400	4.388	4.342	4.415	4.530	4.616	4.485
1914	4.624	4.720	4.738	4.777	4.731	4.951	5.440			5.440	5.788	6.038
1915	4.906	4.881	4.592	4.621	4.776	4.751	4.893	4.730	4.733	4.582	4.405	4.522
1916	4.480	4.500	4.375	4.401	4.129	3.824	3.861	3.771	3.792	3.680	3.508	3.478
1917	3.615	3.848	3.714	3.620	3.651	3.914	3.884	3.863	4.009	3.931	3.860	3.884
1918	4.082	4.194	4.353	4.467	4.683	4.998	4.617	4.707	4.799	4.700	5.157	5.275
1919	4.764	5.063	5.132	5.306	5.290	5.187	5.158	5.413	5.632	5.839	6.093	5.787
1920	5.212	5.066	5.234	5.132	5.702	5.559	5.731	6.059	6.557	6.680	7.303	7.379
1921	4.743	5.328	5.458	5.732	6.424	6.779	5.678	6.007	6.358	6.850	6.874	6.672
1922	5.435	6.251	6.602	5.839	5.078	5.146	5.287	5.514	5.889	6.164	6.714	6.326
1923	4.667	4.534	4.261	4.190	4.374	4.542	4.490	4.625	4.630	4.650	4.909	4.800
1924	5.281	5.301	4.766	4.862	5.189	5.250	5.174	4.961	5.101	5.198	5.180	4.854
1925	5.897	5.769	5.868	5.981	6.063	6.138	6.035	5.801	5.796	5.718	5.649	5.541
1926	6.211	6.256	6.352	6.254	6.180	5.977	5.835	5.806	5.844	5.774	5.724	5.671
1927	5.246	5.152	5.158	5.153	4.956	4.873	4.789	4.594	4.544	4.468	4.509	4.455
1928	5.294	5.437	5.339	5.261	5.201	5.205	5.222	4.927	4.757	4.877	4.905	4.832
1929	4.781	4.876	4.950	5.035	5.123	4.945	4.814	4.805	4.886	5.016	5.169	5.158
1930	4.508	4.503	4.433	4.557	4.660	4.765	4.783	5.090	5.144	5.284	5.263	5.152
1931	3.677	3.499	3.527	3.762	4.098	3.823	4.157	4.491	5.147	5.309	5.137	5.499
1932	3.878	4.087	5.649	5.880	6.096	6.062	5.461	4.956	5.002	5.132	5.303	5.502
1933	6.875	7.212	7.026	6.562	6.162	6.238	6.205	6.134	6.122	6.074	6.028	5.880
1934	5.383	5.139	5.375	5.143	5.290	5.435	5.287	5.256	5.112	4.785	4.840	4.723
1935	4.855	4.959	5.197	5.070	5.014	4.819	4.750	4.944	5.018	4.861	4.814	4.764
1936	5.543	5.289	5.154	5.051	5.200	5.009	4.707	4.777	4.717	4.591	4.406	4.300
1937	4.703	4.557	4.466	4.701	4.929	4.880	4.685	4.657	4.936	5.125	5.309	5.005
1938	4.585	4.783	5.285	4.999	5.137	5.013	4.902	4.925	4.933	4.714	4.651	4.684
1939	4.986	4.833	4.934	4.991	4.885	5.006	4.925	5.115	5.399	5.795	6.274	6.408
1940	6.311	5.887	5.483	6.375	6.107	6.070	6.145	6.412	6.169	6.037	5.534	5.624
1941	5.737	6.055	6.115	5.909	5.906	5.812	5.548	5.400	5.158	4.853	5.083	5.084

Table A6.8 (cont.). *Dividend yield, 1901–2012*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1942	4.907	4.995	4.736	4.667	4.666	4.734	4.554	4.378	4.454	4.526	4.763	4.703
1943	4.863	4.869	4.753	4.754	4.878	4.906	4.887	4.798	4.576	4.565	4.585	4.505
1944	4.491	4.454	4.408	4.476	4.547	4.542	4.410	4.213	4.274	4.179	4.108	4.060
1945	4.080	3.867	3.927	3.906	4.089	3.979	3.819	3.832	3.851	3.929	4.029	3.965
1946	4.098	4.170	4.152	4.134	4.172	4.072	4.018	4.072	4.215	4.110	4.143	4.005
1947	3.790	3.928	4.012	3.966	4.008	4.050	3.891	3.899	4.010	4.390	4.397	4.320
1948	4.421	4.521	4.630	4.601	4.759	4.910	4.774	4.821	4.894	4.999	4.907	4.908
1949	4.728	4.712	4.770	4.730	4.896	5.061	4.895	4.869	4.717	4.704	4.640	4.478
1950	4.398	4.254	4.241	4.203	4.217	4.157	4.231	4.074	3.997	3.922	3.763	3.609
1951	4.382	4.259	4.304	4.272	4.258	4.279	4.155	3.939	3.818	3.828	4.041	3.966
1952	4.376	4.613	4.942	5.100	5.003	5.141	4.972	4.904	5.015	5.042	5.088	5.230
1953	4.813	4.766	4.948	5.034	5.023	4.944	4.821	4.723	4.567	4.603	4.523	4.505
1954	4.562	4.471	4.308	4.278	4.117	4.006	3.896	3.820	3.808	3.771	3.621	3.587
1955	4.010	4.000	3.949	4.043	4.243	4.355	4.150	4.060	3.989	4.296	4.251	4.279
1956	4.489	4.523	4.656	4.646	4.729	4.755	4.562	4.552	4.647	4.733	4.893	4.728
1957	4.766	4.696	4.631	4.584	4.476	4.512	4.456	4.497	4.701	4.763	4.781	4.782
1958	4.635	4.622	4.670	4.604	4.572	4.408	4.183	4.141	4.003	4.030	4.075	4.090
1959	3.948	3.868	3.948	3.768	3.537	3.461	3.208	3.201	3.244	3.152	3.109	2.943
1960	3.116	3.270	3.478	3.393	3.359	3.342	3.231	3.092	3.122	3.193	3.136	3.147
1961	3.413	3.432	3.453	3.325	3.255	3.272	3.288	3.208	3.293	3.306	3.371	3.450
1962	3.625	3.609	3.638	3.682	3.847	4.015	3.784	3.774	3.911	4.015	3.987	3.957
1963	3.905	3.793	3.808	3.725	3.642	3.497	3.374	3.397	3.451	3.311	3.357	3.324
1964	3.256	3.309	3.207	3.213	3.325	3.334	3.222	3.127	3.126	3.120	3.070	2.984
1965	3.114	3.206	3.217	3.276	3.229	3.255	3.139	3.081	3.153	3.215	3.196	3.193
1966	3.559	3.588	3.549	3.834	3.839	3.754	3.855	4.177	4.131	4.207	4.406	4.528
1967	4.317	4.329	4.302	4.306	4.403	4.437	4.243	4.113	4.203	4.200	4.318	4.454
1968	4.456	4.392	4.313	4.131	3.959	3.901	3.682	3.699	3.743	3.656	3.488	3.382
1969	3.349	3.319	3.318	3.160	3.163	3.242	3.508	3.535	3.558	3.534	3.580	3.580
1970	4.044	4.299	4.218	4.713	5.072	4.699	4.373	4.638	4.803	5.312	4.967	4.956
1971	4.678	4.479	4.385	4.621	4.482	4.451	4.454	4.460	4.595	4.402	4.159	4.122
1972	3.978	4.012	3.827	3.742	3.895	3.917	3.782	3.698	3.747	3.786	3.653	3.750
1973	3.770	3.736	3.784	3.705	3.659	3.652	3.667	3.803	3.826	3.710	3.957	3.905
1974	4.207	3.959	3.875	3.831	4.110	4.127	4.041	4.376	4.516	4.243	4.489	4.629
1975	4.573	4.345	4.405	4.316	4.450	4.288	4.184	4.294	4.055	4.005	3.968	3.913
1976	4.210	4.168	4.041	3.704	3.881	3.855	3.834	4.096	4.295	4.659	4.523	4.319
1977	4.429	4.109	4.044	4.123	4.226	4.638	4.757	5.014	4.770	5.044	5.397	4.994
1978	4.335	4.505	4.228	4.026	4.240	4.171	3.904	3.855	3.974	4.211	4.135	4.092
1979	4.307	4.534	4.568	4.761	4.864	4.971	4.866	4.896	4.943	4.937	4.817	4.727
1980	5.434	5.453	5.525	5.482	5.601	5.538	5.465	5.618	5.661	5.260	4.953	4.741
1981	5.467	4.965	4.728	4.903	4.583	4.110	3.860	3.864	4.102	3.725	3.461	3.518

Table A6.8 (cont.). *Dividend yield, 1901–2012*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1982	4.049	4.083	4.209	4.431	4.350	4.338	4.138	4.145	3.885	3.582	3.200	3.012
1983	2.879	2.431	2.419	2.240	2.282	2.371	2.173	2.005	2.037	2.068	1.920	2.004
1984	2.033	2.080	2.007	2.098	2.315	2.240	2.228	2.271	2.369	2.414	2.522	2.506
1985	2.491	2.541	2.597	2.532	2.732	2.777	2.693	2.693	2.656	2.549	2.296	2.102
1986	2.650	2.565	2.268	2.139	2.017	1.986	1.910	1.874	1.868	1.731	1.803	1.807
1987	2.518	2.222	2.128	1.962	2.041	2.003	1.848	1.796	1.690	2.126	2.479	2.410
1988	2.587	2.526	2.447	2.381	2.253	2.271	2.177	2.255	2.132	2.032	2.022	1.908
1989	2.244	2.226	2.132	2.121	2.048	1.965	1.838	1.785	1.874	2.000	2.055	1.908
1990	2.397	2.527	2.600	2.575	2.346	2.267	2.258	2.561	3.263	3.298	3.525	3.413
1991	3.289	2.983	2.919	3.051	2.879	2.823	2.859	2.909	3.083	3.143	3.343	3.479
1992	3.091	3.188	2.999	3.055	3.024	3.284	3.480	3.880	4.304	4.241	3.326	3.285
1993	2.278	2.039	2.050	1.979	1.859	1.883	1.695	1.591	1.596	1.430	1.564	1.453
1994	1.488	1.551	1.700	1.609	1.613	1.739	1.630	1.643	1.689	1.643	1.584	1.622
1995	2.302	2.304	2.388	2.214	2.204	2.120	2.037	2.024	1.891	2.032	2.001	2.007
1996	3.683	3.481	3.432	3.367	3.306	3.285	3.423	3.247	3.111	3.042	2.814	2.713
1997	2.455	2.353	2.268	2.360	2.230	2.090	1.978	2.076	1.943	2.192	2.091	2.104
1998	2.614	2.432	2.286	2.260	2.180	2.160	2.169	2.530	2.821	2.708	2.413	2.444
1999	2.580	2.546	2.496	2.381	2.381	2.258	2.273	2.231	2.237	2.068	1.850	1.592
2000	1.767	1.525	1.590	1.573	1.626	1.702	1.688	1.659	1.803	1.867	2.009	2.059
2001	1.686	1.894	2.175	1.969	1.964	2.073	2.114	2.292	2.589	2.432	2.168	2.138
2002	1.972	1.960	1.913	2.103	2.247	2.424	2.715	2.800	3.290	2.916	2.591	2.959
2003	3.786	3.854	3.948	3.520	3.541	3.399	3.180	3.074	3.170	2.914	2.904	2.816
2004	2.791	2.693	2.731	2.741	2.791	2.702	2.757	2.770	2.684	2.684	2.533	2.515
2005	3.702	3.539	3.531	3.650	3.481	3.343	3.184	3.222	3.049	3.111	3.000	2.832
2006	3.263	3.152	2.956	2.986	3.263	3.234	3.277	3.141	2.986	2.857	2.885	2.664
2007	4.923	5.037	4.794	4.599	4.575	4.679	4.751	4.882	4.902	4.998	5.347	5.456
2008	4.818	4.662	4.745	4.673	4.589	5.335	5.374	5.311	6.058	7.368	7.528	7.262
2009	4.689	4.567	4.506	3.795	3.722	3.686	3.342	3.234	3.214	3.068	3.069	3.012
2010	3.009	3.027	2.793	2.725	2.940	2.899	2.772	2.865	2.643	2.642	2.604	2.460
2011	3.727	3.791	3.729	3.646	3.707	3.843	4.032	4.507	4.790	4.401	4.465	4.418
2012	3.989	3.755	3.830	3.887	4.222	4.098	3.933	4.024	3.908	3.964	3.846	3.770

Table A6.9. *Short-term interest rate, 1856–2012*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1856											5	5
1857	5	5	5	5	5	5	5	5	5	5	5	5
1858	6	6	6	6	6	6	6	6	6	5	5	5
1859	5	5	5	5.5	6	6	6	6	6	6	6	6
1860	6	6	6	6	6	6	6	6	6	6	6	6
1861	6	6	6	6	6	6	6	5	5	5	6	6
1862	6	5	5	5	5	5	5	5	5	5	5	6
1863	6	6	6	6	6	6	6	6	6	6	6	6
1864	6	6	6	6	6	6	6	6	6	6	6	6
1865	6	5.5	5.5	5.5	5.5	5.5	5	5	5	5.5	6	6
1866	6	6	6	6	6	7	7	7	7	6	6	6
1867	5.5	5.5	5	5	5	5	5	5	5	4.5	4.5	4.5
1868	5	5	5	5	5	5	5	5	4.5	4.5	4.5	4.5
1869	4.5	4.5	4.5	5	5	5	5	5	5	4.5	4.5	4.5
1870	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
1871	4.5	4.5	4.5	4.5	4.5	4.5	4	4	4	4	4	4
1872	4	4	4	4	4	4	4	4	4	4	4	4
1873	4	4	4	4	4	4.5	4.5	4.5	5	5.5	5.5	5.5
1874	5	5	5	5	5.5	5.5	5	5	5	5	5	5.5
1875	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
1876	5.5	5.5	5.5	5.5	5.5	5.5	5.032	5	5	5	5.5	5.5
1877	5.5	5.5	5	5	5	5	5.5	5.5	6	6	6	6
1878	6	6	6	6	6	5.5	5.5	5.5	5.5	6	6	6
1879	6	6	6	6	6	5	5	5	5	5	5	5
1880	5	4.5	4.5	4.5	4.5	4.5	4.5	4	4	4	4	4
1881	4	4	4	4	4	4	4	4	4	4	4	4
1882	4	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
1883	4.5	4.5	4.5	4.5	4.5	4.5	5	5	5	5	5	5
1884	5	5	5	4.5	4.5	4.5	4.5	4.5	4	4	4	4.5
1885	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
1886	4.5	4.5	4	4	4	4	4	4	4	4	4	4
1887	4	4	4	4	4	4	4	4	4	4	4	4
1888	4	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
1889	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4	4
1890	4	4	4	4	4	4	4.5	4.5	4.5	5	6	6
1891	5	4.5	4.5	4.5	5	5	5	5	5	5	5	5.5
1892	5	5	5	5	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
1893	4.5	4	4	4	4	4	4	5	5	4	4	4
1894	4	4	4	4	4	4	4	4	4	4	4	4
1895	4	4	4	4	4	4	4	4	4	4	4	4
1896	4	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.5	4.5	4.5

Table A6.9 (cont.). *Short-term interest rate, 1856–2012*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1897	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5	5	5
1898	5	5	4	4	5	5	5	5	5	5.5	5.5	5.5
1899	5.5	5.5	6	6	6	6	6	6	6	6	6	6
1900	6	5.5	5.5	5.5	6	6	6	6	6	6	6	6
1901	6	6	6	5.5	5.5	5.5	5.5	5	5	5	5	5
1902	5	5	5	5	5	5	5	5	5	4.5	4.5	4.5
1903	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
1904	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5	5	5
1905	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5	5	5	5.5
1906	5	5	5	5	5	5	5	5	5	5	6	6
1907	6	6	6	6	6	6	6	6	6	6	6.5	7
1908	6.5	6.5	6.5	6	6	5.5	5.5	5.5	5.5	5.5	5.5	5.5
1909	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5	5	5
1910	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5	5	5
1911	5	4.5	4.5	4.5	4.5	4.5	4	4	5	5	5	5
1912	4.5	4.5	5	5	5	4.5	4.5	4.5	4.5	5	5.5	5.5
1913	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
1914	5	4.5	4.5	4.5	4.5	4.5	5.5	6	6	6	6	6
1915	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
1916	5.5	5.5	5.5	5.5	5	5	5	5	5	5	5.5	5.5
1917	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	6	6	6	7
1918	7	6.5	7	7	7	7	7	7	7	7	7	7
1919	7	7	7	7	6.5	6	6	6	6	6	6	6
1920	6	6	7	7	7	7	7	7	7.5	7.5	7.5	7.5
1921	7.5	7.5	7.5	7	6.5	6.5	6	6	6	5.5	5.5	5.5
1922	5.5	5.5	5	5	5	5	4.5	4.5	4.5	4.5	4.5	4.5
1923	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5
1924	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
1925	5.5	5.5	5.5	5.5	5.5	5.5	5	5	5	4.5	4.5	4.5
1926	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
1927	4.5	4.5	4.5	4	4	4	4	4	4	4	4	4
1928	3.5	3.5	3.5	3.5	4	4	4	4.5	4.5	4.5	4.5	4.5
1929	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	5.5	5
1930	4.5	4.5	4	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
1931	3.5	3	3	3	3	3	4	4	8	6	6	6
1932	6	5.5	5	5	4.5	4	4	4	3.5	3.5	3.5	3.5
1933	3.5	3.5	3.5	3.5	3.5	3	3	3	3	3	3	2.5
1934	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
1935	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
1936	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5

Table A6.9 (cont.). *Short-term interest rate, 1856–2012*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1937	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
1938	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
1939	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3
1940	3	3	3	3	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
1941	3.5	3.5	3.5	3.5	3	3	3	3	3	3	3	3
1942	3	3	3	3	3	3	3	3	3	3	3	3
1943	3	3	3	3	3	3	3	3	3	3	3	3
1944	3	3	3	3	3	3	3	3	3	3	3	3
1945	3	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
1946	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
1947	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
1948	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
1949	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
1950	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3
1951	3	3	3	3	3	3	3	3	3	3	3	3
1952	3	3	3	3	3	3	3	3	3	3	3	3
1953	3	3	3	3	3	3	3	3	3	3	2.75	2.75
1954	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
1955	2.75	2.75	2.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
1956	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	4	4
1957	4	4	4	4	4	4	5	5	5	5	5	5
1958	5	5	5	5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
1959	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
1960	5	5	5	5	5	5	5	5	5	5	5	5
1961	5	5	5	5	5	5	5	5	5	5	5	5
1962	5	5	5	4.5	4.5	4	4	4	4	4	4	4
1963	3.5	3.5	3.5	3.5	3.5	4	4	4	4	4	4	4
1964	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5	5
1965	5	5	5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
1966	5.5	5.5	5.5	5.5	5.5	6	6	6	6	6	6	6
1967	6	5.5	5	5	5	5	5	5	5	5	5	6
1968	6	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5	5	5
1969	5	6	6	6	6	6	7	7	7	7	7	7
1970	7	7	7	7	7	7	7	7	7	7	7	7
1971	7	7	6.5	6	6	6	6	6	5.5	5.5	5	5
1972	5	5	5	5	5	5	5	5	5	5	5	5
1973	5	5	5	5	5	5	5	5	5	5	5	5
1974	5	5	5	6	6	6	6	7	7	7	7	7
1975	7	7	7	7	7	7	7	6	6	6	6	6
1976	5.5	5.5	5.5	5.5	5.5	6	6	6	6	8	8	8

Table A6.9 (cont.). *Short-term interest rate, 1856–2012*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1977	8	8	8	8	8	8	8	8	8	8	8	8
1978	8	7.5	7.5	7	7	7	6.5	6.5	6.5	6.5	6.5	6.5
1979	6.5	6.5	6.5	6.5	6.5	6.5	7	7	8	8	9	9
1980	10	10	10	10	10	10	10	10	10	10	10	10
1981	12	12	12	12	12	12	12	12	12	11	11	11
1982	11	11	10	10	10	10	10	10	10	10	10	10
1983	10.65	10.3	10.9	10.7	11.05	11.45	11.35	11.05	12.1	12.1	12.05	11.8
1984	11	11.25	10.5	10.45	11.6	13.7	13.65	13.65	13.6	11.45	11.5	11.5
1985	13.5	13.55	13.65	13.6	16.1	16.07	15.65	15.97	15.25	14.98	12.94	12.65
1986	11.35	11.1	10.6	11	10	9.88	9.3	9.23	8.53	8.23	9	9.3
1987	10.1	11.5	10.37	9	9.05	9	8.63	9	8.75	9.08	8.7	9
1988	9	9.09	9.3	10.5	10	10.25	10.5	10.4	10.4	10.4	10.39	10.4
1989	10.3	11.25	11.25	11.2	11.2	11.68	11.9	11.7	11.9	11.86	11.6	12.3
1990	12.5	14.5	14.75	13.3	12.55	12.09	12.2	12.84	12.55	16.05	14.3	14.15
1991	13.01	12.12	12.04	12.15	11.25	10.3	10.25	10.27	10.09	10.45	11.94	13.77
1992	12.24	11.92	11.52	12.1	11.3	11.51	12.23	15.6	26	12.6	12.25	10.68
1993	9.92	9.81	10.07	9.28	8.43	8.54	8.23	7.8	7.83	7.3	7.53	7.27
1994	6.89	7.19	7.13	7.04	6.88	6.96	7.14	7.34	7.48	7.43	7.84	7.91
1995	7.42	8.14	8.44	8.55	8.53	9.18	9.1	8.94	8.84	8.57	8.9	8.61
1996	7.86	7.44	6.98	6.22	6.11	5.7	5.36	5.01	4.77	4.48	4.28	3.71
1997	3.86	4.09	4.01	4.08	4.05	4.1	4.14	4.03	4.13	4.15	4.35	4.34
1998	4.18	4.46	4.4	4.51	4.28	4.16	4.18	4.2	4.24	3.95	3.64	3.46
1999	3.14	3.22	2.88	2.855	2.96	2.92	2.98	2.96	3.12	3.14	3.32	3.38
2000	3.47	3.95	3.83	3.96	3.8	3.9	3.95	3.82	3.97	3.79	4.04	4.11
2001	3.89	4.12	3.99	4.04	4.01	4.25	4.25	4.26	3.71	3.69	3.73	3.73
2002	3.78	3.87	4.05	4.26	4.24	4.24	4.21	4.16	4.17	4.08	3.84	3.62
2003	3.69	3.6	3.42	3.48	3.16	2.81	2.73	2.73	2.72	2.74	2.72	2.73
2004	2.58	2.43	2.095	2.02	1.99	1.98	1.995	1.99	1.99	2	1.98	1.99
2005	1.99	2	1.985	2	1.935	1.51	1.48	1.465	1.465	1.47	1.47	1.615
2006	1.82	1.955	1.995	2	2.085	2.18	2.22	2.46	2.49	2.72	2.85	2.97
2007	3.125	3.22	3.21	3.305	3.275	3.435	3.45	3.495	3.57	3.915	3.93	4.03
2008	4.03	4.24	4.11	4.04	4.03	4.12	4.24	4.32	4.45	3.5	3.15	1.6
2009	1.4	0.698	1.002	0.4	0.5	0.4	0.15	0.16	0.18	0.17	0.15	0.2
2010	0.23	0.22	0.25	0.25	0.2	0.29	0.35	0.4	0.55	1.05	1.12	1.3
2011	1.55	1.8	1.69	1.8	1.82	1.8	1.82	2	1.75	1.9	1.9	1.7
2012	1.8	1.65	1.55	1.55	1.5	1.3	1.45	1.5	1.125	1.25	1.23	1.05

Table A6.10. *Long-run government bond yields, 1874–2012*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1874		4.425	4.415	4.406	4.397	4.388	4.378	4.369	4.408	4.408	4.408	4.397
1875	4.397	4.397	4.397	4.425	4.432	4.439	4.446	4.453	4.453	4.453	4.467	4.481
1876	4.453	4.481	4.510	4.510	4.510	4.510	4.510	4.525	4.539	4.525	4.557	4.591
1877	4.624	4.624	4.624	4.624	4.615	4.605	4.596	4.586	4.577	4.567	4.558	4.549
1878	4.539	4.562	4.584	4.607	4.629	4.629	4.629	4.629	4.629	4.629	4.629	4.629
1879	4.629	4.558	4.558	4.558	4.532	4.506	4.481	4.455	4.430	4.406	4.381	4.357
1880	4.333	4.309	4.286	4.263	4.240	4.217	4.194	4.172	4.150	4.129	4.107	4.086
1881	4.065	4.065	4.065	4.065	4.065	4.065	4.065	4.065	4.065	4.065	4.065	4.065
1882	4.065	4.065	4.065	4.103	4.103	4.065	4.103	4.103	4.103	4.105	4.108	4.110
1883	4.113	4.134	4.088	4.134	4.088	4.088	4.088	4.088	4.088	4.088	4.088	4.088
1884	4.088	4.112	4.112	4.134	4.099	4.065	4.074	4.084	4.094	4.104	4.114	4.124
1885	4.118	4.113	4.082	4.082	4.082	3.980	3.980	3.980	3.980	3.979	3.979	3.979
1886	3.970	3.960	3.941	3.922	3.922	3.902	3.902	3.902	3.902	3.871	3.890	3.871
1887	3.871	3.871	3.902	3.902	3.902	3.840	3.902	3.871	3.902	3.887	3.871	3.871
1888	3.840	3.825	3.711	3.636	3.636	3.637	3.638	3.625	3.613	3.600	3.600	3.600
1889	3.600	3.600	3.582	3.600	3.582	3.591	3.587	3.582	3.578	3.573	3.591	3.582
1890	3.573	3.591	3.591	3.600	3.591	3.591	3.591	3.636	3.636	3.636	3.656	3.677
1891	3.703	3.731	3.731	3.780	3.765	3.751	3.736	3.736	3.736	3.871	3.861	3.844
1892	3.826	3.810	3.810	3.810	3.840	3.871	3.871	3.871	3.871	3.850	3.872	3.861
1893	3.893	3.820	3.657	3.673	3.696	3.716	3.736	3.740	3.770	3.789	3.746	3.740
1894	3.740	3.655	3.646	3.655	3.657	3.611	3.618	3.609	3.629	3.605	3.625	3.600
1895	3.600	3.589	3.586	3.573	3.591	3.600	3.601	3.600	3.591	3.582	3.582	3.582
1896	3.586	3.573	3.547	3.547	3.529	3.529	3.529	3.521	3.521	3.529	3.556	3.547
1897	3.538	3.529	3.521	3.529	3.521	3.529	3.529	3.529	3.529	3.529	3.521	3.547
1898	3.538	3.538	3.529	3.538	3.547	3.556	3.556	3.556	3.547	3.564	3.618	3.622
1899	3.582	3.596	3.591	3.770	3.750	3.731	3.673	3.750	3.750	3.746	3.750	3.780
1900	3.731	3.731	3.721	3.721	3.770	3.850	3.810	3.810	3.810	3.871	3.871	3.871
1901	3.810	3.770	3.801	3.820	3.810	3.789	3.789	3.738	3.692	3.711	3.731	3.750
1902	3.692	3.664	3.683	3.673	3.670	3.664	3.664	3.655	3.664	3.660	3.673	3.664
1903	3.673	3.673	3.655	3.673	3.673	3.655	3.673	3.683	3.673	3.673	3.666	3.664
1904	3.673	3.711	3.692	3.711	3.711	3.711	3.702	3.721	3.740	3.750	3.750	3.673
1905	3.696	3.711	3.692	3.683	3.692	3.750	3.689	3.740	3.750	3.750	3.750	3.789
1906	3.780	3.750	3.789	3.770	3.789	3.780	3.820	3.789	3.826	3.840	3.861	3.871
1907	3.799	3.820	3.820	3.850	3.840	3.913	3.913	3.871	3.934	4.000	4.068	4.138
1908	4.000	4.000	4.000	4.000	4.000	4.056	4.045	3.978	3.978	3.989	3.967	3.934
1909	3.934	3.924	3.956	3.892	3.887	3.881	3.871	3.810	3.850	3.892	3.871	3.830
1910	3.830	3.830	3.830	3.861	3.871	3.871	3.871	3.871	3.902	3.934	3.942	3.949
1911	3.956	3.934	3.913	3.913	3.927	3.942	3.956	3.967	3.978	4.000	4.000	3.978
1912	3.978	3.989	4.022	4.022	4.017	4.011	4.027	4.043	4.059	4.075	4.091	4.091
1913	4.091	4.235	4.286	4.337	4.390	4.390	4.390	4.390	4.390	4.377	4.390	4.390
1914	4.390	4.364	4.417	4.444	4.492	4.541	4.590	4.641	4.693	4.746	4.800	4.768

Table A6.10 (cont.). *Long-run government bond yields, 1874–2012*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1915	4.800	4.737	4.675	4.737	4.737	4.787	4.839	4.891	4.945	5.000	5.180	5.373
1916	5.333	5.314	5.475	5.403	5.333	5.217	5.106	4.932	5.000	5.017	5.035	5.053
1917	5.070	5.053	5.067	5.082	5.097	5.112	5.128	5.143	5.143	5.455	5.455	5.455
1918	5.482	5.510	5.538	5.348	5.556	5.435	5.391	5.435	5.435	5.525	5.435	5.520
1919	5.490	5.560	5.560	5.450	5.320	5.280	5.290	5.320	5.410	5.380	5.560	5.460
1920	5.430	5.560	5.920	5.970	6.080	6.060	6.100	6.020	6.250	6.670	6.540	6.490
1921	5.900	6.020	6.210	6.060	6.210	6.100	5.830	5.790	5.810	5.560	5.560	5.470
1922	5.130	5.000	4.810	4.730	4.790	4.680	4.530	4.590	4.610	4.790	4.960	4.760
1923	4.650	4.650	4.760	4.830	4.860	4.830	4.960	4.980	4.910	4.960	5.000	4.830
1924	4.810	4.810	4.790	4.790	4.860	4.960	4.900	4.860	4.900	4.980	5.020	5.000
1925	4.980	4.980	5.000	4.980	4.830	4.730	4.700	4.700	4.710	4.680	4.700	4.780
1926	4.750	4.730	4.710	4.710	4.670	4.640	4.580	4.590	4.650	4.700	4.730	4.730
1927	4.680	4.640	4.590	4.560	4.520	4.560	4.550	4.530	4.520	4.550	4.580	4.580
1928	4.490	4.590	4.610	4.610	4.640	4.650	4.650	4.650	4.640	4.620	4.620	4.650
1929	4.610	4.600	4.620	4.620	4.560	4.560	4.550	4.520	4.520	4.560	4.500	4.460
1930	4.300	4.220	4.160	4.150	4.200	4.210	4.270	4.240	4.160	4.040	4.060	4.110
1931	4.040	4.010	4.070	4.080	4.070	3.950	4.020	4.180	4.240	4.550	4.620	4.800
1932	4.640	4.460	4.520	4.660	4.420	4.290	4.260	4.270	4.200	4.070	4.000	4.010
1933	4.010	4.120	4.200	4.270	4.220	4.160	4.090	4.000	3.880	3.780	3.820	3.710
1934	3.660	3.720	3.700	3.680	3.600	3.610	3.610	3.550	3.360	3.150	3.010	3.010
1935	3.010	3.020	3.090	3.140	3.130	3.190	3.220	3.210	3.270	3.350	3.330	3.320
1936	3.250	3.230	3.210	3.130	3.140	3.150	3.140	3.080	3.040	3.060	3.030	3.030
1937	3.030	3.010	3.050	3.080	3.100	3.060	3.060	3.040	3.030	3.020	3.010	2.980
1938	2.720	2.340	2.310	2.460	2.280	2.180	2.220	2.240	2.230	2.300	2.320	2.460
1939	2.420	2.330	2.270	2.550	2.520	2.560	2.850	3.040	3.320	3.510	3.640	3.750
1940	4.000	4.010	4.050	4.270	4.330	4.060	3.890	3.770	3.660	3.620	3.640	3.660
1941	3.620	3.610	3.600	3.530	3.440	3.410	3.380	3.250	3.210	3.210	3.210	3.220
1942	3.230	3.230	3.230	3.230	3.230	3.230	3.240	3.230	3.240	3.230	3.230	3.240
1943	3.240	3.250	3.250	3.260	3.260	3.280	3.290	3.290	3.290	3.290	3.300	3.290
1944	3.280	3.270	3.270	3.290	3.300	3.300	3.300	3.280	3.280	3.270	3.260	3.240
1945	3.230	3.090	3.020	3.020	3.020	3.020	3.020	3.020	3.020	3.010	3.010	3.010
1946	3.020	3.010	3.010	3.010	3.010	3.010	3.010	3.010	3.010	3.010	3.010	3.020
1947	3.020	3.020	3.020	3.020	3.020	3.020	3.020	3.020	3.020	3.020	3.040	3.040
1948	3.040	3.050	3.060	3.070	3.070	3.090	3.090	3.090	3.090	3.090	3.100	3.090
1949	3.050	3.010	3.010	3.010	3.010	3.010	3.020	3.010	3.020	3.020	3.020	3.020
1950	3.010	3.010	3.010	3.010	3.020	3.020	3.060	3.180	3.180	3.230	3.250	3.320
1951	3.300	3.250	3.210	3.220	3.260	3.260	3.250	3.240	3.200	3.200	3.190	3.200
1952	3.200	3.220	3.260	3.300	3.300	3.300	3.300	3.300	3.300	3.300	3.300	3.300
1953	3.290	3.290	3.290	3.290	3.290	3.300	3.290	3.270	3.270	3.260	3.240	3.210
1954	3.210	3.200	3.190	3.190	3.190	3.190	3.190	3.200	3.210	3.370	3.420	3.370

Table A6.10 (cont.). *Long-run government bond yields, 1874–2012*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1955	3.350	3.370	3.400	3.670	3.900	3.900	3.910	3.850	3.810	3.770	3.750	3.750
1956	3.680	3.660	3.660	3.690	3.700	3.740	3.740	3.740	3.740	3.750	3.840	4.050
1957	4.060	4.120	4.140	4.140	4.160	4.200	4.670	4.670	4.390	4.470	4.480	4.460
1958	4.450	4.490	4.420	4.340	4.300	4.300	4.250	4.300	4.350	4.280	4.270	4.270
1959	4.270	4.270	4.260	4.230	4.230	4.240	4.240	4.240	4.270	4.320	4.380	4.440
1960	4.550	4.600	4.560	4.550	4.550	4.560	4.620	4.620	4.620	4.600	4.520	4.440
1961	4.450	4.480	4.480	4.480	4.560	4.620	4.620	4.620	4.620	4.610	4.570	4.550
1962	5.310	5.320	5.370	5.160	5.080	4.790	4.790	4.780	4.780	4.830	4.830	4.830
1963	4.750	4.540	4.600	4.710	4.790	4.960	4.960	4.960	5.180	5.210	5.220	5.220
1964	5.220	5.600	5.580	5.640	5.640	5.640	5.640	5.660	5.660	5.660	5.870	5.870
1965	5.870	5.870	5.870	6.270	6.270	6.270	6.270	6.270	6.270	6.270	6.270	6.380
1966	6.510	6.550	6.550	6.550	6.550	6.800	6.800	6.650	6.520	6.520	6.480	6.350
1967	6.350	6.260	5.890	5.900	5.900	5.900	5.960	5.950	5.950	5.950	5.920	6.800
1968	6.590	6.290	6.290	6.340	6.330	6.290	6.310	6.310	6.330	6.180	6.190	6.190
1969	6.270	6.270	6.720	6.780	7.020	6.980	7.290	7.270	7.280	7.290	7.250	7.270
1970	7.280	7.280	7.290	7.290	7.310	7.430	7.480	7.510	7.520	7.520	7.470	7.320
1971	7.290	7.290	7.300	7.300	7.290	7.280	7.290	7.300	7.100	7.110	7.120	7.140
1972	7.210	7.240	7.250	7.260	7.270	7.280	7.290	7.330	7.340	7.340	7.360	7.340
1973	7.350	7.360	7.360	7.370	7.400	7.400	7.400	7.410	7.410	7.420	7.370	7.370
1974	7.300	7.270	7.150	7.730	7.830	7.860	7.870	7.870	8.100	8.120	8.150	8.170
1975	8.180	8.170	8.180	8.220	9.000	9.040	9.050	9.080	9.110	9.130	9.140	9.150
1976	9.190	9.120	9.110	9.130	9.140	9.190	9.200	9.220	9.220	9.610	9.630	9.610
1977	9.600	9.630	9.690	9.730	9.750	9.740	9.700	9.750	9.780	9.810	9.830	9.840
1978	9.860	9.870	10.08	10.17	10.19	10.33	10.35	10.01	10.03	10.06	10.07	10.09
1979	9.950	9.870	9.780	9.750	9.770	9.800	10.28	10.27	10.38	10.71	10.74	10.91
1980	10.92	11.24	11.26	11.33	11.31	11.38	11.38	11.46	12.63	12.68	12.71	12.61
1981	12.66	13.60	13.43	13.49	13.56	13.63	13.70	13.74	13.73	13.73	13.78	12.80
1982	12.84	12.76	12.78	12.82	12.79	13.00	13.18	13.23	13.27	13.73	13.09	13.01
1983	13.10	12.83	12.59	12.51	12.14	12.17	11.85	11.84	12.20	12.24	12.44	12.44
1984	11.98	11.63	11.62	11.72	12.24	13.01	14.32	14.01	13.30	12.65	12.32	12.25
1985	12.23	13.09	13.19	13.19	13.72	13.38	13.02	13.07	13.38	13.52	13.15	12.59
1986	12.17	11.83	11.03	9.960	9.980	9.850	9.670	9.760	9.510	9.450	9.720	10.58
1987	11.68	11.47	11.23	11.16	11.78	11.78	11.77	11.97	12.02	12.00	11.62	11.74
1988	11.66	11.29	11.33	11.35	11.53	11.29	11.36	11.56	11.47	11.36	11.05	10.93
1989	10.48	10.52	10.92	11.04	11.05	11.12	11.20	11.01	10.98	11.17	12.12	12.55
1990	12.87	13.70	13.75	13.64	13.28	12.89	12.82	13.26	13.35	13.10	12.85	12.35
1991	11.85	11.15	11.33	11.34	10.77	10.60	10.61	10.62	10.18	10.00	9.840	10.00
1992	9.530	9.430	9.390	9.500	9.470	9.570	9.800	10.60	11.24	11.06	10.68	9.910
1993	10.14	9.800	9.370	9.410	9.090	8.680	8.240	7.630	7.790	7.560	7.490	7.270
1994	6.830	6.940	7.650	8.400	8.690	9.780	10.65	11.20	11.24	10.95	11.00	10.89

Table A6.10 (cont.). *Long-run government bond yields, 1874–2012*

	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec
1995	11.00	10.71	11.18	11.42	10.74	10.58	10.55	10.22	9.640	9.300	8.990	8.600
1996	8.230	8.750	8.770	8.330	8.440	8.340	8.260	8.110	7.800	7.190	7.260	6.850
1997	6.740	6.680	7.100	7.240	7.010	6.800	6.440	6.530	6.380	6.220	6.300	5.971
1998	5.600	5.480	5.310	5.370	5.080	4.975	4.910	4.825	4.745	4.665	4.360	4.172
1999	3.975	4.400	4.372	4.169	4.597	5.040	5.330	5.511	5.750	5.755	5.640	5.720
2000	5.970	5.835	5.375	5.455	5.175	5.280	5.305	5.340	5.255	5.185	5.080	4.860
2001	4.850	4.860	4.751	5.135	5.425	5.475	5.250	5.135	5.320	4.930	5.020	5.350
2002	5.360	5.420	5.630	5.650	5.650	5.455	5.265	5.135	4.915	5.105	5.045	4.710
2003	4.560	4.480	4.635	4.695	4.205	4.415	4.640	4.720	4.520	4.950	4.990	4.780
2004	4.710	4.480	4.265	4.620	4.655	4.665	4.550	4.385	4.310	4.230	4.045	4.025
2005	3.770	3.870	3.745	3.390	3.255	3.000	3.060	2.995	3.045	3.290	3.385	3.335
2006	3.480	3.400	3.685	3.915	3.900	4.045	3.840	3.710	3.645	3.665	3.575	3.805
2007	4.035	3.790	3.930	4.090	4.270	4.480	4.310	4.215	4.315	4.265	4.193	4.345
2008	3.945	3.998	3.957	4.075	4.380	4.515	4.217	4.070	3.830	3.514	2.918	2.430
2009	3.115	2.831	3.005	3.256	3.770	3.480	3.348	3.325	3.333	3.259	3.199	3.300
2010	3.298	3.178	3.177	2.976	2.640	2.679	2.758	2.240	2.524	2.860	2.949	3.275
2011	3.346	3.325	3.332	3.210	2.907	2.910	2.506	2.100	1.747	1.932	1.775	1.616
2012	1.713	1.902	1.980	1.792	1.282	1.601	1.385	1.409	1.472	1.531	1.473	1.534

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7.
Swedish money supply, 1620–2012

Rodney Edvinsson and Anders Ögren

7.1. Introduction[1]

This chapter aims to estimate the Swedish money supply and its components for the whole period 1620–2012. There are, however, a number of issues that need to be resolved before fully consistent series on the money supply can be constructed, not least how money supply and various monetary aggregates should be defined.

Money has four basic functions: medium of exchange, store of value, unit of account and standard of deferred payment. Money supply is a measure of liquidity circulating in the economy. Exactly what should be included is not given, and there are several definitions of money supply. The narrowest, M0, comprises the coins and notes in the possession of the public (the money-holding sector), while M1, M2 and M3 are broader measures, which also include various substitutes for money, mainly deposits. Moreover, the definitions of M0, M1, M2 and M3 vary between countries and over time within the same country.

The international standard provided by the IMF[2] is in turn an adaptation to the definitions applied in *System of National Accounts 1993*.[3] Society is divided into sectors: the money-issuing sector, the money-holding sector and the money-neutral sector. Money supply is defined as the debt instruments of issuers in the possession of the money-holding sector. The most significant difference from various national definitions is that the money-holding sector is broader[4] in that it also includes other financial institutions than banks that provide credit and receive deposits. These financial institutions are, together with banks, labelled Monetary Financial Institutions. The need of broader measures for purposes of economic analysis and policy-making is a consequence of financial innovation and deregulation since the 1970s.

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1   Some of the results in this study have previously been presented in Ögren (2003, 2009), and Edvinsson (2012).
2   IMF (2000).
3   Inter-Secretariat Working Group on National Accounts (1993).
4   Inter-Secretariat Working Group on National Accounts (1993, pp. 98–99).

The Riksbank presents monthly data on M0 and M3 back to 1961. From 2003, the Riksbank outsourced the production of financial market data to Statistics Sweden.[5]

Up to December 2005, series were presented of M0, M3 and M3+. The issuers consisted of Swedish banks (including foreign branches located in Sweden and Treasury bills issued by Riksgäldskontoret/National Debt Office). M0 was defined as notes and coins outside the bank sector, while M3 also included bank deposits and bank certificates. In addition, M3+ included the Swedish public's holding of Treasury bills. No data on M1 and M2 were presented before 2006.

As of 2006, the Riksbank applies new definitions of various credit and monetary aggregates. This is in accordance with a harmonisation with the definitions of the European Central Bank,[6] which are applied to the euro area. The ECB definitions are in turn accommodations to the definitions of IMF and SNA 1993. In Sweden, data are presented on M0, M1, M2 and M3 but not any longer on M3+. Central government is seen as constituting a money-neutral sector with the exception of central government liabilities with a monetary character. The money-issuing sector now excludes foreign branches, but includes unsettled claims with foreign branches.

M0 is calculated in the same way as previously, although it is somewhat narrower because the money-holding sector has been broadened. M1, narrow money, comprises M0 plus deposits that are immediately convertible into currency or used as means of payment, i.e. demand deposits. According to the new definitions, demand deposits include overnight loans and deposits in transaction accounts. M2 comprises M1, deposits with a term of maturity of up to two years and deposits redeemable at up to three months' notice. M3 according to the new definition comprises M2 plus interest-bearing securities with a term to maturity of up to two years. The old (but not the new) definition of M3 also included deposits with agreed-upon terms to maturity of more than two years and deposits redeemable at more than three months' notice. M3 according to the new (but not the old) definition includes shares in money-market funds, money-market instruments and other securities with terms to maturity of up to two years.

Statistics Sweden also publishes a series of the monetary base, defined as the sum of all coins and notes in circulation outside the Riksbank, deposits by the money-issuing sector at the Riksbank, and Riksbank certificates. This series is extended back to January 1981.[7]

While the new definition leaves M0 almost unchanged (for January 2006 it is reduced by 0.1 per cent), it increases M3 by 20 per cent for January 2006. The new definitions are presented from January 1998 onwards. However, to provide comparability over time, Statistics Sweden continues to publish M0 and M3 according to the old definitions.[8]

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5   Statistics Sweden (2006, 2007, 2013).

6   ECB (undated).

7   Statistics Sweden (2013).

8   Statistics Sweden (2013).

In a pioneering work, Lars Jonung presents estimates of money supply, monetary base and other credit aggregates for the period 1732–1971.[9] He applies a definition of M2 that includes notes and deposits at commercial banks, but excludes deposits in savings banks and agricultural credit associations.[10] He did this because commercial banks were the dominant credit institution in Sweden and monthly data on deposits at commercial banks are available back to January 1871. One problem is that the definitions in Jonung are not compatible with modern definitions of money supply. Jonung was published before the Riksbank presented its first estimates of M3. Although modern definitions are not always the most appropriate for earlier historical periods, it is desirable to have long-term series that are consistent over time.

Because of the problem with applying the new definition before 1998, not least because it includes financial institutes outside the bank sector, the series of M0 and M3 in this study are based on Statistics Sweden's "old" definitions. Some breaks occur also in the series according to the old definitions, and some adjustments have been made in this study to present consistent series over time that are as close as possible to Statistics Sweden's "old" definitions.

Data previously published by the Riksbank on the composition of the notes circulation during the period 1701–1924 are utilized in the present study.[11] Data have also been taken from the Riksbank's yearbooks[12] and other regular publications of records of the Riksbank and private banks. Some of the data had been previously collected by Lars Jonung and Per Hortlund, who have contributed to the present project at the Riksbank to construct historical and financial historical statistics.

The series before 1960 are adjusted to the series from 1961 onwards.

M0 is constructed as follows:

+ Total amount of Swedish coins –

– The Riksbank's possession of Swedish coins –

– Commercial banks' (including Postbanken) possession of coins –

– Savings banks' possession of Swedish coins –

– Cooperative banks' possession of Swedish coins –

+ Riksbank notes in circulation outside the Riksbank +

+ Riksgäld notes in circulation outside the Riksbank (existed for the period 1789–1844) +

+ Stockholm banco notes in circulation (existed for the period 1661–67) –

– Commercial banks' (including Postbanken/Postsparbanken) possession of Riksbank notes –

– Savings banks' possession of Riksbank notes –

– Cooperative banks' possession of Riksbank notes

Data are missing on the possession of notes and coins for Postsparbanken for the

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9   Jonung (1975).

10   Jonung (1975).

11   Riksbank (1931).

12   Sverige Riksbank (1909–78); Sveriges Riksbank (1979–2001).

periods 1884–1933 and 1962–69, for cooperative banks before 1970 and for savings banks before 1932. To fill these gaps, the present study extrapolates the missing data using the ratio of the deposits in these types of bank to the deposits in commercial banks, and commercial banks' possession of notes and coins, as indicators. Private bank notes are not included in M0. A broader measure of liquidity can be calculated by adding the private bank notes to M0.

The present study's M0 is the same as Statistics Sweden's series according to the old definition back to 1971. For the 1960s, the difference arises because Statistics Sweden did not deduct the possession of notes and coins by Postbanken/Postsparbanken and agricultural credit associations.

In this study, M3 includes, besides M0, all private bank notes, bank deposits and bank certificates. More specifically, M3 is constructed as follows:

+ M0 +
+ Private bank notes held by the public +
+ Deposits in commercial banks (including Postbanken) held by the public +
+ Deposits in savings banks held by the public
+ Deposits in cooperative banks (agricultural credit associations up to 1973) held by the public +
+ Postgiro –
– PK-banken's clearing account with the Post Office (existed for the period 1974–1986) +
+ Bank certificates

Private deposits at the Riksbank are not included in M3, even though they were substantial up to the 19th century.

In the time series for banks' total deposits presented by Statistics Sweden, a break occurs in December 1995. According to an older series, at that time the deposits in all banks totalled 655 billion SEK, but according to a newer series they amounted to 673 billion SEK, i.e. higher by 2.7 per cent. However, Statistics Sweden does not make any adjustment before 1995 to take account of this change. Henceforth, for the period before 1995 the present study increases the total deposits in all banks by 2.7 per cent. Several other breaks occur in the series in the period 1961–94, but Statistics Sweden seems to have spliced the series for this period. Bank certificates are presented for the period 1980 onwards, but this series seems to be unbroken.

Up to 1964, the Riksbank yearbooks have separate entries for the deposits in Postsparbanken/Postbanken and Postgiro. From 1965, the yearbook indicates that the deposits in Postbanken include both the saving account and the postgiro account. As of July 1st 1974, Postbanken and Kreditbanken fused to form a new commercial bank, Post- och Kreditbanken (PKbanken). Postverket continued to handle the interest-bearing postgiro account. Before that date, Postbanken was not included in commercial banks.

In 1969, a change was made in the Bank Inspection Board's monthly reports of

the assets and liabilities of commercial banks.[13] Figures for December 1968 were presented according to both systems.[14] The most significant change was a reduction of sight deposits by almost 50 per cent, from 8,227 million SEK according to old system account to 4,578.5 million SEK according to the new system. The change in total deposits from the public was less significant, from 41,235 million SEK according to the old system to 40,442 million SEK according to the new system.

Total deposits in commercial banks, Postsparbanken, Postgiro and savings banks before 1961 are presented in Statistics Sweden (1960) and the Riksbank yearbooks.

Annual data on deposits in agricultural credit associations are presented in the Riksbank yearbooks back to 1934. For the period 1920–33, estimates of deposits in agricultural credit associations are interpolated using data on lending every five years as an indicator, presented in Statistics Sweden.[15]

The appendix displays the data. M0 is estimated for the whole period back to 1620. M3 is presented only from 1819 onwards, since it has not been possible to calculate the size of bank deposits in the private Discount companies in the late 18th and early 19th centuries. For 1819, M0 and M3 are the same, since there were no deposits in private banks.

7.2. An overview of Swedish currencies 1620–2012

During the studied period, which covers almost four centuries, the Swedish currency was changed several times. Before the Swedish krona was introduced in 1873, there were several domestic currencies that circulated at flexible market exchange rates. This evolution is described in detail in Volume One of *Historical Monetary and Financial Statistics for Sweden*.[16] The present study transforms the value of all currencies in circulation into the monetary unit in most common use, de facto the weakest currency, using the market rate instead of the official rates.

In 1620 Sweden was on a silver standard, with the mark as the main unit of account. The mark was divisible into 8 öre, while 4 marks were counted as one daler. The riksdaler (specie) existed in parallel and was primarily used as a stable international currency, although the coin was also minted in Sweden.

In 1624, the copper standard was introduced and the silver standard continued to exist in parallel. An extremely complicated monetary system was implemented, with up to 6–7 currencies in use, in periods at floating exchange rates relative to each other. The copper currency was later devalued compared to the silver currency, so that one daler silvermynt was set equal to 2 daler kopparmynt in 1633, to 2.5 daler kopparmynt in 1643 and to 3 daler kopparmynt in 1665. Daler silvermynt and daler kopparmynt were mainly used as units of account for the main currency in use. 4 marks

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13 Årsbok - Sveriges riksbank, 1970, p. 35*.
14 Årsbok - Sveriges riksbank, 1970, p. 52*.
15 Statistics Sweden (1960).
16 Edvinsson, Jacobson and Waldenström (2010).

Seven different means of payment circulating at the time of the foundation of the Riksbank, each of them a distinct currency units in various periods.
Source: The Royal Coin Cabinet.

1. Gold ducat minted in 1664.

2. Copper plate, 1 daler silvermynt, minted in 1649.

3. Riksdaler coin, minted in 1646

4. Petty copper coin, valued 2½ öre kopparmynt or one öre silvermynt, minted in 1661.

5. Öre in silver coin (öre courant), 4 öre courant, minted in 1665.

6. Mark in silver coin, 8 mark, minted in 1664.

7. Paper note, issued as 100 daler silvermynt by Stockholm Banco in 1666.

in actual silver coins were later called daler carolin, and came to be valued at more than the daler silvermynt. 32 öre in actual silver coins were called daler courant and officially set equal to the daler silvermynt, but there were periods when the market disagreed. The riksdaler (specie) continued to exist as its own currency, and the gold ducat was also minted. For a brief period, in 1715–19, so-called emergency coins ("nödmynt") or coin tokens came to dominate circulation, but were devalued by 50 per cent in 1719. There was a premium on proper coins (copper plates and silver coins), at least from 1716, when exchanged into coin tokens. In the 18th century, paper monies were introduced on a large scale and fell in value relative to the metallic currencies.

In 1776 the silver standard was reintroduced but with the riksdaler as the main unit of account, divisible into 48 skillings. Paper notes were devalued by 50 per cent, so that 6 daler silvermynt in notes were exchanged for one riksdaler. The gold ducat continued to be minted. The stable monetary situation was brief; in 1789 the Riksgäldskontoret started to issue its own notes, while the Riksbank notes continued to be convertible into riksdaler specie coins. The riksdaler riksgälds fell in value relative to the riksdaler banco. In 1803 one riksdaler banco was set equal to 1.5 riksdaler banco, but in 1809 the riksdaler banco was made inconvertible and fell in value relative to the riksdaler specie with a stable fine silver content. In 1834, when the silver standard was reintroduced, one riksdaler specie was set equal to 2 2/3 riksdaler banco or 4 riksdaler riksgälds. In 1855 the riksdaler riksmynt, divisible into 100 öre, became the main unit of account, and set equal to one riksdaler riksgälds. In 1873 the riksdaler riksmynt was transformed into the krona in connection with the adoption of the gold standard and the forming of the Scandinavian Currency Union. The kronas of Sweden, Norway and Denmark were equal in value relative to each other and the krona continued to be Sweden's currency unit after the Scandinavian Monetary Union was finally abolished in 1924. The krona (SEK) is still Sweden's currency unit.[17]

The present study follows the usual convention in Swedish economic history of setting one SEK equal to one riksdaler riksmynt in 1855–72, to one riksdaler riksgälds in 1789–1854, to one riksdaler specie in 1777–88, to 18 daler kopparmynt (or 72 mark kopparmynt) in 1633–1776, to 18 daler in copper coins (or 576 copper öre) in 1624–32, and to 18 daler (or 72 mark) in 1620–23. SEK is assumed to follow the most common or weakest currency in various periods, which implies that it follows the coin tokens in 1715–18 and paper notes in 1745–76.

7.3. Stockholm Banco, 1656–68

Stockholm Banco is famous for being the first bank to issue bank notes in Europe. Between 1661 and 1668 it issued what were then quite considerable amounts in notes

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17 Hecksher (1949b), pp. 254–255.

– or Credit notes as they were labelled. Unfortunately, the books of the bank were damaged in a fire, making it impossible to follow the note issuance by accounting.[18]

Stockholm Banco Account Books
Source: Palmstruchska Samlingen Riksarkivet. Photo: Anders Ögren

A secondary source is, however, a book by Aleksandrs Platbārzdis (1960). From the damaged material (*Räkenskapsböcker),* Platbārzdis managed to recover information on all the notes issued in the year 1661 or no less than 735 notes (numbered individually).[19]

Even more impressive is Platbārzdis' detective work on the years after 1661. Using a large number of primary sources, he managed to collect information on the more than 20,000 notes that were issued over the next seven years.[20]

Platbārzdis provides information on total notes in circulation in 1665–67,[21] while a report quoted by Heckscher estimates the total amount at the end of 1664 to 2.7

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18   For those interested in the history of Stockholm Banco and its founder Johan Palmstrüch, see Ögren (2012b).

19   These are listed in Table 7.I Appendix (*Bilaga)* 12 (1960, pp. 181 – 183). Nevertheless, it is not completely clear exactly how he extracted these data.

20   These notes are listed in Table 7.II Appendix (*Bilaga)* 13 (Platbarzdis, 1960, pp. 184 – 213).

21   Platbarzdis (1960, p. 72).

million daler kopparmynt.[22] The same level is assumed at the end of 1663. By comparing tables on the specific notes issued, tables on denominations and tables on falsified notes (which include dates), one can estimate with some precision the development of note issuance per year in different denominations at the ends of 1661 and 1662.

7.4. The Early Riksbank, 1668–1788

When Stockholm Banco was forced into bankruptcy, parliament seized the opportunity to open its own bank instead. This bank, *Rikets Ständers Bank* (RSB), was more or less a blueprint of the former Stockholm Banco – with two distinct differences: 1) The owner was solely the parliament, and 2) RSB's regulations officially banned any issuing of notes.

Clearly, however, market actors would use the papers issued by RSB as means of payment. They include authorized assignments (*assignationer*), which were cheques drawn on an account or a credit in RSB, and Bank receipts (*Insättningsbevis),* i.e. receipts on deposits in the Bank.

Transportation notes (*Transportsedlar*) were introduced in the early 18th century. They were not really what would count as bank notes today. If anything, the Transportation note resembled a cashier's check, as the amount was stated on each note and the note's recipient had to be assigned on the note by its previous owner. This restricted the circulation of Transportation notes, especially in rural areas where illiteracy was widespread.[23]

At first these notes were not a success; the first one was released in 1701 and only sixteen were issued in 1701–09.[24] Their wider circulation did not start until after the reign of Karl XII and even in the 1720s it was modest.[25] The first year for which Transportation notes are included in the Bank's accounts is 1707 (1,712 daler silvermynt), and the second comes three years later, 1710 (4,819 daler silvermynt).[26] A comparison of these figures with the concurrent amounts of authorized assignments and bank receipts in circulation shows that the Transportation notes had a very slow start as a circulating means of payment.

The first experiment with fiat money on a larger scale was, however, not with notes. Towards the end of the Great Nordic War, 1716–19, the monetary system was in disarray as a result of several changes, most notably the circulation of token coins, called 'nödmynt' (emergency coins) or 'mynttecken' (coin tokens). The value of the copper metal from which these coins were minted was only 0.5 to 1 per cent

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22 Heckscher (1936, p. 630).
23 Heckscher (1949a, p. 738), Lindgren (1968, p. 39).
24 Sveriges Riksbank (1931, p 40 note 1). The first Transportation note was issued on September 18th to a Per Johan von Horn and was cashed on December 31st in the same year.
25 Heckscher (1949a, p.737).
26 Sveriges Riksbank (1931, p. 40).

Coin token issued during the Great Nordic Wars.
Source: The Royal Coin Cabinet.

of their face value. Various measures were taken to ensure the use of coin tokens by the general public and to draw in proper money to the Crown. Initially, the coin tokens did not significantly disturb the monetary system and were even welcomed for being easy to handle. Later, however, they contributed to inflation, since the volume minted became very large, accounting for nearly half of M0 in late 1718. By a decree of 23rd April 1719, the circulated coin tokens valued at one daler silvermynt (32 öre silvermynt) were redeemed for another type of token coin, 'Hoppet' (The Hope), valued at 2 öre silvermynt, and a note worth 14 öre silvermynt that would be exchangeable later at its full value. The exchange was carried out in June 1719. In effect, this amounted to a 50 per cent devaluation of the coin token worth one daler silvermynt. The devaluation was even larger in practice, since not all notes were exchanged at their full value (although a majority of them were repaid later on) and the value of the devalued coin tokens continued to depreciate.[27]

In 1722 the Banking Committee addressed the issue of the Transportation notes' low popularity. Merchants were critical of these notes, which they meant were difficult to use for transactions. For example, the notes of the previous Stockholm Banco had had spaces for the assignments when these notes were transported, a feature which the Riksbank's Transportation notes lacked.[28]

As a way of increasing the Transportation notes' popularity, in 1726 it was decided that they could be used for tax payments, which made them a kind of legal tender. This improved the demand for Transportation notes and people started to save postal fees by removing the paper sheet that was intended for transportation signatures (the Transportation note consisted of two sheets of paper to provide enough room for written transportations). This meant that the public disregarded the rules for Transportation notes and ceased to document the transactions. From the mid-1720s, Transportation notes normally carried only one written transportation – the assignment from the Riksbank to the first owner – and were finally signed by the person redeeming the note in the Riksbank.[29] Thus it became more like a modern bank note with a printed denomination.

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27   Edvinsson (2010).
28   Lindgren (1968, pp. 39–40).
29   Lindgren (1968, p. 46), Montgomery (1931, p. 7).

In 1776 the riksdaler specie became the main currency unit when Sweden switched to a sole silver standard.
Source: Source: The Royal Coin Cabinet.

Demand for Transportation notes grew as a result of the decision to allow them for tax payments. For the total money stock, the initial increase in Transportation notes in the mid-1720s seems to have involved substituting these notes for authorized assignments and to a smaller extent for bank receipts.

The rapid increase in note-issuing started in the early 1730s. We know that at least from 1728, Riksbank notes had begun to circulate in Russia. At this time the bank notes were used to a very small extent compared with metallic coins.

The regulation of Riksbank lending was eased in the 1730s. Previously the rules had been very strict and still served as a reminder of Stockholm Banco's failure. The Riksbank got the right to lend its profits from the loan business in 1731 and was permitted to lend against goods (preferably iron) as collateral from 1734. This could to some extent also explain the increase in note-issuance.[30]

Extended credit from the RSB to domestic manufacturing appeared in 1739. This policy was run by parliament, or more precisely the Cap party, as a means of subsidising Swedish trade and manufacturing in accordance with a more mercantilist approach. The extended credit was funded by extended note issuance; Transportation notes, which up to this time had been fully covered by deposits, started to become credit notes. The real take-off in note issuance was connected with the Cap's war against Russia 1741–43 and its funding by printing money.[31] Although bank notes had to fall a long way in value compared with copper before it became profitable to export copper instead of notes, the point was finally reached at which the copper standard had to be suspended. The export of metallic coins was prohibited in

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30   Hecksher (1949a, pp.742, 745–746), Montgomery (1931, p. 7).
31   Heckscher (1949a, pp. 747), Montgomery (1931, pp. 7–8).

1743 and the convertibility of notes into specie metals was officially suspended in 1745.[32]

When the Riksbank abandoned the fixed exchange rate in 1743, authorized assignments and bank receipts ceased to be used for transactions. The Bank's note issuance clearly made up for more than these instruments. In 1745 the Riksbank started to issue more "modern" bank notes, with printed denominations and no need for transportation. This had not been done since Stockholm Banco's credit notes in the 1660s.[33] The practice has continued ever since.

The period with a paper standard was marked by (*a*) an enormous increase in note issuance, and (*b*) repeated unsuccessful attempts to restore monetary order by establishing a specie standard. The State's borrowing requirement grew during the Seven Years War in 1756–63 (the Pomeranian War) and it accounted for just over half of the Riksbank's loans. These loans and the imbalance in state finances led to a complete breakdown of the monetary system and in 1762 the Riksbank had to cancel its loans to the public. At the peak in 1762, the Riksbank had enlarged the money stock by 35 times the level in 1730.

The main issue from then on was the adoption of a specie standard.[34] However, the need to finance the State blocked the attempts that were made in 1764 and 1769.[35] The 1770s was also a decade of extended note-issuance, albeit at a slower pace than in the late 1750s and early 1760s. A new plan for convertibility was launched in 1774 and put into practice in 1776, despite resistance from the Riksbank.[36]

The new specie standard was based on the Riksdaler specie; one riksdaler specie was set equal to six daler silvermynt in paper notes.[37] It was a silver standard and did not suffer from the problems of the previous bimetallic copper and silver standards. This currency was first used in book-keeping in 1776.

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32   Heckscher (1949a, p. 750).

33   Montelius (1931, p. 141).

34   Fregert & Jonung (1996, pp. 445, 454), Montgomery (1931, pp. 35–36), Nygren (1984, p. 21).

35   Montgomery (1931, pp. 50, 59–62, 108–111).

36   Montgomery (1931, pp. 164, 190, 219).

37   Ahlström (1974, p. 38), Sveriges Riksbank (1931, pp. 9–10).

Figure 7.1: *Notes, coins and coin tokens in million daler kopparmynt (following the weakest currency) 1660–1780.*
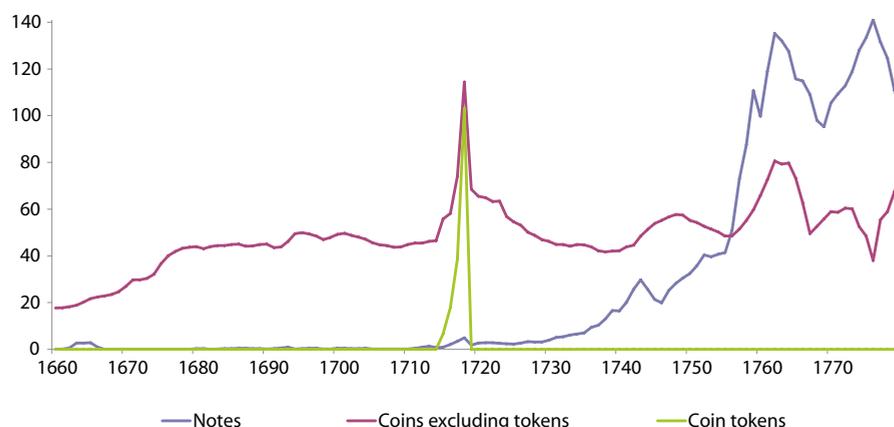
Source: Table A7.1.

As seen in Figure 7.1, which summarises the different means of payment in 1660–1780, paper money monetization took off in the 1730s and led to a remarkable increase in the money stock from the 1740s and especially late 1750s, notwithstanding the deflationary pressure in the latter period. The enactment of the silver standard led to slight downward pressure on note circulation from 1776, a situation that changed drastically in 1789 with Gustav III's need to fund the war on Russia.

7.5. Dual currencies: The National Debt Office and the Riksbank, 1789–1833

The episode when two state authorities issued notes on different footings is undoubtedly one of the most interesting periods in Swedish monetary history. In 1789 the National Debt Office (*Riksgäldskontoret*) was founded by transforming the former Office that had been responsible for the state's debts (*Riksens ständer kontor)*. The latter Office had been established in 1719 to pay off the debts from the Great Nordic Wars in the reign of Karl XII.[38]

To fund the war on Russia, the National Debt Office started to issue interest-earning promissory notes in small denominations. These promissory notes were then transformed as early as 1791 into non-interest earning notes, the same type as bank notes.[39] The Riksbank continued to issue its notes based on silver, as enacted in 1776. The intention behind parliament's regulation had been for the National Debt Office to issue notes for no more than five to six hundred thousand riksdaler specie. However, in the regulation the amount was preceded by the words "*in the begin-*

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38   Ahlström (1989, pp. 93–94), Carlsson (1989, p. 35).
39   Lindgren (1968, p. 105).

A wallet belonging to Märta Helena Reenstierna ("Årstafrun") from the late 18th century at a time when paper notes came to dominate money supply.
Source: The Royal Coin Cabinet.

ning". Hecksher describes the start of note-issuing by the National Debt Office as "opening Pandora's box"; once opened, nothing could stop the avalanche. The amount of six hundred thousand (600,000) Riksdaler Specie had been exceeded within a month.[40]

Even after the war, the National Debt Office had to go on increasing its note issuance in order to service its debts; other factors also contributed to this. Parliament wrestled with the problem of how to restore monetary order and presented a detailed plan with a common silver standard in 1800. It was more or less decided that the Riksbank would take over the National Debt Office's monetary liabilities but the reform was delayed until 1803. In the meanwhile the National Debt Office increased its note issuance to a nominal value of almost 19 million riksdaler on the date of the monetary reform.[41]

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40 Heckscher (1949b, pp. 236, 245).
41 Hallendorf (1931, pp. 209, 221–235, 290), Heckscher (1949b, p. 254).

Figure 7.2: *Notes and coins in circulation issued by the Riksbank and the National Debt Office, 1780–1850, in million SEK (riksdaler riksgälds) at market rates.*
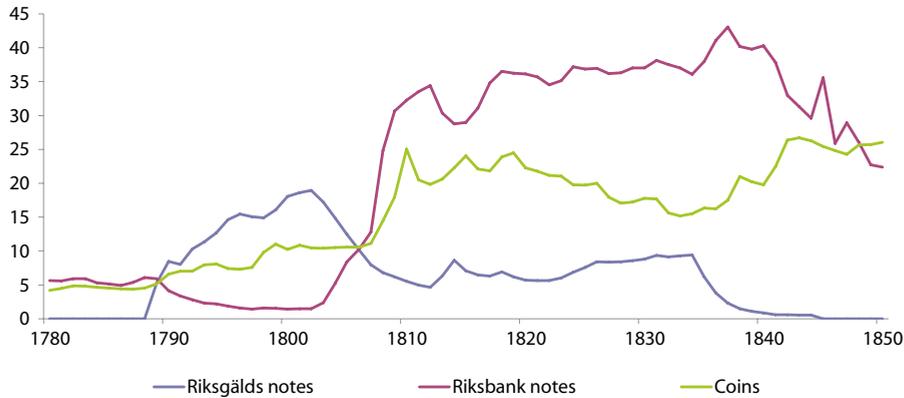
Sources: The appendix.

The National Debt Office notes were valid for payments to the State, except for the Riksbank. The market soon accepted the notes, probably due to an inadequate supply of trustworthy means of payment. It did not take long for prices to be quoted in National Debt Office notes.[42]

Because of their massive flood from the National Debt Office, the notes depreciated rapidly in relation to Riksbank notes. The latter were still convertible into silver.[43] As a result of the notes' different bases and supply, two units of accounts were constructed: riksdaler banco (issued by the Riksbank) and riksdaler riksgälds (issued by the National Debt Office). The premium on the riksdaler banco relative the riksdaler riksgälds is presented in the appendix (end-of-year). The relationship between the two types of note was finally fixed in 1803 at one riksdaler banco equal to one-and-a-half riksdaler riksgälds. These two units of account existed side by side in Sweden until the currency reform of 1855, when riksdaler riksgälds became the sole unit of account under the name riksdaler riksmynt.

7.6. The Banking System and the Riksbank, 1834–1913

Although the Riksbank did not officially abandon the silver standard during the period with dual currencies, it was forced to do so in practice in 1809. Parliament decided to readopt the silver standard in 1830 and this was implemented in 1834. From then until 1913 Sweden experienced an unbroken period of eighty years with a fixed exchange rate, terminated by the outbreak of World War One.

More fundamental changes for the money supply came with the emergence of the

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42 Fregert & Jonung (1996, p. 458), Heckscher (1949b, p. 239).
43 Heckscher (1949b, pp. 239–240, 242).

6⅔ riksdaler banco, the equivalent of 10 riksdaler riksgälds; paper noted issued by the Riksbank in 1848. Sweden was at the time on a silver standard, and the note was convertible into 2½ riksdaler specie coins.
Source: The Royal Coin Cabinet.

banking system. Savings banks started to appear in the 1820s and the first commercial banks were established in the 1830s.

The commercial banks, so-called *enskilda* (private) banks, were based on unlimited liability and had the right to issue credit notes. This right has led to a lot of confusion about the Swedish monetary situation in the 19th century, not least because the phenomenon of note-issuing private banks has been interpreted with hindsight along the lines of what free banking theory suggests rather than in accordance with the actual empirical history.

What the empirical evidence shows is that the private bank notes were inside money; no *enskild* bank ever issued notes that were accepted or used as reserves by other banks in the banking system. This clearly differed from the role of Riksbank notes, which were base money, used as reserves by the banking system throughout the period – even when the law stipulated that they were not a legal basis for note issuance.[44] It follows that any interpretation of how the Swedish money supply was

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44   See Ögren (2006, 2012a)

Private bank note issued in 1876.
Source: The Royal Coin Cabinet.

organized which assumes that *enskilda* and Riksbank notes competed on an equal footing is flawed. Against this background, private bank notes are not included in M0 but are included in the broader measure of M3.

While the notes issued by private (*enskilda*) banks are not to be seen as having the same foundation as Riksbank notes, they were an important part of monetization through the creation of bank money. It is safe to say that the hallmark of Swedish monetization in the 19th century is the enormous and steadily growing impact of bank-created money.

The huge importance of the banking system for the money supply means that an empirical account of the money stock and its components is very dependent on bank data. This is not a problem in the late 19th, more specifically from 1871 onwards. Commercial bank data in the form of balance sheets are conveniently available in *Sammandrag af Bankernas Uppgifter.* Commercial bank data are presented monthly from 1878, which means that from then on, monthly series can be constructed for the money stock and its components including the monetary base, although this is not done in the present study. The publication *Sammandrag af Bankernas Uppgifter* ends with the year 1911; *Ekonomisk Tidsskrift* continued to publish the banks' reports thereafter and as these are digitalized, they are a very convenient source to work with.

For the period before 1871, however, reliable data are less easy to come by. The Riksbank published aggregated commercial-bank balance sheets from 1834 in its seminal statistics: *Sveriges Riksbank 1668-1918-1924 Bankens tillkomst och verksam-*

het Volume V.[45] However, the aggregated nature of these data means that it is not possible to distinguish between the commercial banks' monetary assets and their liabilities (notes, demand deposits, time deposits, and reserves).

Sven Brisman's (1934) history of Swedish baking, *Sveriges affärsbanker – Utvecklingstiden,* has a series on note issuance and reserves by *enskilda* banks from 1834 until 1858, but the sources are not mentioned. Jonung's (1975) important work, *Studies in the Monetary History of Sweden,* has the same figures as Brisman for the commercial banks in the same period (but again no source is provided). The likely source for both Brisman and Jonung is the Special Committee on Finance of 1858 (*Finanskommittéen 1858*), instigated after the crisis of 1857/58. That enquiry forced all commercial banks to send in data on their positions regarding reserves, equity capital and note issuance since their foundation; the figures for the banking system in that report exactly match the figures used by Brisman and Jonung. This means that the latters' series are ex-post constructions. Due to a lack of data for the period 1859–71, Jonung interpolated the figures for the private banks' note issuance, which implies an assumption that their note issuance grew steadily in this period.

To resolve all these problems in estimating a correct money supply, a previous study by Anders Ögren (2003), on which the present study is based, uses a completely different methodology and completely different sources. From the outset, note issuance in the commercial banking system was a matter of concern for the authorities in that it had to be based on certain assets. Moreover, the banks were supervised by the local municipality and required to report their position on note issuance. Each report was published in the Swedish State's official journal: *Post och Inrikes Tidningar.* Furthermore, the balance sheets which appear in *Sammandrag af Bankernas Uppgifter* from 1871 onwards are simply collections of the bank statistics that had been published in *Post och Inrikes Tidningar.* Due to the increasing number of banks from the mid-1860s, the banks' balance sheets were published in the journal as comprehensive appendices instead of as scattered reports per bank. This source certainly seems to provide the preferable foundation for an accurate estimation of the money supply.

A problem with this methodology is that it is very time-consuming as each bank has separate reports and these are scattered in time as well as in place in the publication. Moreover, a few reports are missing in the early 1830s, when the banking system was in its infancy (the first bank was established in 1831 and the second in 1833). Still, all in all this source has provided a much better series on private bank note issuance, deposits and reserves than any other source used. So far, the data in this series are annual but, given even more effort, it could be possible to create a series with a higher frequency (up to quarterly). Also, as the banks' complete balance sheets were already being published in the 1840s, this source is of immense importance for the statistics on commercial banks before 1871.

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45   Sveriges Riksbank (1931).

The private banks' issuance of postal bank bills was utilized quite extensively, although they are not included in the estimates of M3 in the present study. Here again, the difference between the liabilities of the private commercial banks and the Riksbank as central bank is evident – the private banks did not need any reserves as cover for these liabilities, whereas postal bank bills issued by the Riksbank were considered to be part of the circulating money stock and had to be covered by reserves along with all other monetary liabilities issued by the Riksbank.

For commercial banks it is possible to distinguish different public liabilities such as their issued notes, time deposits and demand deposits.

Regarding the characterization of banks' time versus demand liabilities, the situation is by no means as clear as it might seem. Even issued notes could in fact be regarded as time liabilities because the Banking Act of 1864 entitled banks to delay their redemption for up to six months.[46]

A major and more intractable problem when estimating the money supply is the lack of data on the savings banks' activities. These banks were considered to be philanthropic institutions for fostering savings without a profit motive, so a similar demand for transparency did not exist and thus there are no similar data on their activities. Work by Ingemar Nygren does provide annual data on the public's deposits in savings banks from 1834 (at Statistics Sweden (SCB)), but no distinction is made between demand deposits and time deposits and there is no information on reserves.

In practice, the liquidity of money circulating as *enskilda* bank notes differed from that of money held as deposits. Under these circumstances, a measure of liquidity may be used, composed of M0 and private bank notes in circulation.

7.7. Coins in circulation

Coins in circulation at year-ends are presented in the Riksbank yearbooks from 1939 onwards; the data are monthly from 1946. No official data exist for the period before 1939. One problem with the data from 1939 onwards is that they appear to assume that hardly any coins were disappearing from circulation.

In this study, coins in circulation before 1939 are derived from the minting statistics,[47] with a deduction for the Riksbank's possessions. For the silver, nickel, iron and bronze coins minted after 1873, this study assumes that depreciation was very low and its rate is adjusted so that the calculated figure agrees with the Riksbank yearbook for 1939.

The Riksbank's possession of coins is deducted from the total minted stock to arrive at the amount of coins in circulation outside the Riksbank (including coins in

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46 See Ögren (2003, 2012a).
47 Tingström (1972) and Wallroth (1918).

A riksdaler riksmynt silver coin, minted in 1862. In 1873, when Sweden switched to a gold standard, the riksdaler riksmynt was replaced by the krona.
Source: The Royal Coin Cabinet.

the possession of private banks). Data on the Riksbank's possession of gold, silver, nickel, iron and bronze coins are from previous publications by the Riksbank.[48]

The circulation of gold coins during the classic gold standard of 1873–1914 is difficult to assess. Flodström assumes that in 1908 the circulation was not significant,[49] since most of the gold coins were melted down in industry. However, the expansion of the Riksbank's reserves of gold coins after 1908 indicates that this is incorrect. In fact, the Riksbank's possession of gold coins that qualify as legal tender at the end of 1917 was 28 per cent more than the total minting up to that year. Part of this discrepancy is explained by imports of Danish and Norwegian gold coins, which were also legal tender in Sweden due to the Scandinavian Monetary Union, but this does not account for the entire increase in the Riksbank's possession of Scandinavian gold coins.

The present study assumes that in the period before the First World War, four per cent of the gold coins outside the Riksbank and the commercial banks disappeared each year, which seems to be a maximum assumption. For the period after 1890, net imports of gold coins from Denmark and Norway are assumed to have had an impact on the total amount of gold coins in circulation in Sweden. After the outbreak of the First World War, when the gold standard was suspended, gold coins basically ceased to be circulated as currency, and are therefore not included in measures of M0 and M3.

All coins minted before 1873 are assumed to have depreciated at a higher rate than non-gold coins after 1873. The circulation of coins is calculated from data on minting, with an assumption of a natural depreciation of the stock, i.e. that coins were regularly driven out of circulation.[50] The so-called Perpetual Inventory Method (PIM) is applied, as is common in modern national accounts when estimating capital stocks indirectly from investment in preceding accounting periods.[51]

The maximum life span of a coin is set equal to T years. For each coin x the stock,

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48   Sveriges rikes ständers bank (1831–61); Sveriges rikes ständers bank (1862–66); Sveriges riksbank (1867–69); Sveriges riksbank (1870–1923); Sveriges Riksbank (1931); Sveriges riksbank (1909–78); Sveriges riksbank (1979–2001).

49   Flodström (1912).

50   Note circulation is from Sveriges Riksbank (1931).

51   Inter-Secretariat Working Group on National Accounts (1993, pp. 148–150).

$s_{t,x}$, in existence on the 1st of January in year t is computed as the dot product of two vectors: $\boldsymbol{m}_{t,x} = [m_{t-T,x}, m_{t-T+1,x}, \ldots, m_{t-2,x}, m_{t-1,x}]$, a minting vector describing the amount minted from years t-T to t-1 of the coin in question, and $\boldsymbol{r}_{t,x} = [r_{T,x}, r_{T-1,x}, \ldots, r_{2,x}, r_{1,x}]$, describing the proportion of coins ($0 \le r_{k,x} \le 1$) in existence 1 to T years after being minted. $s_{t,x}$ is determined as:

$$s_{t,x} = \boldsymbol{m}_{t,x}(\boldsymbol{r}_{t,x})' = \sum_{k=t-T}^{t-1}\left(m_{k,x}r_{t-k,x}\right)$$

The determination of $\boldsymbol{r}_{t,x}$ is problematic and has to be based on various assumptions about the rate of depreciation. Nevertheless, while PIM is less reliable for annual fluctuations, it yields reasonable assessments of long-term changes. It can be added that the Riksbank's present estimates of the stock of coins in circulation assume no loss in circulation at all,[52] which is not very realistic.

The composition of coin treasures can be used as an indicator of the composition of coins in circulation at the time when the coins were hidden. This can be compared with the volume of minting in various years, which yields a rough indication of the rate of depreciation. Coin treasures in Sweden and Finland show that coins still circulated half a century or more after they were minted. Copper coins most likely spent a shorter time in circulation.[53] According to Tingström, in the eighteenth century, half of the copper plates disappeared as means of payment after around 20 years.[54]

Various rates of depreciation can be assumed. In a geometric rate of depreciation, the lifespan, L, of a coin is a geometric random variable. The implied half-life is constant throughout the coin's lifetime. Since older and newer coins depreciate at the same rate, they could be described as "history-less". In the present study, a function is used based on the assumption of a linearly decreasing half-life rate, with a minimum T of 65 years, implying that older coins, due to wear and tear, depreciated at a higher rate than newer ones. For a coin x it is assumed that:

$$r_{k,x} = \prod_{j=1}^{k}0.5^{1/(T-65-(T-65)(j-1)/T)} \; ; \; 1 \le k \le T$$

T has been chosen at different levels for different coins, from 84 years, implying that half the coins disappeared after 17 years, to 101 years, implying that half disappeared after 30 years. For petty copper coins minted in 1624–60 and petty copper coins denominated in skilling riksgälds minted in 1799–1802, the half-life is set to 17 years. For copper plates minted in 1644–1776, and petty copper coins minted in 1661–1779, skilling banco copper coins minted in 1802–55, and bronze öre minted in 1857–73, the half-life is set to 20 years. For öre courant minted up to 1767, ducats minted in 1654–1868, and gold carolins minted in 1868–72, the half-life is set to

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52 Sveriges Riksbank (1979–1999).

53 Sarvas (1967); Sarvas (1969); Tingström (1984).

54 Tingström (1984, pp. 94–95).

25 years. For silver carolins (mark coins minted in silver) minted up to 1755, riksdaler (specie) minted up to 1854, and riksdaler (and 10-öre) riksmynt minted in 1855–73, the half-life is set to 30 years. These half-lives roughly correspond to earlier studies on the composition of coin treasures.

Minting data exist for most of the studied period. Missing data are interpolated, based on the numismatic values attached to various coins today.[55] Coins that were only minted in small amounts for a particular year can be assumed to fetch a higher numismatic price than coins minted in larger amounts for another year.

When the mint equivalent was raised for various coins or when they were undervalued for other reasons in relation to their official nominal value, the rate of depreciation must be assumed to have increased substantially. Sarvas argues that coin treasures indicate that Gresham's Law operated under such circumstances. He shows that coins at the old mint equivalent tended to be driven out.[56] Nevertheless, the effect of Gresham's Law was ambiguous. Some of the older, better coins were not melted down or exported, but temporarily withdrawn from circulation, and returned when a premium was paid for them. Monetary authorities often increased the nominal value of undervalued coins. Although coins sometimes temporarily disappeared as means of payment, they could continue to function as a store of value. As such they should not be excluded from the money supply.

Coin treasures show that for some coins in some periods, there is a clear indication that Gresham's Law was in operation. For others there is no such indication. For instance, when the mint equivalent of four-öre silver coins was raised in 1686, the older coins tended to be driven out of circulation. However, Gresham's Law did not seem to have an effect on the older, better one-öre silver coins in the late 17th and early 18th centuries. Even when Gresham's Law was effective, the composition of coin treasures shows that dear monies were never driven out completely. The present study makes the following assumptions:

- The stock of copper plates minted in the 17th century is assumed to have depreciated by an additional six per cent per year from 1692, when they became undervalued compared to silver coins. This rate is based on the observation that older plates constituted 20 per cent of the value of copper plates in early 18th century coin treasures.[57] The same additional rate of depreciation is assumed for older copper plates after their mint equivalents were raised in 1649, 1660 and 1674.

- Copper plates minted after 1715 were largely exported, especially after the copper standard was suspended in 1745. Therefore, export[58] is deducted from minting when computing the stock of plates in circulation.

- Carolins (silver coins denominated in mark) are assumed to have been driven

55 Tonkin and Tonkin (2005).
56 Sarvas (1967, p. 35).
57 Sarvas (1967, p. 36).
58 Tingström (1984, pp. 96–98).

out by an additional five per cent per annum in 1725–32, when they were undervalued. This rate is based on information that four million carolins were melted down at that time in Danish and Holstein mints.[59]

- Silver coins denominated as 4 öre that were minted in 1664–84 are assumed to have disappeared from circulation by an additional five per cent per year in 1685–1717, based on the finding that these coins were 5–7 times less common in early 18th century coin treasures, relative to their minting volumes when compared with other silver coins.[60]

- The stock of silver coins minted before 1664 is assumed to have depreciated by an additional five per cent per year from 1664.[61] In that year the mint equivalent was raised for carolins and öre courant.

Although the so-called old carolins in 1717–18 were briefly decreed to be invalid as means of payment, they are included in circulation since the measure was temporary.[62] These coins probably continued to function as means of payment since they were intrinsic value coins. The value of various coins in circulation is calculated using market exchange rates at each year-end when monthly data exist (or the average of the two adjacent years when monthly data are missing).[63]

7.8. Changing borders

One problem is that the borders of the Kingdom of Sweden changed several times. Swedish coins only circulated in Sweden and Finland, while, for example, Swedish Pomerania minted its own coins. The present study estimates various aggregates both for Sweden within present borders and for the total circulation of currency issued by the central Swedish monetary authorities (i.e. in Sweden-Finland up to the early 19th century).

In 1843 the Riksbank was forced to redeem its notes that circulated in Finland as the Russian authorities wanted to break the monetary ties with Sweden. The circulation of Riksbank notes was rather important as the exchange of these notes was a heavy burden on the Riksbank, so heavy in fact that for several years the Bank had to allow its coverage of its notes to fall below what was regulated.[64] An earlier study by Anders Ögren uses David Davidson's estimation of notes circulating in Finland together with an assumption that the entire trade deficit with Finland from 1834 to 1840 was paid in Riksbank notes and that meant that at least 3 million SEK in Riksbank notes was circulating in Finland during the years up to 1843. It is proposed here that figures on the trade balance may be used to estimate the amount of Swedish

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59 Sjöstrand (1908, p. 9).
60 Based on Sarvas (1969, p. 133).
61 See Sarvas (1967, p. 35).
62 Wallroth (1918, p. 92). This assumption differs from Edvinsson (2012).
63 Edvinsson (2010); Lobell (2010).
64 Ögren (2007)

notes circulating in Finland. Perhaps we cannot assume that all such payments were made by sending Riksbank notes but it is reasonable to assume that these deficits (and surpluses) affected the Riksbank's position vis-à-vis Finland and it seems to be the most straightforward way of estimating to what extent Swedish paper money ended up circulating in Finland.

For the period 1668–1809 the present study assumes that the ratio of circulation within Sweden's present borders to total circulation was 0.8. For the period after 1809 this ratio is linearly increased to 0.944 up to 1842, in accordance with the earlier study by Anders Ögren. From the end of 1843 it is assumed that no coins and notes circulated outside Sweden's present borders.

For earlier years, two border changes are taken into account, in 1645 and 1658. In those two years the ratio of the money supply's circulation within Sweden's present borders to total circulation is based on the size of the population in various regions in 1699. It is further assumed that it took 10 years for the currency to be replaced by Swedish coins and notes in the conquered territories.

7.9. An overview

It is possible to establish a fairly unique database on the money supply, both in detail and in time. Most of the work has already been done and is presented in this chapter. There is of course more information to retrieve – such as data on the discount companies in the late 18th and early 19th centuries.

The series presented in this chapter show that there were important shifts in the composition of the money supply. Figure 7.3 shows the development of coins in circulation, M0, M3, and GDP in market prices within Sweden's present borders in 1620–2012. Figure 7.4 displays the velocity of money according to two measures; GDP divided by M0 and M3, respectively.

Coins dominated the circulation up to the early 17th century. The first bank notes, issued in the 1660s, accounted for at most 14 per cent of the money supply. It was not until the late 1750s that paper notes accounted for most of the liquidity outside the Riksbank. Although the issuing of notes in the 1660s caused a panic, the fall in the value of paper money and the cancelling of its convertibility could partly be explained by inexperience rather than over-issuing.[65] The first Swedish experiment with fiat monies on a larger scale was instead with coin tokens minted towards the end of the Great Nordic War. Towards the end of 1718 they accounted for nearly half of the money supply.

While various metallic currencies continued to exist alongside each other, their relative shares were not constant. In the 1650s, copper plates overtook petty copper coins as the most important copper money. Up to 1665, copper coins dominated the money supply, while in 1665–85 silver and copper coins had roughly equal shares.

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65 Brisman (1918, p. 66).

Christmas market in Stockholm in 1859. The expansion of the market economy at that time increased the velocity of paper notes and coins.
Source: Stockholm City Museum.

After 1685 it was the silver currencies that expanded and drove out copper plates, but this was reversed after 1710. In the 1770s, riksdaler came to dominate the metallic means of payment. Minting of riksdaler coins was extremely large in 1766–76, in preparation for the conversion to the sole silver standard in 1777, when the riksdaler became the main currency unit. After 1789, Riksbank notes were quickly replaced by riksgälds notes. This was reversed in the early 19th century.

The velocity of money, measured by the ratio between GDP and M3, shows two distinct decreases, in 1650–80 and in 1870–1920.

The first decrease corresponds to the growth of Stockholm and trade. Except for sharp annual fluctuations, the velocity of money was then quite stable at 6–7 between the end of the 17th and the mid-19th century, a period of more than 150 years. Despite the expansion of paper notes in the 18th century, the velocity of money did not change, which shows that paper notes replaced metallic coins rather than expanding the money supply relative GDP.

The second change was the effect of the banking system's rapid growth in the

19th century. This led to a dramatic fall in M0's share of M3 and the two measures of money's velocity diverged. The considerable business activities of Swedish savings banks make M3 an interesting measure of the entire banking system's importance for the process of monetization.[66] The two periods of substantial commercial bank establishments, the late 1860s and the mid-1890s, both accompany a marked acceleration in the growth of M3.

Figure 7.3: *M3, M0, coins and GDP in current values within Sweden's present borders (million SEK, 1 SEK = 18 daler kopparmynt), 1620–2012.*
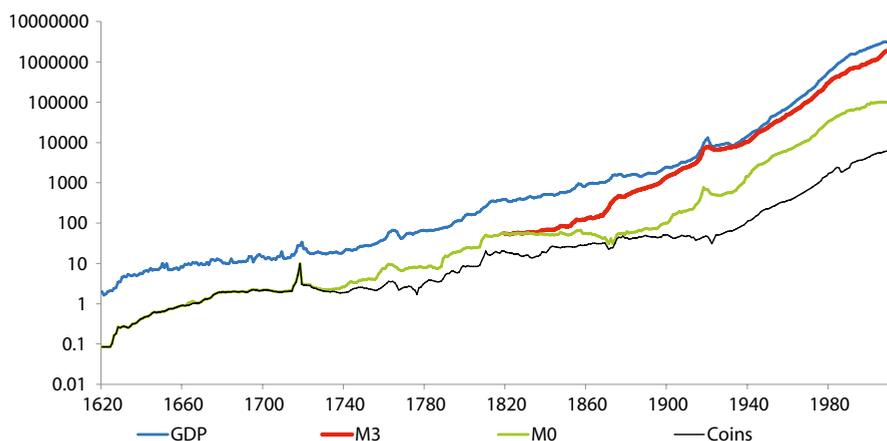
Sources: Tables A7.1, A7.2 and A7.3; Edvinsson (2014).

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66   See Lilja (2000), Petersson (2000). The money stock 1871–1971, calculated in Jonung's study, consisted of the volume of *enskilda* and Riksbank notes held by the public plus deposits from the non-banking sector in commercial banks (Jonung, 1975 pp. 13, 208–211).

Figure 7.4: *Velocities of M3 and M0 1620–2010 (GDP divided by money supply).*
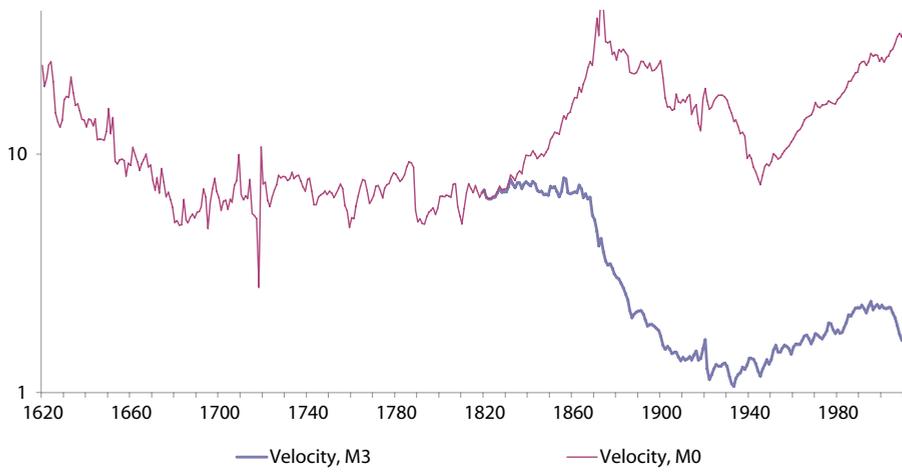
Sources: See figure 7.3.

Appendix

Table A7.1: *Money supply 1619–1776, year-end data.*

	Circulation within Sweden's present borders, mn SEK (1 SEK = 18 daler kopparmynt)		Ratio: Within Sweden's present borders to Kingdom of Sweden	Total circulation, Kingdom of Sweden (including Finland), mn daler kopparmynt			
	M0	Coins, including coin tokens		M0	Coins, including coin tokens	Notes	Coin tokens
1619	0.0853	0.0853	0.978	1.571	1.571	0.000	0.000
1620	0.0852	0.0852	0.978	1.569	1.569	0.000	0.000
1621	0.0851	0.0851	0.978	1.566	1.566	0.000	0.000
1622	0.0848	0.0848	0.978	1.560	1.560	0.000	0.000
1623	0.0844	0.0844	0.978	1.553	1.553	0.000	0.000
1624	0.0848	0.0848	0.978	1.562	1.562	0.000	0.000
1625	0.1038	0.1038	0.978	1.910	1.910	0.000	0.000
1626	0.1604	0.1604	0.978	2.952	2.952	0.000	0.000
1627	0.1839	0.1839	0.978	3.385	3.385	0.000	0.000
1628	0.2650	0.2650	0.978	4.878	4.878	0.000	0.000
1629	0.2544	0.2544	0.978	4.682	4.682	0.000	0.000
1630	0.2684	0.2684	0.978	4.940	4.940	0.000	0.000
1631	0.2735	0.2735	0.978	5.034	5.034	0.000	0.000
1632	0.2650	0.2650	0.978	4.877	4.877	0.000	0.000
1633	0.2546	0.2546	0.978	4.686	4.686	0.000	0.000
1634	0.2781	0.2781	0.978	5.118	5.118	0.000	0.000
1635	0.3102	0.3102	0.978	5.709	5.709	0.000	0.000
1636	0.3216	0.3216	0.978	5.920	5.920	0.000	0.000
1637	0.3334	0.3334	0.978	6.137	6.137	0.000	0.000
1638	0.3715	0.3715	0.978	6.837	6.837	0.000	0.000
1639	0.4115	0.4115	0.978	7.574	7.574	0.000	0.000
1640	0.4318	0.4318	0.978	7.947	7.947	0.000	0.000
1641	0.4570	0.4570	0.978	8.411	8.411	0.000	0.000
1642	0.4774	0.4774	0.978	8.787	8.787	0.000	0.000
1643	0.4872	0.4872	0.978	8.967	8.967	0.000	0.000
1644	0.5343	0.5343	0.978	9.835	9.835	0.000	0.000
1645	0.5909	0.5909	0.978	10.876	10.876	0.000	0.000
1646	0.6146	0.6146	0.976	11.341	11.341	0.000	0.000
1647	0.6097	0.6097	0.973	11.279	11.279	0.000	0.000
1648	0.6170	0.6170	0.971	11.442	11.442	0.000	0.000
1649	0.6269	0.6269	0.968	11.654	11.654	0.000	0.000
1650	0.6447	0.6447	0.966	12.016	12.016	0.000	0.000
1651	0.6448	0.6448	0.963	12.047	12.047	0.000	0.000
1652	0.6863	0.6863	0.961	12.855	12.855	0.000	0.000

Table A7.1 (cont.): *Money supply 1619–1776, year-end data.*

	Circulation within Sweden's present borders, mn SEK (1 SEK = 18 daler kopparmynt)		Ratio: Within Sweden's present borders to Kingdom of Sweden	Total circulation, Kingdom of Sweden (including Finland), mn daler kopparmynt			
	M0	Coins, including coin tokens		M0	Coins, including coin tokens	Notes	Coin tokens
1653	0.7433	0.7433	0.959	13.959	13.959	0.000	0.000
1654	0.7547	0.7547	0.956	14.209	14.209	0.000	0.000
1655	0.7548	0.7548	0.954	14.246	14.246	0.000	0.000
1656	0.7887	0.7887	0.954	14.886	14.886	0.000	0.000
1657	0.8223	0.8223	0.954	15.520	15.520	0.000	0.000
1658	0.8629	0.8629	0.954	16.286	16.286	0.000	0.000
1659	0.8902	0.8902	0.938	17.077	17.077	0.000	0.000
1660	0.9062	0.9062	0.923	17.674	17.674	0.000	0.000
1661	0.9003	0.8957	0.908	17.856	17.764	0.091	0.000
1662	0.9331	0.9026	0.892	18.824	18.210	0.615	0.000
1663	1.0498	0.9183	0.877	21.551	18.851	2.700	0.000
1664	1.0915	0.9623	0.861	22.806	20.106	2.700	0.000
1665	1.1509	1.0196	0.846	24.484	21.690	2.794	0.000
1666	1.0772	1.0364	0.831	23.340	22.456	0.884	0.000
1667	1.0382	1.0366	0.815	22.918	22.883	0.035	0.000
1668	1.0406	1.0406	0.800	23.413	23.413	0.000	0.000
1669	1.0984	1.0984	0.800	24.713	24.713	0.000	0.000
1670	1.1932	1.1932	0.800	26.848	26.848	0.000	0.000
1671	1.3248	1.3248	0.800	29.808	29.808	0.000	0.000
1672	1.3207	1.3207	0.800	29.716	29.716	0.000	0.000
1673	1.3492	1.3492	0.800	30.358	30.358	0.000	0.000
1674	1.4290	1.4290	0.800	32.153	32.153	0.000	0.000
1675	1.6253	1.6253	0.800	36.568	36.568	0.000	0.000
1676	1.7788	1.7782	0.800	40.023	40.010	0.013	0.000
1677	1.8592	1.8587	0.800	41.833	41.821	0.012	0.000
1678	1.9179	1.9178	0.800	43.153	43.150	0.003	0.000
1679	1.9427	1.9427	0.800	43.710	43.710	0.000	0.000
1680	1.9635	1.9516	0.800	44.180	43.911	0.269	0.000
1681	1.9212	1.9115	0.800	43.227	43.009	0.219	0.000
1682	1.9542	1.9522	0.800	43.970	43.925	0.045	0.000
1683	1.9810	1.9742	0.800	44.573	44.419	0.154	0.000
1684	1.9886	1.9760	0.800	44.744	44.461	0.284	0.000
1685	2.0052	1.9957	0.800	45.117	44.904	0.213	0.000
1686	2.0219	2.0002	0.800	45.493	45.004	0.490	0.000
1687	1.9772	1.9597	0.800	44.487	44.094	0.393	0.000
1688	1.9770	1.9667	0.800	44.482	44.252	0.231	0.000

Table A7.1 (cont.): *Money supply 1619–1776, year-end data.*

	Circulation within Sweden's present borders, mn SEK (1 SEK = 18 daler kopparmynt)		Ratio: Within Sweden's present borders to Kingdom of Sweden	Total circulation, Kingdom of Sweden (including Finland), mn daler kopparmynt			
	M0	Coins, including coin tokens		M0	Coins, including coin tokens	Notes	Coin tokens
1689	2.0095	1.9957	0.800	45.215	44.904	0.311	0.000
1690	2.0067	1.9980	0.800	45.151	44.955	0.196	0.000
1691	1.9493	1.9336	0.800	43.859	43.507	0.352	0.000
1692	1.9732	1.447	0.800	44.398	43.756	0.642	0.000
1693	2.0950	2.0549	0.800	47.137	46.236	0.901	0.000
1694	2.2114	2.2029	0.800	49.757	49.566	0.192	0.000
1695	2.2351	2.2233	0.800	50.290	50.024	0.266	0.000
1696	2.2121	2.1938	0.800	49.772	49.360	0.412	0.000
1697	2.1731	2.1550	0.800	48.895	48.488	0.407	0.000
1698	2.0988	2.0904	0.800	47.223	47.034	0.189	0.000
1699	2.1356	2.1265	0.800	48.051	47.846	0.205	0.000
1700	2.2077	2.1881	0.800	49.674	49.232	0.443	0.000
1701	2.2256	2.2061	0.800	50.076	49.638	0.438	0.000
1702	2.1833	2.1687	0.800	49.123	48.795	0.328	0.000
1703	2.1465	2.1355	0.800	48.296	48.048	0.248	0.000
1704	2.1126	2.0923	0.800	47.533	47.077	0.456	0.000
1705	2.0321	2.0250	0.800	45.722	45.562	0.161	0.000
1706	1.9975	1.9907	0.800	44.945	44.791	0.154	0.000
1707	1.9837	1.9747	0.800	44.633	44.431	0.202	0.000
1708	1.9473	1.9407	0.800	43.813	43.665	0.148	0.000
1709	1.9491	1.9453	0.800	43.854	43.769	0.085	0.000
1710	2.0009	1.9925	0.800	45.021	44.832	0.189	0.000
1711	2.0426	2.0221	0.800	45.959	45.496	0.462	0.000
1712	2.0629	2.0205	0.800	46.415	45.462	0.953	0.000
1713	2.1070	2.0510	0.800	47.406	46.148	1.258	0.000
1714	2.0951	2.0639	0.800	47.139	46.437	0.702	0.000
1715	2.8107	2.7692	0.800	63.242	62.306	0.935	6.567
1716	3.4814	3.3880	0.800	78.331	76.229	2.102	17.993
1717	5.1557	5.0048	0.800	116.004	112.609	3.395	38.603
1718	9.8935	9.6731	0.800	222.604	217.645	4.958	103.281
1719	3.1242	3.0474	0.800	70.295	68.566	1.729	0.000
1720	3.0293	2.9137	0.800	68.160	65.557	2.603	0.000
1721	3.0112	2.8881	0.800	67.752	64.982	2.770	0.000
1722	2.9332	2.8107	0.800	65.997	63.241	2.756	0.000
1723	2.9278	2.8160	0.800	65.875	63.360	2.514	0.000
1724	2.6309	2.5247	0.800	59.194	56.807	2.387	0.000

Table A7.1 (cont.): *Money supply 1619–1776, year-end data.*

	Circulation within Sweden's present borders, mn SEK (1 SEK = 18 daler kopparmynt)		Ratio: Within Sweden's present borders to Kingdom of Sweden	Total circulation, Kingdom of Sweden (including Finland), mn daler kopparmynt			
	M0	Coins, including coin tokens		M0	Coins, including coin tokens	Notes	Coin tokens
1725	2.5257	2.4273	0.800	56.829	54.614	2.216	0.000
1726	2.4784	2.3590	0.800	55.763	53.079	2.685	0.000
1727	2.3735	2.2274	0.800	53.404	50.117	3.287	0.000
1728	2.3108	2.1692	0.800	51.994	48.807	3.187	0.000
1729	2.2277	2.0880	0.800	50.123	46.980	3.143	0.000
1730	2.2256	2.0531	0.800	50.075	46.195	3.880	0.000
1731	2.2202	1.9972	0.800	49.954	44.937	5.017	0.000
1732	2.2314	1.9908	0.800	50.205	44.794	5.412	0.000
1733	2.2350	1.9626	0.800	50.288	44.158	6.130	0.000
1734	2.2897	1.9953	0.800	51.518	44.895	6.623	0.000
1735	2.3016	1.9898	0.800	51.786	44.771	7.015	0.000
1736	2.3658	1.9484	0.800	53.230	43.839	9.391	0.000
1737	2.3280	1.8726	0.800	52.380	42.132	10.248	0.000
1738	2.4297	1.8527	0.800	54.669	41.685	12.984	0.000
1739	2.6066	1.8670	0.800	58.649	42.007	16.642	0.000
1740	2.6042	1.8711	0.800	58.594	42.100	16.494	0.000
1741	2.8328	1.9450	0.800	63.739	43.764	19.975	0.000
1742	3.1181	1.9780	0.800	70.156	44.506	25.651	0.000
1743	3.4758	2.1529	0.800	78.206	48.441	29.765	0.000
1744	3.4232	2.2824	0.800	77.021	51.355	25.667	0.000
1745	3.3474	2.3956	0.800	75.316	53.900	21.416	0.000
1746	3.3409	2.4544	0.800	75.171	55.224	19.947	0.000
1747	3.6415	2.5177	0.800	81.934	56.648	25.285	0.000
1748	3.8227	2.5639	0.800	86.011	57.687	28.325	0.000
1749	3.9062	2.5509	0.800	87.890	57.396	30.494	0.000
1750	3.8987	2.4538	0.800	87.721	55.210	32.511	0.000
1751	4.0063	2.4152	0.800	90.142	54.342	35.800	0.000
1752	4.1338	2.3394	0.800	93.010	52.636	40.374	0.000
1753	4.0492	2.2853	0.800	91.108	51.419	39.689	0.000
1754	4.0384	2.2320	0.800	90.865	50.221	40.644	0.000
1755	3.9969	2.1568	0.800	89.930	48.528	41.402	0.000
1756	4.4315	2.1620	0.800	99.708	48.645	51.063	0.000
1757	5.5265	2.2841	0.800	124.346	51.392	72.955	0.000
1758	6.3540	2.4551	0.800	142.965	55.240	87.726	0.000
1759	7.5703	2.6513	0.800	170.332	59.655	110.676	0.000
1760	7.3573	2.9260	0.800	165.539	65.836	99.703	0.000

Table A7.1 (cont.): *Money supply 1619–1776, year-end data.*

	Circulation within Sweden's present borders, mn SEK (1 SEK = 18 daler kopparmynt)		Ratio: Within Sweden's present borders to Kingdom of Sweden	Total circulation, Kingdom of Sweden (including Finland), mn daler kopparmynt			
	M0	Coins, including coin tokens		M0	Coins, including coin tokens	Notes	Coin tokens
1761	8.5095	3.2242	0.800	191.463	72.545	118.918	0.000
1762	9.5913	3.5811	0.800	215.805	80.576	135.229	0.000
1763	9.3952	3.5220	0.800	211.393	79.246	132.147	0.000
1764	9.2152	3.5445	0.800	207.341	79.752	127.589	0.000
1765	8.4059	3.2592	0.800	189.132	73.332	115.800	0.000
1766	7.8953	2.7902	0.800	177.643	62.780	114.863	0.000
1767	7.0450	2.1983	0.800	158.512	49.463	109.049	0.000
1768	6.6897	2.3376	0.800	150.518	52.597	97.921	0.000
1769	6.7201	2.4826	0.800	151.202	55.859	95.343	0.000
1770	7.3092	2.6203	0.800	164.456	58.956	105.501	0.000
1771	7.4632	2.6038	0.800	167.923	58.585	109.338	0.000
1772	7.6936	2.6839	0.800	173.106	60.388	112.718	0.000
1773	7.9550	2.6715	0.800	178.988	60.108	118.879	0.000
1774	8.0213	2.3326	0.800	180.480	52.483	127.997	0.000
1775	8.0842	2.1523	0.800	181.893	48.427	133.466	0.000
1776	7.9576	1.6913	0.800	179.046	38.053	140.992	0.000

Note: In 1715–18 the daler kopparmynt follows the value of coin tokens. The premium on better coins (copper plates and silver coins) when exchanged into coin tokens is set equal to nil on 31st of December 1715, 6 per cent on 31st of December 1716, 24 per cent on 31st of December 1717 and 60 per cent on 31st of December 1718.

Sources: Sveriges Riksbank (1931), Wallroth (1918), Edvinsson (2012), Lindgren (1968).

Table A7.2: *Money supply 1777–1845, year-end data.*

	Circulation within Sweden's present borders			[R] Ratio, Sweden present borders to total circulation	[BD] Bank deposits	Total circulation (including circulation in Finland up to 1842)					[PR] Premium on riksdaler banco notes, end of year (%)
	[SM3] M3, mn SEK	[SM0] M0, mn SEK	[SC] Coins, mn SEK			[TNB] Notes and coins held by the bank sector	[TP] Private bank notes	[TC] Coins, mn SEK	[TR] Riksgälds notes, mn riksdaler riksgälds	[TRB] Riksbank notes, mn riksdaler banco	
1777		8.313	2.469	0.800				3.087		7.304	
1778		8.155	2.619	0.800				3.274		6.919	
1779		7.926	2.999	0.800				3.749		6.158	
1780		7.864	3.340	0.800				4.174		5.655	
1781		8.014	3.561	0.800				4.451		5.567	
1782		8.637	3.882	0.800				4.852		5.944	
1783		8.584	3.841	0.800				4.802		5.928	
1784		7.939	3.703	0.800				4.629		5.295	
1785		7.733	3.614	0.800				4.517		5.149	
1786		7.477	3.530	0.800				4.412		4.934	
1787		7.749	3.471	0.800				4.339		5.347	
1788		8.474	3.621	0.800				4.526		6.067	
1789		13.064	4.135	0.800				5.169	5.230	5.527	7.3
1790		15.317	5.247	0.800				6.558	8.445	3.708	11.7
1791		14.723	5.610	0.800				7.012	8.046	3.032	10.4
1792		16.079	5.611	0.800				7.014	10.271	2.542	10.7
1793		17.293	6.356	0.800				7.945	11.342	2.046	13.8
1794		18.395	6.475	0.800				8.094	12.704	1.858	18.1
1795		19.138	5.915	0.800				7.394	14.640	1.716	10.0
1796		19.514	5.860	0.800				7.324	15.459	1.462	10.1
1797		19.210	6.046	0.800				7.558	15.054	1.252	12.0
1798		21.020	7.858	0.800				9.823	14.878	1.153	36.5
1799		22.860	8.793	0.800				10.992	16.037	1.002	54.3
1800		23.807	8.201	0.800				10.251	18.056	1.029	41.1
1801		24.783	8.690	0.800				10.863	18.624	0.983	51.9
1802		24.719	8.392	0.800				10.491	18.942	0.967	51.6
1803		23.989	8.325	0.800				10.406	17.207	1.582	50
1804		24.498	8.399	0.800			0.642	10.498	14.867	3.505	50
1805		25.172	8.466	0.800			1.623	10.583	12.453	5.619	50
1806		24.813	8.459	0.800			2.436	10.574	10.175	6.845	50
1807		25.499	8.919	0.800			2.546	11.149	7.958	8.511	50
1808		36.876	11.544	0.800			3.068	14.430	6.816	16.566	50
1809		43.829	14.339	0.800			4.098	17.924	6.191	20.448	50

Table A7.2 (cont.): *Money supply 1777–1845, year-end data.*

	Circulation within Sweden's present borders			[R] Ratio, Sweden present borders to total circulation	[BD] Bank deposits	Total circulation (including circulation in Finland up to 1842)					[PR] Premium on riksdaler banco notes, end of year (%)
	[SM3] M3, mn SEK	[SM0] M0, mn SEK	[SC] Coins, mn SEK			[TNB] Notes and coins held by the bank sector	[TP] Private bank notes	[TC] Coins, mn SEK	[TR] Riks-gälds notes, mn riksdal-er riks-gälds	[TRB] Riks-bank notes, mn riksdal-er ban-co	
1810		50.583	20.160	0.804			8.688	25.063	5.558	21.509	50
1811		47.749	16.590	0.809			8.214	20.513	4.992	22.357	50
1812		47.870	16.125	0.813			9.336	19.831	4.638	22.936	50
1813		46.776	16.827	0.817			10.863	20.584	6.290	20.232	50
1814		49.003	18.307	0.822			10.857	22.276	8.607	19.162	50
1815		49.653	19.852	0.826			9.069	24.029	7.106	19.309	50
1816		49.556	18.374	0.831			8.651	22.123	6.456	20.725	50
1817		52.537	18.210	0.835			6.144	21.810	6.332	23.188	50
1818		56.508	20.054	0.839			2.144	23.894	6.929	24.337	50
1819	56.463	56.463	20.682	0.844			0.000	24.515	6.183	24.152	50
1820	54.426	54.331	18.870	0.848	0.094	0.029	0.000	22.252	5.703	24.095	50
1821	53.911	53.764	18.562	0.852	0.147	0.045	0.000	21.776	5.627	23.811	50
1822	52.745	52.442	18.137	0.857	0.304	0.094	0.000	21.169	5.627	23.005	50
1823	53.804	53.490	18.109	0.861	0.314	0.097	0.000	21.029	6.038	23.431	50
1824	55.743	55.093	17.122	0.865	0.650	0.200	0.000	19.783	6.858	24.809	50
1825	56.353	55.624	17.149	0.870	0.729	0.225	0.000	19.715	7.578	24.585	50
1826	57.849	56.921	17.499	0.874	0.928	0.286	0.000	20.017	8.421	24.639	50
1827	55.805	54.604	15.787	0.879	1.201	0.370	0.000	17.969	8.363	24.125	50
1828	55.535	54.168	15.042	0.883	1.367	0.421	0.000	17.036	8.438	24.198	50
1829	56.806	55.327	15.279	0.887	1.479	0.456	0.000	17.219	8.561	24.686	50
1830	57.950	56.286	15.853	0.892	1.663	0.513	0.000	17.779	8.823	24.689	50
1831	59.764	57.836	15.842	0.896	1.928	0.594	0.000	17.680	9.351	25.405	50
1832	57.594	55.456	14.056	0.900	2.137	0.659	0.000	15.610	9.120	25.012	50
1833	58.505	54.952	13.707	0.905	2.444	0.727	1.110	15.150	9.305	24.671	50
1834	58.318	54.377	14.117	0.909	2.477	1.235	1.464	15.528	9.428	24.060	50
1835	57.946	52.967	14.936	0.914	3.144	2.545	1.835	16.350	6.194	25.321	50
1836	59.436	52.981	14.881	0.918	3.927	3.365	2.527	16.212	3.785	27.393	50
1837	62.464	54.169	16.141	0.922	4.209	4.148	4.086	17.502	2.294	28.726	50
1838	66.339	54.095	19.472	0.927	4.901	4.279	7.344	21.014	1.482	26.774	50
1839	66.168	51.411	18.820	0.931	5.683	5.897	9.074	20.215	1.115	26.526	50
1840	67.810	51.730	18.518	0.935	6.041	5.672	10.039	19.798	0.872	26.872	50
1841	68.655	51.172	21.079	0.940	6.810	6.447	10.672	22.431	0.623	25.232	50
1842	67.915	50.656	24.905	0.944	7.064	6.301	10.195	26.380	0.597	21.986	50

Table A7.2 (cont.): *Money supply 1777–1845, year-end data.*

	Circulation within Sweden's present borders			[R] Ratio, Sweden present borders to total circulation	[BD] Bank deposits	Total circulation (including circulation in Finland up to 1842)					[PR] Premium on riksdaler banco notes, end of year (%)
	[SM3] M3, mn SEK	[SM0] M0, mn SEK	[SC] Coins, mn SEK			[TNB] Notes and coins held by the bank sector	[TP] Private bank notes	[TC] Coins, mn SEK	[TR] Riksgälds notes, mn riksdaler riksgälds	[TRB] Riksbank notes, mn riksdaler banco	
1843	68.387	51.333	26.706	1.000	7.604	7.263	9.450	26.706	0.560	20.887	50
1844	68.675	50.461	26.250	1.000	8.427	5.948	9.788	26.250	0.543	19.744	50
1845	73.109	52.011	25.430	1.000	9.140	9.006	11.959	25.430	0.000	23.724	50

Note: [SC] = [TC]*[R]; [SM0] = ([TC]+[TR]+[TRB]*[PR]-[TNB])*[R]; [SM3] = [SM0]+ [TP]+[BD]; Total liquidity = [TM0]+[TP].

Sources: Sveriges Riksbank (1931), Skogman (1946a, 1946b), Wallroth (1918), Statistics Sweden (1960), Ögren (2003), Edvinsson (2012).

Table A7.3: *Money supply 1846–2012, year-end data (mn SEK).*

	[M3] M3	[M0] M0	[C] Coins outside the Riksbank	[BC] Bank certificates	[BD] Bank deposits	[NB] Notes and coins held by the bank sector	[P] Private bank notes	[RB] Riks-bank notes outside the Riksbank
1846	76.29	53.14	24.83		9.75	10.52	13.40	38.84
1847	84.68	58.31	24.26		10.83	9.32	15.54	43.37
1848	85.04	56.68	25.63		12.57	8.05	15.78	39.10
1849	84.60	53.86	25.73		15.33	5.96	15.40	34.09
1850	81.01	51.44	26.07		14.52	8.17	15.04	33.54
1851	83.40	50.96	26.09		15.98	8.75	16.46	33.62
1852	86.87	51.43	26.01		18.80	8.44	16.65	33.86
1853	97.48	55.29	25.82		21.65	11.91	20.55	41.38
1854	110.32	60.31	25.81		24.63	15.47	25.37	49.97
1855	122.45	63.93	25.98		26.91	21.23	31.61	59.18
1856	119.16	65.34	27.89		27.13	15.01	26.69	52.46
1857	118.84	66.55	28.47		30.88	8.61	21.41	46.69
1858	121.21	56.47	28.03		39.48	11.81	25.26	40.25
1859	120.30	54.83	28.23		38.81	10.18	26.66	36.78
1860	129.95	54.66	28.16		45.08	12.99	30.22	39.49
1861	135.79	54.53	30.29		49.04	13.03	32.22	37.27
1862	139.65	55.85	30.58		53.40	10.57	30.39	35.83
1863	132.60	51.57	31.86		53.92	11.56	27.10	31.27
1864	134.81	53.01	31.84		54.24	10.36	27.56	31.53
1865	145.55	48.56	31.20		63.50	13.15	33.49	30.51
1866	145.62	47.47	30.89		69.11	10.05	29.04	26.63
1867	157.16	44.13	31.06		78.54	13.11	34.50	26.18
1868	153.29	41.34	31.37		85.35	16.40	26.60	26.36
1869	186.19	43.76	32.18		107.47	15.29	34.95	26.88
1870	206.80	37.32	26.43		130.25	18.50	39.23	29.40
1871	241.73	30.90	22.70		162.53	23.08	48.30	31.28
1872	314.13	41.20	24.67		215.58	28.73	57.35	45.26
1873	345.45	31.26	24.60		246.97	38.06	67.21	44.73
1874	405.51	38.50	31.79		303.09	33.86	63.92	40.57
1875	433.31	52.02	41.04		321.46	25.20	59.83	36.18
1876	469.83	54.66	44.30		353.93	19.72	61.24	30.08
1877	461.39	53.72	43.50		356.90	16.73	50.77	26.95
1878	444.53	56.45	47.49		342.20	17.94	45.88	26.90
1879	452.82	53.32	42.77		350.28	21.04	49.22	31.59
1880	498.63	61.22	43.34		387.17	21.52	50.23	39.40
1881	515.09	56.33	39.84		409.82	21.30	48.93	37.80
1882	551.82	59.04	40.73		440.17	19.07	52.61	37.38
1883	585.19	58.25	42.41		474.47	19.83	52.48	35.67

Table A7.3 (cont.): *Money supply 1846–2012, year-end data (mn SEK).*

	[M3] M3	[M0] M0	[C] Coins outside the Riksbank	[BC] Bank certificates	[BD] Bank deposits	[NB] Notes and coins held by the bank sector	[P] Private bank notes	[RB] Riks-bank notes outside the Riksbank
1884	621.89	60.50	42.91		509.00	20.41	52.39	37.99
1885	642.02	60.80	42.27		531.68	20.81	49.54	39.34
1886	669.98	67.13	45.75		554.28	20.50	48.57	41.89
1887	682.61	64.45	45.08		568.62	20.79	49.54	40.16
1888	711.09	69.93	46.47		585.32	20.73	55.84	44.19
1889	735.87	72.80	49.08		604.21	20.12	58.86	43.84
1890	764.34	72.77	47.88		632.98	20.52	58.60	45.40
1891	794.87	71.42	46.95		664.69	19.40	58.76	43.87
1892	811.53	70.85	45.93		682.72	19.10	57.96	44.02
1893	847.18	72.69	45.93		715.43	21.07	59.06	47.83
1894	890.51	73.86	45.65		755.32	23.69	61.33	51.90
1895	932.77	74.92	43.36		796.97	25.18	60.88	56.74
1896	989.32	85.32	44.48		838.69	22.45	65.30	63.30
1897	1085.90	91.44	45.42		922.26	22.82	72.20	68.84
1898	1197.05	96.13	50.44		1021.61	25.17	79.32	70.86
1899	1322.27	101.00	50.84		1141.62	25.04	79.66	75.19
1900	1430.90	99.81	51.72		1248.84	23.90	82.25	71.99
1901	1513.02	114.18	47.67		1343.18	34.47	55.66	100.98
1902	1570.59	138.44	44.30		1407.10	43.28	25.05	137.41
1903	1649.85	163.63	41.65		1482.17	43.87	4.05	165.84
1904	1728.70	166.21	42.80		1560.60	46.90	1.89	170.31
1905	1855.21	177.04	44.34		1676.57	51.01	1.60	183.71
1906	2041.30	194.61	46.40		1846.69	53.71	0.00	201.91
1907	2198.23	181.71	49.02		2016.52	57.43	0.00	190.12
1908	2320.27	197.77	48.98		2122.50	52.70	0.00	201.49
1909	2386.03	197.80	46.93		2188.23	51.03	0.00	201.90
1910	2493.38	206.07	48.89		2287.31	49.30	0.00	206.49
1911	2602.03	215.37	48.81		2386.66	51.54	0.00	218.10
1912	2736.85	218.67	43.17		2518.18	52.92	0.00	228.43
1913	2884.79	229.95	44.06		2654.84	48.59	0.00	234.47
1914	3071.63	286.60	37.72		2785.03	55.18	0.00	304.06
1915	3377.07	310.77	39.38		3066.30	56.49	0.00	327.89
1916	4072.65	377.90	41.28		3694.75	80.90	0.00	417.52
1917	5102.65	520.84	43.15		4581.81	95.03	0.00	572.72
1918	6835.28	757.51	45.85		6077.77	101.88	0.00	813.53
1919	7503.92	668.48	47.02		6835.44	126.11	0.00	747.56
1920	7755.70	686.95	46.04		7068.76	118.97	0.00	759.88
1921	7527.05	568.05	38.24		6959.00	97.89	0.00	627.70

Table A7.3 (cont.): *Money supply 1846–2012, year-end data (mn SEK).*

	[M3] M3	[M0] M0	[C] Coins outside the Riksbank	[BC] Bank certificates	[BD] Bank deposits	[NB] Notes and coins held by the bank sector	[P] Private bank notes	[RB] Riks-bank notes outside the Riksbank
1922	7103.40	522.73	30.65		6580.67	92.12	0.00	584.19
1923	6786.78	513.49	38.07		6273.29	100.97	0.00	576.39
1924	6642.24	499.84	50.22		6142.41	87.67	0.00	537.29
1925	6586.27	499.16	50.58		6087.11	81.21	0.00	529.79
1926	6705.40	491.48	51.58		6213.92	85.17	0.00	525.08
1927	6855.78	499.57	53.82		6356.20	80.49	0.00	526.24
1928	6933.89	516.44	56.72		6417.46	86.30	0.00	546.01
1929	7180.91	550.54	60.12		6630.38	78.71	0.00	569.13
1930	7495.98	571.97	63.09		6924.02	85.01	0.00	593.88
1931	7554.57	564.99	64.23		6989.58	81.92	0.00	582.68
1932	7738.35	568.35	64.33		7170.00	94.20	0.00	598.22
1933	7914.66	612.04	67.10		7302.62	102.66	0.00	647.60
1934	8063.10	664.04	71.00		7399.06	115.19	0.00	708.23
1935	8325.67	755.65	76.08		7570.02	106.35	0.00	785.92
1936	8733.74	867.67	80.70		7866.07	106.03	0.00	893.00
1937	9173.97	948.22	85.44		8225.75	117.30	0.00	980.09
1938	9783.22	1032.07	90.80		8751.15	119.41	0.00	1060.68
1939	10415	1416	103		8999	109	0	1422
1940	10407	1462	113		8945	133	0	1482
1941	11530	1670	118		9860	147	0	1700
1942	12762	1999	125		10762	141	0	2016
1943	14395	2259	137		12137	145	0	2266
1944	15967	2494	150		13473	148	0	2492
1945	17544	2769	162		14775	174	0	2782
1946	18767	2888	186		15880	175	0	2877
1947	19777	2905	203		16872	193	0	2895
1948	20823	3142	217		17681	188	0	3113
1949	22537	3317	225		19219	195	0	3287
1950	23990	3552	228		20438	189	0	3513
1951	27216	4093	241		23124	238	0	4090
1952	28469	4576	254		23893	255	0	4577
1953	31326	4851	268		26475	252	0	4835
1954	33372	5092	283		28280	277	0	5087
1955	34556	5313	307		29242	312	0	5319
1956	36616	5586	322		31030	333	0	5598
1957	39421	5813	333		33608	360	0	5840
1958	42701	6021	340		36680	378	0	6059
1959	47971	6193	352		41778	425	0	6266

Table A7.3 (cont.): *Money supply 1846–2012, year-end data (mn SEK).*

	[M3] M3	[M0] M0	[C] Coins outside the Riksbank	[BC] Bank certificates	[BD] Bank deposits	[NB] Notes and coins held by the bank sector	[P] Private bank notes	[RB] Riks-bank notes outside the Riksbank
1960	48865	6540	366		42325	385	0	6559
1961	52035	6843	381		45192	408	0	6870
1962	57076	7271	403		49804	462	0	7330
1963	61954	7791	431		54163	509	0	7869
1964	66612	8342	460		58270	504	0	8386
1965	70135	8702	493		61433	537	0	8746
1966	76111	9297	525		66814	526	0	9298
1967	85835	10018	557		75817	504	0	9965
1968	95583	10469	597		85114	709	0	10581
1969	100222	10963	647		89259	647	0	10963
1970	105792	11356	686		94436	649	0	11319
1971	116295	12779	730		103517	655	0	12704
1972	129989	14111	805		115878	619	0	13925
1973	146690	15338	861		131352	752	0	15229
1974	159732	17277	919		142455	916	0	17274
1975	179963	20084	1003		159879	1025	0	20106
1976	189087	22119	1125		166968	1119	0	22113
1977	206835	24372	1321		182463	1368	0	24419
1978	244140	27521	1427		216619	1653	0	27747
1979	284187	30880	1524		253307	2224	0	31580
1980	310273	33518	1720	6210	270545	2622	0	34420
1981	351408	35993	1801	6325	309090	2863	0	37055
1982	380575	37985	1915	6588	336002	2915	0	38985
1983	406768	41872	2242	12357	352539	3089	0	42719
1984	435262	45024	2436	5878	384360	3932	0	46520
1985	439037	46006	2371	5788	387243	4460	0	48095
1986	485498	50242	1819	2893	432363	5627	0	54050
1987	505587	52043	1922	8485	445059	6182	0	56303
1988	531853	54930	2063	5185	471738	6584	0	59451
1989	585056	60419	2229	7176	517461	7889	0	66079
1990	651487	61713	2359	7284	582490	10266	0	69620
1991	677515	64556	2991	5033	607926	11543	0	73108
1992	699089	64051	3205	7348	627690	9894	0	70740
1993	726997	66803	3308	6166	654028	8919	0	72414
1994	729353	68594	3450	4704	656055	7848	0	72992
1995	749249	68303	3596	8044	672902	8357	0	73064
1996	833675	72017	3656	13354	748304	8774	0	77135
1997	843265	74114	3809	18556	750595	8681	0	78986

Table A7.3 (cont.): *Money supply 1846–2012, year-end data (mn SEK).*

	[M3] M3	[M0] M0	[C] Coins outside the Riksbank	[BC] Bank certificates	[BD] Bank deposits	[NB] Notes and coins held by the bank sector	[P] Private bank notes	[RB] Riks-bank notes outside the Riksbank
1998	863922	77879	3980	9530	776513	8389	0	82288
1999	947814	87161	4213	33672	826981	11289	0	94237
2000	974091	88881	4434	17294	867916	8782	0	93229
2001	1038972	96743	4744	15730	926499	10368	0	102367
2002	1086038	95847	5005	24331	965860	11137	0	101979
2003	1119288	98481	5265	19009	1001798	10459	0	103675
2004	1171218	98243	5442	21360	1051615	10651	0	103452
2005	1286682	100479	5559	6530	1179673	10596	0	105516
2006	1427436	100883	5518	7336	1319217	11492	0	106857
2007	1634076	100523	5807	34803	1498750	13801	0	108517
2008	1826405	99515	6007	72898	1653992	12758	0	106266
2009	1873879	100119	6073	38486	1735275	10544	0	104590
2010	1965359	96911	5499	4854	1863594	8490	0	99902
2011	2076594	92384	5365	11455	1972755	7896	0	94915
2012	2225347	88182	5385	19169	2117996	8259	0	91056

Note: The following relations hold: [M0] = [C]+[RB]-[NB]; [M3] = [M0] + [P] + [BC] + [BD]; Liquidity = [M0]+[P].

Sources: Sveriges Riksbank (1931), Wallroth (1918), Statistics Sweden (1960), Statistics Sweden (2013) Sveriges riksbank (1909–78), Sveriges riksbank (1979–2001), Sveriges Riksbank (2001–13), Ögren (2003).

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PrFK – Protokoll från första kammaren 1879 [Minutes of the First Chamber of Parliament]

RdSkr – Riksdagens Underdåniga Skrifvelser 10:e Samlingen 1834–1913 [Parliamentary Resolutions]

StU – Statsutskottet 4:e Samlingen 1834–1900 [Standing Committee on Supply]

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8.
The Riksbank balance sheet, 1668–2011

Klas Fregert

8.1. Introduction

This chapter describes the sources, construction and content of the end-of-year balance sheet data for the Riksbank from its start in 1668 up to and including 2011. Yearly data for the period 1668–1924 were included in the five-volume history of the Riksbank, published between 1918 and 1931 to celebrate the Bank's 250th anniversary.[1] One of the contributors, Professor David Davidson (1854–1942), captured the potential usefulness of yearly balance-sheet data:

> The events, which in this chapter will be described and explained, are those which have been illustrated, albeit only *statistically*, in the tables of chapter II [Riksbank balance sheets 1834–1860] … The tables show the absolute size of every single event but from them it is also possible to interpret the relations between these events at an instant in time as well as during different times – though only as these events took shape at the *end* of each year. The character of these events has over the years been influenced foremost by the constitution of the Riksbank, the guidelines for the Riksbank and a host of other factors, which have determined this activity. Among the last-mentioned factors, the most important are those of the open money market and in that way, they have been dependent on the incompletely known structure of this part of the money market. Davidson (1931, p. 78, italics in original).

Figure 8.1 illustrates Davidson's message. The changes in the balance sheet reflect, on the one hand, the relative importance of the Riksbank's goals ("guidelines") and, on the other, the character of the financial sector ("the open money market"). The

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1   Sveriges Riksbank (1918–1931). Individual contributions will be referenced by author and year.

goals are determined by parliament, the Riksbank's principal, within the framework of the constitution, the Riksbank charter and Riksbank law.[2]

Figure 8.1. *The determinants of the Riksbank balance sheet: an overview.*
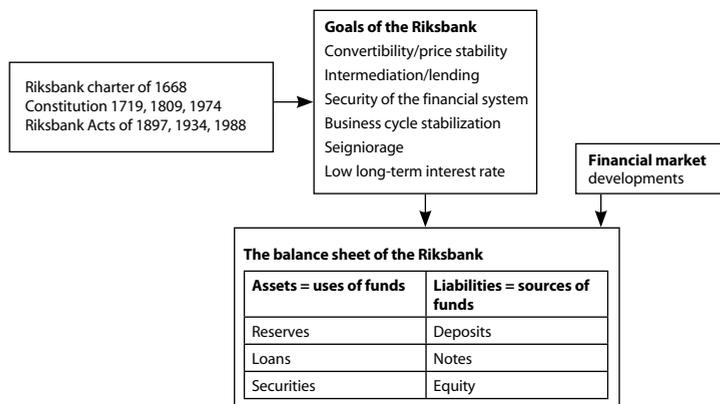
Davidson hinted that a limitation of the data is that they represent stocks at a specific point in time: the year-end. Events occurring during the year will be invisible and events occurring at the end of the year may make the data unrepresentative. The end-of-year data are thus most useful for medium- to long-term analysis using trends or moving averages.[3] A potential problem with the interpretation of the data, alluded to by Davidson, lies in our incomplete knowledge of the financial sector's structure. In a survey of the Riksbank, based on the five-volume history, Heckscher (1936, p. 161) admonished the reader to bear in mind that "the well authenticated part played by public banks, up to the middle of the nineteenth century, has been small compared with what was done by private bankers, goldsmiths, scriveners, money-lenders and usurers".

As an introduction to and a motivation for the construction of the consolidated data categories used to organize and present the original data, consider the Riksbank goals and their connection to the main balance sheet items as given in Figure 8.1. The effect of financial sector developments on the balance sheet will be touched on when we describe the time series of the balance sheet items.

The goal of *convertibility* and its modern incarnation, price stability, has been the paramount goal of the Riksbank since its inception. The preamble of the Riksbank charter of 1668 stated the overall goal as maximizing general welfare through the

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2 The parliament has been the Riksbank's principal (owner) since its foundation in 1668. Fregert and Jonung (1996) present the institutional framework and its development.

3 Another problem could be systematic differences between the end of year and the rest of the year. High demand for notes, resulting in larger note issues connected with month-ends and the holiday season, comes to mind.

The new paper notes issued by the Riksbank.
Source: Sveriges Riksbank.

facilitation of trade, which the bank would help by "preserving the proper and right value of the domestic money and thereby hinder all wrongful increases in the value of foreign money".[4] Convertibility of deposits and later notes to metal secured their value. Metal convertibility implies a stable value of the deposits and notes of the Riksbank in terms of goods in the short to medium term, as the value of metals in terms of goods typically changes slowly. Similarly, the current two per cent inflation goal protects the value of Riksbank notes in the short to medium term, but not in a secular perspective because the price level will drift. The goal is the Riksbank's interpretation of the requirement to "preserve the value of money", introduced in 1999 under the Riksbank Act of 1988. The struggle to maintain a stable value of money

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4   *Sveriges Rijkes Ständers Beslut och Förordning om Banken i Stockholm. Dat. Den 22 Septemb. Åhr 1668*, in Sveriges Riksbank (1918, vol. I, bilagor, p. 82). Between 1855 and 1974, convertibility was inscribed in the constitution (Instrument of Government, *Regeringsformen*). The gold standard was abandoned in 1931 by means of an escape clause, introduced in 1915, that had to be approved annually by parliament up to 1974, when a new Instrument of Government took over.

View of the old Riksbank building.
Source: Wikimedia.

and restore convertibility after failures characterizes the entire history of the Riks-bank more than any other goal. Until 1992, when Sweden switched to a floating exchange rate regime, the main concern was backing deposits and notes on the liabil-ity side with reserves of metal and foreign assets on the asset side. Previous periods of fiat money with floating exchange rates against metal and metallic currencies occurred in 1745–76, 1809–34, 1914–24, and 1931–33. With the exception of the period 1931–33, the restitution of convertibility was the stated goal during these periods, with delays caused by the perceived inadequacy of reserves.

Lending and, more generally, *intermediation* are today performed by the commer-cial banking sector and financial markets. Lending as a goal was included in the

Riksbank charter in 1668 on par with convertibility. The organization of the Riksbank mirrored the two goals, with two separate departments: the loan bank and the exchange bank, both financed by their own deposits. The loan bank's intermediation provided a double service in the form of interest-bearing deposits to savers and lending to investors. Loans to the private sector constitute a large portion of Riksbank assets until well into the 19th century. Interest-bearing deposits constituted the major part of the liability side in the 17th century, but notes became the major source of funds from 1738 onwards. New forms of interest-bearing deposits and lending to the private sector at the Riksbank were introduced in the 1860s to counter competition from the private banks, but disappeared again in the 1890s when the Riksbank prepared for its role as central bank. Thus lending and intermediation ceased to be Riksbank goals and were taken over by private banks.

The goal *security of the financial system* is written into the current Riksbank Act with the Riksbank as the guarantor of the payment system's security. This goal plays a minor role in the Riksbank's history before the financial crisis of 1991–1993 as Sweden has been spared large-scale financial crises, though the Riksbank did provide some emergency funds during the deflation crises of 1921–1922 and 1931–1933. During the financial crisis of 2008–2009, the Riksbank balance sheet tripled, with new forms of lending to banks. A central bank's rescue operations during a financial crisis can lead to losses, which is one motivation for the Riksbank to have an equity buffer. The Riksbank may also need foreign reserves to help commercial banks that depend on foreign financing during a financial crisis. The Riksbank's need for equity and foreign reserves is treated in the official inquiry SOU 2013:9.

Business cycle stabilization is a recent goal but there have been traces of it since the 19th century. The discount rate policy that emerged in the late 19th century aimed to protect convertibility in such a way that the business cycle was less affected than by previous methods. Today, the Riksbank conducts a "flexible inflation target policy", which aims to minimize business cycle fluctuations while steering the rate of inflation towards 2 per cent by means of the Riksbank's control of the shortest interest rate. The practice of offering loans to the banking sector at an interest rate set by the Riksbank has occurred since the late 19th century through rediscounting of private bills, advances against securities, and repurchase agreements (repos). These means are recorded on the asset side.[5] A complementary method used from 1955 to the 1980s, which appears on the liability side, is the so-called investment fund system, whereby corporations were required to deposit funds at the Riksbank in interest-bearing deposits, "Special deposits", which were released in downturns.

The goal of providing government income, *seigniorage*, does not appear in the Riksbank charter but has been a de facto determinant of the Riksbank's activities in some periods. Seigniorage affects the balance sheet through transfers of Riksbank

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5   In some periods (1993–1996, 2001–2002, 2008–2012), banks have lent funds to the Riksbank through the acquisition of so-called Riksbank certificates issued by the Riksbank, recorded on the Riksbank liability side, see section 8.4.2.4.

profits to the government, which reduce the Riksbank's equity. Seigniorage competes with lending as a goal, since equity can be a source of loan finance, a controversial parliamentary issue in the 19th century. Seigniorage also competes with the goal of safeguarding the financial system, as equity is a buffer during financial crises when the Riksbank acts as lender of last resort. Seigniorage may also be a result of government borrowing at the central bank, which can undermine the goals of convertibility and price stability. Large loans may lead to inflation, which reduces the value of government debt, or may be written off and thereby reduce Riksbank equity, while government equity increases by the same amount, as happened in 1778.

After World War II, Parliament instructed the Riksbank to strive for *low long-term interest rates* to stimulate investment, in particular for housing. This resulted in the Riksbank holding large stocks of government bonds.

8.2. Sources

Yearly time series of the balance sheet items for the period 1668–1743 appear in volumes I and II of *Sveriges Riksbank* (1918–1931), referred to as Simonsson (1918) and Simonsson (1919), respectively. Yearly time series from 1729 to 1924 appear in volume V of *Sveriges Riksbank* (1918–1931). The data from 1925 to 1977 are taken from *Sveriges Riksbank Årsbok* and for 1978 to 2002 from *Sveriges Riksbank Statistisk Årsbok*, and thereafter from the *Annual Reports*. For details, see Table 8.1. There are some overlaps across these sources as well as across years for a given publication, as each yearly issue contains data for the last few years. When the data differ for a given year due to different consolidations, the more detailed data have been selected.

The main sources for the interpretation of the series before 1925 are the narratives given in volumes I to IV of *Sveriges Riksbank* (1918–1931), referred to by their individual contributors. The yearbook *Sveriges Riksbank Årsbok* began in 1908 and contains narratives until 1977. From 1975 the annual reports have been used.[6] General histories in Swedish of the Riksbank after 1924 are Kock (1961, 1962) for the period 1924–58 and Werin (ed. 1993) for the period 1945–90. Overviews in English are given in Heckscher (1934) and Wetterberg (2009).

The consolidated data converted into Swedish kronor (SEK) are given in the appendix. The original balance sheet data are available in an excel file at the Riksbank homepage. The original data are divided into four periods 1) 1668–1743; 2)

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6   *Sveriges Riksbank Årsbok* contains tables and a narrative annual report from its start in 1908 to 1977 and includes translations into French of the tables until 1937 and thereafter into English. English summaries of the narrative appear from 1950. From 1978 until 2002 the tables were published in *Sveriges Riksbank Statistisk årsbok/Statistical Yearbook*, while the narrative part is given in the *Quarterly Review* issued by the Riksbank (*Kredit och valutapolitisk* översikt *1979–1988, Penning- och valutapolitik 1989–2011*) renamed *Economic Review* in 2000. Summaries are found in the *Annual Report* (*Förvaltningsberättelse* 1979 to 1996, *Årsredovisning* 1997–2012). *Sveriges Riksbank Årsbok* and *Sveriges Riksbank Statistisk årsbok/Statistical Yearbook* are available from 1960 at www.riksbank.se and the *Quarterly Review/Economic Review* from 1990.

1693, 1700, 1706, 1720, 1722, and 1729–76; 3) 1777–1858; and 4) 1858–2012, corresponding to sheets in the excel file. The division reflects three major breaks in the data. The yearly data for the period 1668 to 1743 are incomplete, as discussed below. The breaks in 1777 and 1858 are due to changes in the unit of account. The original data are organized in consolidated groups common to all periods, used in the appendix and discussed below. Table 8.1 gives the sources, the unit of account in the source and the conversion factors to SEK. These conversion factors are discussed in Fregert and Gustafsson (this volume, Section 5.2.4).

Table 8.1. *Balance sheet sources, units and conversion to Swedish kronor (SEK).*

Period	Source	Unit of account in source	Conversion to SEK
1668–1728	Simonsson (1918)	Daler silvermynt (dsm)	1 dsm = 1/6 SEK
1719–1743	Simonsson (1919)	Daler silvermynt (dsm)	1 dsm = 1/6 SEK
1693, 1700, 1706, 1720, 1722, 1729–1777	Sveriges Riksbank (1931, vol. V)	Daler silvermynt (dsm)	1 dsm = 1/6 SEK
1777–1788	– " –	Riksdaler specie (rdr sp)	1 rdr sp = 1 SEK
1789–1802		Riksdaler specie (rdr sp)	Floating exchange rate rdr sp and rdr rg; 1 rdr rg = 1 SEK
1803–1828		Riksdaler specie (rdr sp)	1 rdr sp = 1.5 rdr rg = 1.5 SEK
1829–1857	– " –	Riksdaler banco (rdr b:co)	1 rdr b:co = 1.5 SEK
1858–1873	– " –	Riksdaler riksmynt (rdr rm)	1 rdr rm = 1 SEK
1874–1924	– " –	Kronor (SEK)	
[1908] 1925–1976	*Sveriges Riksbank årsbok*	Kronor (SEK)	
1977–2002	*Sveriges Riksbank. Statistisk Årsbok*	Kronor (SEK)	
2003–	*Annual report*	Kronor (SEK)	

The yearly data for the period 1668–1743 cover deposits, capital (equity), loans to the government, and loans to the private sector. The data for deposits and lending come from the general ledgers kept by the exchange bank and the loan bank. Equity is calculated by adding profits and losses recursively year by year from the loan bank's income and expenditure books. These data are incomplete, as the sums of assets differ from the sums of liabilities and equity. Simonsson (1919) mentioned incomplete interest calculations, defaulted loans not being written off and different methods for converting the accounts into a common currency. Separate accounts were kept depending on the unit of account and the metal of the deposited coins. A further problem is that the data do not match the data for the years for which complete data

are available from Sveriges Riksbank (1931, vol. V) for the consolidated (loan bank and exchange bank) Riksbank. The overlapping years are: 1693, 1700, 1706, 1720, 1722, and 1729–1743. In Sveriges Riksbank (1931, vol. V), yearly data are given each year from 1729 to 1924 such that assets equal liabilities and equity.

The differences between the two series of the overlapping years are due to: 1) Sveriges Riksbank (1931, vol. V) containing more series: "Other assets", "Other liabilities", "Loans on loan bank attests", "Other exchange bank liabilities", and "Kept interest income from the creditors"; and 2) individual series that appear to be the same in the two sources, such as reserves, differing from each other. The introduction to Sveriges Riksbank (1931, vol. V) states that the data from before 1743 reported in that volume come from figures reported to Parliament ("Generalextrakt"), which thus may differ from the figures in Simonsson (1918, 1919), which are based on the general ledger. The differences appear unsystematic such that total assets and liabilities in the sources are larger in some years and smaller in others across the two sources. Differences in the sums of assets and liabilities vary from minus 25 to plus 35 per cent relative to total assets.

8.3. Consolidations

The consolidation is constructed so that the categories are meaningful for the analysis of the effects on the balance sheet caused by changes in Riksbank goals and financial market developments. This does not imply that the consolidation is ideal. In particular, it would be desirable to divide deposits and loans according to the counterpart (general public, banks, and government). This is only possible from 1929 for deposits and for loans from 1975. Loans are, however, divided between government and the private sector for the whole period.

Section 8.4 presents the consolidated categories and their main content, with comments to help the interpretation. Changes in titles of balance sheet items for which it is obvious that they refer to the same item have been collected in one series. The published accounts for the period 1858–2012 contain 77 asset series and 70 liability series. Not all individual items are commented on. For a full understanding of each individual item, further studies of published historical works, yearbooks and other sources may be necessary, some of which are cited below. In general, recent items are easier to interpret as more information is given. As of 1987, the annual reports contain an explanation of each item.

The original data are organized with consolidated categories as headers. For each individual time series, the first and the last year covering the whole period 1668 to 2011 are given, together with the minimum and maximum values for the subsample. The information indicates the relative importance and character of the time series. For example, a short duration and a large maximum value indicate that the balance sheet item is of an extraordinary character. Note, however, that only the first and last years are given so there may be intervening periods when the series is empty. The

figures are shown with spaces denoting thousands. The name of each indvidual time series is given in both Swedish and English.

The series within each category are ordered chronologically according to their first year. This organization illuminates which categories have been important in specific periods and highlights certain periods as reform periods when several new time series appear and others dispappear. In addition, the chronologial organization of the series within each category should help to construct shorter data sets by deleting irrelevant years and series. The consolidated data are shown below the original data.

The consolidated Riksbank balance sheet is divided into the following consolidated, non-overlapping categories:

$$R_{met} + R_{FX} + L_{pr} + L_{gvt} + S + CIO + OA$$
$$\text{Active=Assets=Users of funds}$$
$$=D_{non\text{-}interest} + D_{interest} + D_{spec} + N + EQ + LIO + OL$$
$$\text{Passive=Liabilities=Sources of funds}$$

where the asset (active) side consists of:

R_{met}: Reserves: metal (1668–2012)
R_{FX}: Reserves: foreign assets (1858–2012)
L_{pr}: Loans to private sector (1668–2012)
L_{gvt}: Loans to government (1668–1992)
S: Domestic securities (1858–2008)
CIO: Claims on international organizations (1930–2012)
OA: Other assets (1720–2012)

and the liability and equity (passive) side consists of:

$D_{non\text{-}interest}$: Non-interest-bearing deposits (1668–2012)
$D_{interest}$: Interest-bearing deposits (1668–1968)
D_{spec}: Deposits: special (1955–1997)
N: Notes (1710–2012)
EQ: Equity (1668–2012)
LIO: Liabilities to international organizations (1951–2012)
OL: Other liabilities (1720–2012)

The liability and equity on the right-hand side provide *sources* of funds in the form of: deposits (*D*), notes (*N*), equity (*EQ*), liabilities to international organizations (*LIO*), and other liabilities(*OL*). The assets on the left-hand side represent the *uses* of the funds as aquisitions of: reserves (R), loans (*L*), domestic securites (*S*), claims on international organizations (*CIO*), and other assets (*OA*).

In general, any particular liability or equity item represents funds that can be used

to aquire any asset item. In 1668, however, the Riksbank was organized in accordance with its charter into two departments with different activities and their own sources: the *loan bank (Länebanken)* lent coins from its interest-bearing deposits, and the *exchange bank* (*Wexelbanken*) provided non-interest-bearing deposits and kept the coins as reserves.[7] Thus, exchange bank deposits were to be backed by 100 per cent reserves, whereas deposits at the loan bank should be used for loans with no backing in reserves. The two departments kept separate accounts. In theory the exchange bank's balance sheet would read: $D_{non\text{-}interest} = R_{met}$, and the loan bank's: $D_{interest} + EQ = L$, with the loan bank building up equity from its interest income. Right from the start, however, the two departments were connected by the exchange bank's reserves being used as a common pool following a secret instruction from the parliamentary Banking Committee (Brisman 1918, p. 138). If coins were lent from the reserves, the loan bank incurred a debt to the exchange bank, which constituted a claim (asset) by the exchange bank on the loan bank. The fact that the two departments pooled reserves justifies consolidating the two departments from the beginning, as done in Sveriges Riksbank (1931, vol. V).[8]

There are indications of some connections between a certain source of funds and a certain use. For example, claims on the IMF (*CIO*) have been partially financed by liabilities to the IMF (*LIO*); new loans (*L*) from 1738 were generally paid in notes (*N*); and other liabilities (*OL*) contain foreign loans used to aquire reserves (*R*). A formal connection between the asset and the liability side existed between 1835 and 1974 with note-coverage rules (*sedeltäckningsbestämmelser*), see section 8.4.2.2 on notes.

8.4. Contents

This section describes the content of the consolidated categories. Individual time series disappear and new ones appear at irregular intervals. The most important transitional periods occur in the years around 1815, 1864, 1877, and 1975. The series are described category by category except for assets and liabilities to international organizations, which are treated together in section 8.4.3.

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7   The structure followed the private forerunner *Palmstruchska banken*, which in turn was modeled on the relation between the *Amsterdam Wisselbank* and the *Amsterdam Länebank*.

8   For data on the internal debts between the lending and exchange banks (which disappear in the consolidated balance sheet for the two departments together), see Simonsson (1918, p. 16) for 1668–1718, and Simonsson (1919, p. 387) for 1719–1743. The debts recorded at the loan bank differ somewhat from the corresponding claims recorded at the exchange bank.

In 1873 Sweden introduced the gold standard. Pictured: 10 kronor in gold. A large part of the Riksbank gold reserves consisted of these coins.
Source: Wikimedia.

8.4.1. Assets

8.4.1.1. Reserves

Reserves are divided into metal reserves and foreign asset reserves. Metal reserves were collected from 1668 to back deposits at 100 per cent at the exchange bank. After a run in 1745, the exchange bank's deposits and notes became inconvertible. For the next two decades, reserves played a minor role in the Riksbank's operations when lending and the note issue increased in tandem. In 1765, Parliament decided on a plan to restore convertibility at the original parity, which included the reduction of loans and notes and the aquisition of silver reserves against notes and loans from abroad.[9] After convertibilty was reinstated in 1777 at a devalued rate, the Banking Committee set a goal of 75 per cent coverage of notes and deposits against silver reserves, a goal that was not reached before the next period of inconvertibility in 1808–1834. During this period of inconvertibiltty the Banking Committee set up goals for reserves as preconditions for a return to convertibility.

The new banking instruction of 1835, which initiated a period of convertibility that lasted until 1914, introduced so-called note-cover reserve requirements (*sedeltäckningsbestämmelser*), described in section 8.4.2.2, which existed until 1974. From 1835 until 1845, reserves included gold and silver at the Riksbank, with a minimum requirement for silver. In 1845, the definition was broadended to include gold and silver owned by the Riksbank at foreign locations, "Foreign bills" and "Credits at foreign banks". In 1872 the definition was restricted to the formulation in use between 1835 and 1845 with minimum requirements for gold, as Sweden switched from a silver to a gold standard in 1873. The instruction for 1872 gave the

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9   Cf. "Loans from Genua and Holland" 1773–1775 under "Other liabilities".

Riksbank the right to aquire "Foreign bonds", which also appear in the accounts from this year. At the same time, all foreign assets were excluded from official reserves (Brisman 1931, p. 162). Foreign assets were again counted as official reserves from 1901 to 1974.

Reserves can be valued according to either historical cost or market value. Before 1946, reserves, metal or foreign exchange, were recorded at historical cost, reflecting the metal standard as the normal state of affairs, with implied fixed foreign exchange rates. This was also the case during the periods of inconvertibility 1745–1776, 1809–1834, and 1920–1924, when all reserves (metal and foreign exchange) were recorded at historical value. At the returns to convertibility at devalued rates in 1777 and 1835, reserves on the asset side and equity on the liability side increased in value relative to all other items. At the return to the gold standard in 1924, at the old, pre-World War I parity, there was no change in the value of reserves relative to all other items

When Sweden left the gold standard in September 1931, gold continued to be valued at the parity of 2,480 SEK per kilogram fine gold chosen in 1873 when Sweden shifted from a silver to a gold standard. Likewise, foreign exchange holdings were booked at rates corresponding to the gold parity exchange rates, such that *unrealized* gains and losses were not reflected in the balance sheet. On the other hand, *realized* gains and losses from transactions in gold and foreign exchange assets at other than the booked exchange rates were recorded in the asset item "Exchange account" (*Kursdifferenskonto*). This item is included among "Other assets" in the consolidated balance sheet between 1931 and 1945. An increase in this item changes the "Net profit/This year's result", part of equity, on the liability side by the same amount.

From 1946 to 1970, market prices of gold assets were used. The difference between the market value of gold and the old parity value (2,480 SEK per kilogram gold) is recorded on the asset side as "Surplus value of gold", representing *unrealized* changes in the value of the stock of gold.[10] This is included as an asset item in "Reserves: metal". Changes affect "Net profit/This year's result", part of equity, on the liability side by the same amount. *Realized* changes from transactions of gold and foreign exchange continue to be recorded in the "Exchange account", but now on the liability side among "Other liabilities", representing losses. An increase in the account on the liability side implies an equal decrease in equity.

After the break-up of the Bretton Woods agreement in 1971, the accounting principles for foreign exchange assets reflect changes in market exchange rates but less than

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10 The Riksbank Yearbooks from 1946 to 1973 contain a note on the introductory page to the tables "Activity of the Riksbank" regarding the valuation of gold and foreign exchange stocks: "Note. The gold holding of the Riksbank is booked at a price of 2,480 SEK per kilogram of fine gold. Until the 12th of July 1946 foreign exchange holdings have been booked at rates below market rates. After this date, however, they are generally booked at prevailing middle rates." and "As from the 31st December 1946 the difference between the market value of the gold holding – see Table 52 – and its value at its above-mentioned price of 2,480 SEK per kilogram gold has been debited to a special account 'Surplus value of gold." quoted from the Riksbank Yearbook 1973, p. 3*.

fully and with a delay. The Riksbank yearbook of 1975 refers to "the previously used principle for most floating currencies of fixed book-keeping exchange rates, representing largely the fixed central exchange rates decided in 1973", which in 1975 had been changed to "more market-related exchange rates". The Riksbank yearbook 1981 (p. 39) refers to "a principle which is based on an average of market exchange rates for a certain period" and the Riksbank yearbook 1986 (p. 57) "a principle based on an average of market exchange rates during the last six months – if this value is lower – on the ultimo exchange rate". Finally, from 1987 all foreign assets and liabilities are valued at current market values (*Riksbankens förvaltningberättelse* 1987, p. 59).

Regarding the valuation of gold after 1970, the Riksbank yearbook 1971 refers to the use of a dollar price of gold of 38 dollars per ounce determined by the "Group of Ten" and the U.S. Congress in 1971 and a "central rate of SEK 4.8129 per US dollar determined by the Riksbank General Council" in 1971. A new gold price was set in 1973 and was used until 1997.[11] Market valuation of gold was reintroduced in 1998, when the value of Riksbank gold holdings jumped 15 times relative to 1997.[12]

8.4.1.2. Loans to the government

Loans to the government began on a small scale in 1670 and then increased to a large scale – to finance the Scanian war (1674–1679) – even though the Bank charter prohibited lending to the government.[13] The loans are recorded as "Older loans to the Crown". Most of them were repaid in a few years. The Great Nordic War (1700–1721) resulted in a new wave of loans, "Younger loans to the Crown" in Simonsson (1919). Some of these were repaid by the new regime in 1720–1740.[14] The loans are labelled "Credit to the Crown" in the data from Sveriges Riksbank (vol. V). The Hats' Russian war (1741–1743) initiated a new period of large loans to the government, coinciding with an increase from 1738 in private lending, now wholly financed by new notes. Another surge in lending to the government occurred with Sweden's participation in the Seven Years' War 1757–1762.

All the government loans were extinguished in 1778 as part of a deal between the government and Parliament to restore the convertibility of Riksbank notes. The deal was commemorated in 1779 by King Gustav III as illustrated below. The default in 1778 led to a commensurate decrease in equity, validating the previous loans to the government as seignorage income to the government. The Finnish War, 1808–09, led to new lending, recorded as "Credit to the Crown" from 1808 to 1829, when this item is replaced by "Interest-bearing bonds" (Sveriges Riksbank 1931, vol. V, footnote 1, p.

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11 The gold price changed from 2,480 SEK per kilogram, set in 1873, to 5,880 SEK per kilogram in 1971, cf. footnote, *Riksbankens årsbok* 1971, p. 80*, and changed again in 1973 to 6,190 SEK per kilogram.

12 Henriksson (2002) analyzes the role of gold in the balance sheet of the Riksbank from a port-folio-theoretical perspective.

13 See Brisman (1918, p. 168–177).

14 During the so-called Age of Freedom 1718–1772, Sweden had a constitutional monarchy.
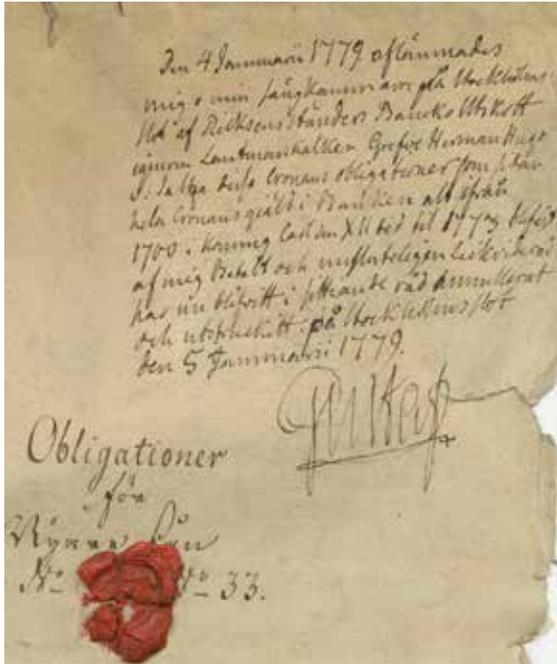
Statement signed by King Gustav III used as cover for the crossed-out Crown bonds, which reads, in translation:

"The 4th of January 1779 the Crown´s bonds were delivered to me in my bedroom at the Stockholm Royal Castle from the Parliament´s Banking Committee through the president of the Nobility´s Chamber Hugo von Saltza, since the Crown's debt at the Bank from 1700 in the time of King Charles XII to 1773, has been paid by me and now extinguished in a council meeting by annulment and crossing at the Stockholm Royal Castle the 5th of January 1779.
Gustaf "

Source: Riksarkivet RGK 2426.
Note: The background and the ceremony is described by Åmark (1961, pp. 245–246).

Government bond issued 1758 for loan from the Riksbank. It was crossed out by King Gustav III in 1779 to commemorate a deal in 1778 between the government and the parliament to extinguish all government debt owned by the Riksbank.
Source: Riksarkivet RGK 2426.

18). "Interest-bearing bonds" is in turn renamed "Bonds: Swedish" in 1864. According to Brisman (1931, p. 54), the last debts from the war of 1808–1809 were extinguished in 1873, which should appear in the bond series. This "bond" series contains both direct loans and saleable bonds. I have counted all "Bonds: Swedish" from 1858 as saleable bonds, so from that year they belong in the category "Domestic assets".

An additional item, "Government loan fund", appears in 1858 and disappears in 1864. This lending consists of Riksbank lending of foreign exchange to Swedish businesses during the international crisis. The funds were originally borrowed by the government in Hamburg and the Riksbank administered the loan on behalf of the government. Corresponding to the loan recorded as an asset, the funding is recorded among "Other liabilities" as the "Government Loan in Hamburg" with almost the same amounts between 1858 and 1863.[15]

Direct lending to the government after the war of 1808–09 has been limited to temporary loans to the National Debt Office. Some lending occured from 1858 to 1863 to meet temporary needs when the government did not yet have a cash buffer, see Brisman (1931b, p. 53). No more direct state lending occurs before World War II, when loans to the National Debt Office occur between 1940 and 1949. Direct loans to the National Debt Office appear again between 1989 and 1992. This is a technical change from previous short-term borrowing by the government using Treasury bills, now included in domestic assets.[16] The historically close connection between wars and lending to the government is shown in Figure 8.2 for the period 1668–1814. After 1814, Sweden has not been a combatant in any war.

Figure 8.2. *Riksbank loans to the government 1710–1814.*
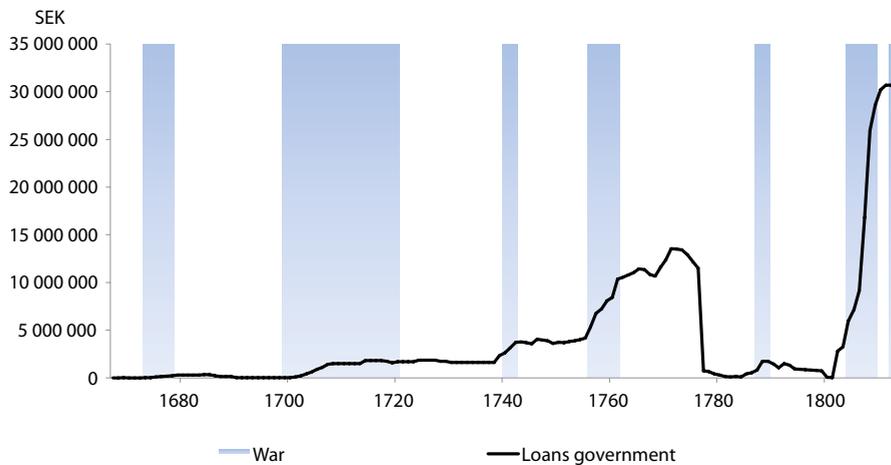
Source: Appendix, wars: Wikipedia, "List of wars involving Sweden".

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15 The Riksbank refrained from raising the loan in its own name to avoid suspicions that it was in trouble, see Davidson (1931, pp. 165–168).

16 See notes 7 and 9, p. 61, *Förvaltningsberättelse* 1989.

8.4.1.3. Loans to the private sector

Loans to the private sector are divided in the accounts according to collateral until 1975, when they are classified according to two borrower categories: banks and the public. In section 8.4.1.4 we discuss which types of loan were used primarily by the general public and the banks before 1975.

Between 1668 and 1718, private loans are divided into "Loans on personal property" and "Loans on mortgages".[17] In the 18th century, three new types of loan appear in the accounts: "Loans on loan bank deposits" appeared in 1720, though they were actually introduced in 1684 (see "Interest-bearing deposits" below); "Loans to Manufakturfonden" and "Credit to Public and Boards Funds" begin in 1741 with the purpose of supporting domestic industry and trade.

In a similar spirit, the Riksbank supported so-called discount companies with loans. The discount companies lent short term against discount bills. A private discount company, *Diskontkompaniet,* started in 1773, supported by loans from the Riksbank, which appear as "Loans to discount companies" from 1773. This item lasted until 1863. Several discount companies, private or part-owned by the Riksbank, started between 1792 and 1810.[18] In 1815 the Riksbank took full control of the previously part-owned discount company *Allmänna diskontverket*, which was then renamed *Bankodiskontverket*. All the private discount companies failed in 1817, after which *Bankodiskontverket* increased its lending with loans from the Riksbank.

Three new types of private loan were introduced in 1814–1816. "Loans on silver deposits" is a small item and refers to loans with collateral from "Loan bank deposits in silver", see above under deposits. The new categories "Loans to local government" and "Loans for cultivation" appear together with "Credit to Public and Boards Funds", which lent to canal companies. The new lending constituted a state support system to modernize the country.

The 19th century saw the birth of an organized financial sector, which grew steadily such that by the end of the century the Riksbank's role as an ordinary bank had in practice disappeared. Inspiration from Scotland and the need to fill the role of the failed discount companies led to the emergence of private note-issuing banks (*enskilda banker*) and savings and loans associations in the 1820s. To meet the competition, the Riksbank reorganized its discount lending by creating *Handels- och näringsdiskonten* in 1830 to replace *Bankodiskonten*. The Riksbank contributed finance in the form of loans to complement interest-bearing deposits from the public and savings and loans banks. In a further attempt to meet the competition, a new branch bank system (*filialbanker*) owned by the Riksbank started in 1852, but with

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17 Riksbank lending in the 17th century is covered by Brisman (1918, pp. 151–166). Hallendorff (1919) describes the evolution of lending policy during the volatile Age of Freedom (1719–1772) as part of a general chronological history.

18 The Riksbank's involvement with discount companies until 1834 is described by Brisman (1931a, pp. 126–144) and their incorporation into the Riksbank in Brisman (1931b, pp.18–20).

a separate organization and accounts. From 1852 the Riksbank accounts include "Advances to the Riksbank branch banks".

The establishment of *Skandinaviska Banken* in 1856 as the first deposit-financed private bank is a landmark. The first joint-stock deposit-taking bank was incorporated in 1863. In 1864, interest rates were set free. To vie with the new competitors, the Riksbank modernized its lending and deposit-taking.[19] Mortgage lending was reduced, accompanied by increased short-term lending against personal property and income, and commercial bills (discount lending). "Loans on mortgages" is a small item after 1864, but remains on the balance sheet until 1974. Rural and town mortgages were taken over by *Allmänna hypoteksbanken* and appear on the asset side as "Credit to the Public Mortgage Bank" until 1875. "Loans on loan bank deposits", a miniscule rest of the 17th century, disappeared in 1876. Remains of old loan types were collected in "Ceased loans" from 1877.

The new lending from 1864 began with the Riksbank taking over the loans from the branch banks and *Handels- och näringsdiskonten*, which were dismantled. Thus "Loans to discount companies" and "Advances to the Riksbank branch banks" disappear in 1864.[20] The new lending categories in the accounts from 1864 are: "Bills, payable in Sweden", "Loans with right to renewal", "Loan on Certificates of Debt etc", and "Letters of Credit". The latter three types were replaced in 1877 by "Loans on personal security, "Loans on shares", and "Loans on bonds etc".

A new category, "Instalment loans" (*avbetalningslån*), appears in 1886. According to Brisman (1931b, pp. 54–57), they can be traced back to *Diskontkompaniet* from 1773 as short-term loans given against personal security and with right of renewal. According to Brisman (1931b, p. 57), "Instalment loans" replace "Loans with right of renewal" in 1875, but in the published accounts they only appear in 1886. Most likely these loans appear as part of "Loans against personal security", which drops in value between 1885 and 1886 equal to the increase in Instalment loans in 1886. The loans had a small maximum limit and were subsidized with a low interest rate. A large borrower category was small farmers. The "Instalment loans" disappear after 1902 but reappear in 1938 together with a new fund as part of equity, "The loan Instalment fund", and remain until 1974.[21] The Yearbooks show that the largest part is generally the lending from the Instalment fund. The lending follows govern-

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19 Information on Riksbank lending during the 19th century is given for the period around 1800 and 1803–34 by Brisman (1931a, pp. 122–125, 144–163); the period 1834–60 by Davidson (1931, pp. 11–40); and the periods 1860–70 and 1870–97 by Brisman (1931b, pp. 48–50, 145–159). Grossman (2010, ch. 8) gives an overview of Swedish banking developments in the 19th and 20th centuries.

20 The branch banks were, however, not fully incorporated until 1874 and their remains are consolidated in the accounts with "Loans to the Iron office (*Järnkontoret*)" and "Loans to the Board of Trade (*Kommerskollegium*)", which disappear in 1873.

21 During the period 1903–1937, the loans were handled by the Riksbank as an off-balance sheet item. In the Riksbank income statements between 1903 and 1937, the item "profit from Instalment loans" appears as a separate item from "net profit from the banking business proper".

ment ordinances and goes to specific groups, which vary over time. Examples are loans to persons with an academic degree or a degree from a police school, civil servants at Parliament, students with refugee status, and young households.

The loan categories in 1877 remain almost unchanged until 1975 but their relative importance changes drastically as the Riksbank began its development into a modern central bank by acting as a lender to banks instead of to the general public. The amounts are small in the 20th century. Loans to the general public according to the 1921 Yearbook were: "Directly discounted bills" (part of "Bills, payable in Sweden"), "Letters of credit", "Loans against collateral in shares, merchandize and personal security" divided in the accounts into "Loans on shares", "Loans on merchandize" and "Loans on personal security".[22] These categories remain in the accounts until 1975, except for "Loans on merchandize", which disappears in 1947.

The Riksbank's dwindling importance relative to private banks in deposit taking, lending and note issue during the 19th century is shown in Figure 8.3. After 1897, when the first Riksbank Act was promulgated, making the Riksbank a monopoly note supplier, the note share increases to 100 per cent in 1904, by which time both Riksbank deposits and loans to the private sector have all but disappeared.

Figure 8.3. *The Riksbank's deposits, loans and notes as shares of total banking (Riksbank plus private banks) 1834–1914.*
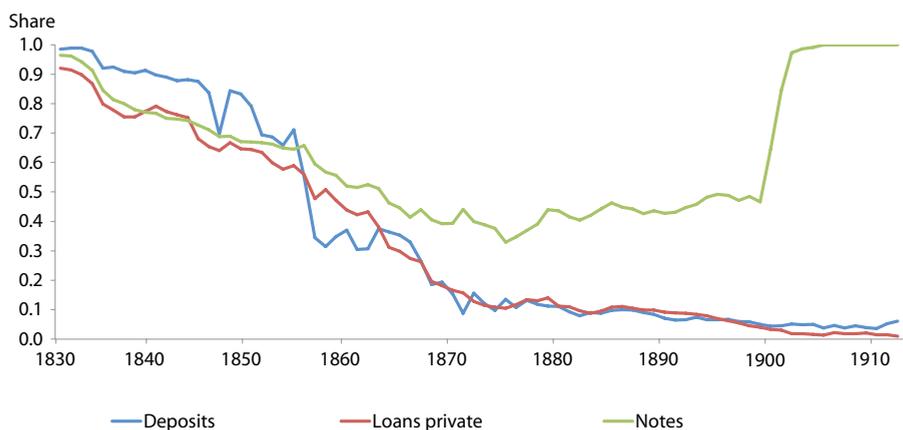
Sources: Riksbank data from appendix. Data for private banks from Riksbank (1931, vol. V, Table "Privatbankernas ställning 1834–1924", pp. 172–187).

From 1975 the remaining lending to the public is booked as "Loans to the public". In the annual report for 1987 (*Förvaltningsberättelse* 1987, note 10, p. 60), lending to the public is categorized as loans against collateral (*hypotek*), instalment loans and loans for advances on inheritance taxes (*lån för förskotterad arvsskatt*). The report states that no new lending to the general public occurs. The last record of the item is

22   *Riksbankens årsbok* (1921, Table XIX, p. 23*) with data 1904 to 1921.

in 1992, then at zero. The explanatory note states that the item contains instalment loans and inheritance tax loans and that "New lending to the general public occurs only for a few inheritance tax loans."

8.4.1.4. Loans to banks

Only from 1975 do the accounts distinguish between loans to banks and the general public. While end-of-year data are too infrequent for a study of monetary policy as such, an important indicator is whether the banks are borrowing at all from the central bank. It is also useful to know in which form the banks borrowed at the Riksbank.

Consider first the temporary lending from the Riksbank to help the private note-issuing banks in the transition to the Riksbank's note monopoly. The Riksbank Act of 1897 stipulated that by the end of 1903 the note-issuing banks were to have withdrawn their notes from circulation. In 1897 the private note issue covered 55 per cent of the total note issue and was, apart from equity capital, the only source of funds for the private note-issuing banks (*enskilda banker)*. The Riksbank offered to lend notes to the *enskilda* banks at low cost (2/3 below the ordinary rediscount rate). This lending is recorded as "Credit according to §41 the Riksbank Act" between 1899 and 1909, when it constituted a significant portion of total Riksbank loans. After 1909 the *enskilda banker* had to cover any shortcomings in funding by discount or rediscount borrowing at the Riksbank.[23]

Regular borrowing by banks at the Riksbank began in 1877, recorded under "Loans on bonds etc."; these loans appear to have been used primarily by banks right from the start according to Brisman (1931b, p. 151).[24] At about the same time, banks began to discount bills at the Riksbank. The term used was rediscounting, as the bills were originated by the banks. The banks paid the so-called rediscount rate, half a percentage point below the discount rate applied to "Loans on bonds etc." A formal decision to rediscount bills originated by banks was taken in 1893.[25]

The *Riksbanken Årsbok* for 1921 presents data for the period 1904–1921 on the division between bank and public borrowing at the Riksbank. The banks' borrowing is reported to consist of "Loans on bonds etc." and rediscounted bills, part of "Bills, payable in Sweden". By 1921, "Loans on bonds etc." were almost exclusively used by banks according to the Riksbank yearbook.[26] In the 1925 yearbook the statement is

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23 According to Goodhart et al (1994, table 1.1., p. 6), twelve central banks acquired a note monopoly before the Riksbank. They also state that ten central banks began to act as lender of last resort before 1890, the date for the Riksbank. Using Brisman's (1931b, p. 216) year 1879, the Riksbank is the fifth.

24 "Loans against bonds etc.", correspond to "advances", also called Lombard loans, used by many central banks.

25 See Brisman (1931b, pp. 215–226) on the process whereby the Riksbank became a lender to the banks and a full central bank from 1870 to 1904.

26 "'Loans on bonds' to the public has not been calculated, but is so insignificant that this does not matter", *Riksbankens årsbok* (1921, p. 24*).

modified to "it should however be remembered that this group [loans on bonds] contains a certain, comparatively stable volume of loans to the public".

Regarding the banks' share of "Bills, payable in Sweden" ("rediscounted bills" in Riksbank terminology as opposed to "directly discounted bills" from the general public), they are given in a separate table in the Riksbank yearbooks from 1904 until 1954, when rediscounting disappears. These data are yearly averages and therefore not fully compatible with the end-of-year series "Bills, payable in Sweden". The banks' share of all discounting, shown in Figure 8.4, varies between 80 and 90 per cent between 1904 and 1933, after which it swings between almost zero and levels between 70 and 80 per cent.[27]

Figure 8.4. *Banks' rediscounting as a percentage share of "Bills, payable in Sweden" 1904–54. Average per year.*
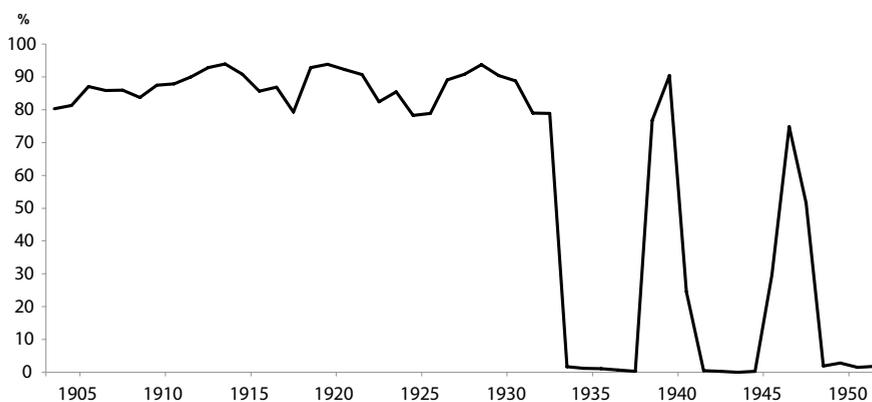
Source: Riksbank Årsbok, various issues.

Loans were reclassified in 1975 according to the type of borrower: "Loans to banks", "Loans to other financial intermediaries", and "Loans to the public". "Loans to banks" appears until 1997. In 1997–1999 the lending to banks appears as "Monetary Policy repos" and in 2000–2007 as "Main refinancing operations". "Fine-tuning operations" 1998–2007 and "Marginal lending facility" 1998–2009 represent small-scale complementary actions. The extraordinary lending to banks during the global financial crisis appears as "Lending at longer maturities in SEK" 2008–2010 and helped to triple the balance sheet.[28]

When interpreting these series, it should be remembered that the specifics of interest-steering through lending to banks have changed during the post-war era.

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27 Brisman (1931, p. 225) reported that 30 per cent of all discounted bills in 1895 consisted of rediscounted bills to banks and 51 per cent in 1899.

28 A description of the measures taken by the Riksbank in response to the global financial crisis in 2008–09 is given in Elmér et al (2012).

Major changes occurred in 1962 with a two-step interest structure: the discount rate and a higher penalty rate; in 1985 with the "interest-rate staircase system": several steps combined with repo operations; and in 1994 the current corridor system with one deposit and one lending rate and a repo rate controlled inside the corridor. The importance of steering the short-term interest rate as a monetary policy tool has also changed considerably. After World War II, the Riksbank purchased government bonds to fulfil the goal of low long-term interest rates. Between 1952 and 1983 the credit market was regulated with decreed interest setting for bank loans and deposits and quantitative limits on bank lending. Another tool was the system of special deposits to withdraw liquidity, described in section 8.4.2.1.[29]

8.4.1.5. Domestic securities

Domestic securities are assets that can be traded on a secondary market. The series "Interest-bearing Bonds" is classified as "Domestic Securities" from 1858.[30] From 1872 they appear as "Domestic bonds" to distinguish them from the new "Foreign bonds". From 1914, "Domestic bonds" are replaced by "Swedish government bonds" and "Swedish bonds", which meant that the latter item contains non-government Swedish bonds. From 1928 they are labeled "Other Swedish bonds", which disappears in 1945. Domestic securities is a small item before World War II, at most 10 per cent of all the assets, compared to between 50 and 70 per cent after the war.[31] The Riksbank's acquisition of government bonds was a consequence of the goal laid down by Parliament to stabilize the long-term interest rate at a low level.

From 1975 until 1988 "Government securities" is split into "Treasury bills" and "Other domestic government securities". The Riksbank had substantial holdings of government securities until 1992, after which they were left to expire without being replaced. The last year in which the Riksbank held Swedish government bonds is 2000.[32]

8.4.1.6. Other assets

The consolidated "Other assets" contains assets that cannot be classified as reserves, loans or securities. The unclassified items appear as "Sundries" or "Other assets"

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29 The staircase system in 1982–1994 and the current system are described in Hörngren (1994). The current system is also described in Sellin and Sommar (2012) with special reference to the global financial crisis 2008–2010. Lindbeck (1975) and Werin et al (1992) describe monetary policy in the postwar period.

30 The category "Interest-bearing Bonds" appears in 1829 but is classified as loans before 1858, as explained in Section 8.4.1.2.

31 An exception is the substantial acquisition of Swedish government bonds in 1932, which were sold in 1934. The purchase was made to provide the National Debt Office with funds for an operation to rescue the bank *Skandinaviska kreditaktiebolaget*, owned by Ivar Kreuger, who committed suicide in March 1932. The Riksbank did not buy any of the government bonds that were issued from 1932 to finance a deliberate budget deficit to help fight the depression.

32 See *Riksbank Annual Report* 2000, p. 42, and *Riksbank Annual Report 2001*, p. 41.

between 1743 and 1974. From 1940 to 1960, "Other foreign assets" exists as a separate category, suggesting that in this period the unspecified "Other assets" should be interpreted as "Domestic other assets". In 1975 assets were grouped into domestic and foreign assets, with "Other assets: domestic" and "Other assets: foreign". From 1998 the unspecified "Other assets" reappears.[33]

The consolidated "Other assets" also includes specified items such as: "Unpaid interest" 1720–1863, "Loans for foreign exchange operations"[34] 1768–1776, "Coins (other than gold)" (1929–1975), "Exchange account" (1932–1945), "Domestic cheques, bank drafts and foreign notes" (1946–1975), "Fixed assets" (1994–2005), "Financial assets" (1998–2005), "Derivative instruments" (1998–2005), "Prepaid expense and accrued income" (1998–2005), and "Claims for securities settlement proceeds" (2002–2003). "Other assets" generally make up less than 5 per cent of the balance sheet, but became a more subtantial share between 1932 and 1945 when the "Exchange account" increased from selling gold for more than the parity price abandonded in 1931 (see above under Reserves).[35]

Finally, three asset series arose from the conversion of the so-called National Debt Office notes from 1803. These are described in the box on page 370 in connection with "Other liabilities" arising from the same source.

8.4.2. Liabilities and equity

8.4.2.1. Deposits

Deposits are divided into three subcategories: interest-bearing, non-interest bearing, and special deposits.

From 1668 to 1863, deposits are divided in the accounts between the non-interest-bearing deposits at the exchange bank (*växelbanken*, renamed the deposit department in 1829) and the interest-bearing deposits at the loan bank (*länebanken*). The exchange bank provided a liquidity service by offering cheque transfers and safe storage of coins, while the loan bank acted as a financial intermediary with deposits and loans matched by a maturity of six months. Using the chequeing facility turned out to be exceedingly complicated and time-consuming. The resulting low number of depositors accentuated the deposits' low liquidity (Brisman 1918, pp. 131–143). Instead, depositors flocked to the loan bank.

The interest-bearing deposits of the loan bank appear as: "Creditors of the Loan bank" in 1668–1789, "Loan bank deposits in notes" in 1790–1828, "Loan bank

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33   More specific information about the main item(s) in these categories can be found in the Annual Reports (*Förvaltningsberättelser*) from 1987, when notes first appear for each item in the balance sheet.

34   Given in Sveriges Riksbank (1931), p. 9, footnotes 7 to 15 as "Fordringar av Söderling för dennes växeloperationer" (Claims on Söderling [Bankokommissarie] for his foreign bill operations).

35   The "Exchange account" reached a maximum of 18 per cent of the balance sheet in 1938.

deposits in silver" in 1800–28, and "Loan bank deposits" in 1829–1863.[36] Besides attracting interest, the loan bank's deposits were more liquid. Deposits at the loan bank could be used as collateral for loans from the loan bank from 1672, making them effectively demand deposits (Brisman 1918, p. 145). These loans appear on the asset side as "Loans on bank obligations" from 1720 to 1876.[37] The customer holding a deposit and borrowing on it simultaneously has no net position with the bank, which suggests that the appropriate measure of deposits at the loan bank is its deposits minus the loans against these deposits, as suggested by Brisman (1931, p. 122). This is done in the consolidation such that the loans with loan bank deposits as collateral are subtracted from "Interest-bearing deposits".

The loan bank became the victim of its own success. Lack of lending opportunities and thereby interest income to cover the expenses and interest payments of the deposits forced the Riksbank to close for new deposits in three periods: 1683–1685, 1691–1699, and 1703–1704. In 1709, the loan bank froze deposits in response to a bank run.[38] To reduce interest payments, a substantial part of the deposits was paid back to the public between 1720 and 1743 (Hallendorff, pp. 95–99). The deposits remaining after 1743 were mainly owned by public institutions and charities.[39]

In an attempt to match competition from the commercial banks, interest-bearing deposits made a comeback at the Riksbank in 1864 as "Interest-bearing demand deposits" and "Interest-bearing time deposits".[40] These deposits were open to the public and private banks, but not to the central or local governments. The interest-bearing deposits grew quickly and almost matched the size of the note issue in 1880; after that they dwindled and were closed in 1895, in preparation for the Riksbank monopoly of the note-issue in 1904. It was considered improper for the Riksbank to be in competition with private banks, which stood to lose their note-issue funding.

Non-interest bearing deposist at the exchange bank mainly grew during periods when the loan bank was closed. They are labeled: "Creditors of the Exchange Bank"

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36 Between 1800 and 1828 there are two types of loan bank deposits: old deposits labeled "Loan bank deposits in notes" and new deposits "Loan bank deposits in silver". In 1800, the loan bank began to offer deposits against silver with 4 per cent interest and a maximum of ten years maturity (Skogman 1845, p. 115). The goal was to collect silver in order to make the so-called National Debt Office notes convertible, see box on page 370.

37 The Swedish labels changed in 1829 from "*Lån på lånebanksattester*" to "*Lån mot lånebank-obligationer*".

38 The deposit receipts, *lånebanksattester*, were traded at a discount, reflecting the probability that they would become convertible again.

39 In the annual report for 1975 (*Förvaltningsberättelse* 1975, p. 106), loan bank deposits ("*lånebanksobligationer*") make an appearance in the table "Within the line recorded assets and liabilities", that is, off-balance sheet items which may affect the balance sheet in the future, for the years 1974 and 1975 with the amount 8,006 SEK.

40 Interest-bearing accounts were first introduced by *Handels- och näringsdiskonten*, owned by the Riksbank, in the 1850s, but do not appear on the Riksbank accounts until 1864, see Brisman (1931b, pp. 38–48).

1668–1829 and "Current account at the deposition department "1829–1857. When notes became available in the early 18th century, the main advantage of the exchange bank notes vis-à-vis copper plates disappeared. From that time, the exchange bank deposits were of minor importance, the remaining users mainly being the government and public institutions.[41] The exchange bank deposits remained convertible until 1745 (unlike the deposits of the loan bank).

From 1858, non-interest-bearing deposits appear as "Non-interest deposits" 1858–1928, "Cheque account: government", 1914–1988, "Cheque account: Commercial Banks" 1929–1937, "Cheque account: Other Depositors" 1929–1997. "Debt to the National Debt Office (NDO)" 1898–1912 contains interest-free deposits by the NDO of means the Office had borrowed but not yet used. From 1914 they appear in the broader category "Cheque account: government", which disappears after 1988 when the government began using other banks.

Finally, the third category of deposits, special deposits, appeared in 1939 as part of "Deposits subject to at least 45 days' notice", which changed in 1969 to "Deposits on investment fund accounts". From 1955 the funds were made part of a systematic stabilization policy such that they were released at the beginning of a downturn. The investment funds deposits were owned by private corporations, who were required to deposit a certain fraction of their profits in these accounts. The funds were locked until the authorities decided to release them. Other special deposits arose in the 1970s, also as withholdings of profits, but for other purposes, as indicated by the names of the accounts.[42] Most of these special deposits were closed in the early 1980s as part of the general credit market deregulation which was completed by 1985.

8.4.2.2. Notes

Notes, N, appear on the balance sheet in 1710 as transport notes, *transportsedlar*. [43]Deposit receipts had already circulated for a long time as means of payment but do not appear on the balance sheet as they are representatives of deposits already on the balance sheet.[44] The transport notes began to increase from 1726 when they became valid for tax payments. Postal bills have been included in "Notes"from 1864. Coins appear on the liability side from 1986, when the Riksbank took over the production

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41   See Brisman (1918, pp. 230) and Brisman (1931a, pp. 121–122).

42   "Deposits on investment fund accounts", "Deposits on work environment accounts", "Deposits on special investment fund accounts", "Liquidity equalization deposits", "Temporary profit deposits", "Business liquidity accounts", "Export deposit accounts", "Local government liquidity accounts", and "Research and development accounts".

43   According to Wallén, only one note was issued in 1701 and 14 notes between 1702 and 1708.

44   Depositors at both the lending and the exchange bank soon learned to use deposit receipts as media of exchange, despite regulations against the practice (Brisman 1918, pp. 132–134). *Approberade assignationer* and *kassasedlar* were receipts issued by the exchange bank and *lånebanksattester* were issued by the loan bank. In 1681, the receipts at the loan bank were allowed to be used as a medium of exchange, according to the banking instruction, and became convertible at the Riksbank without the originator's or bearer's signature, see (Brisman 1918, p. 145).
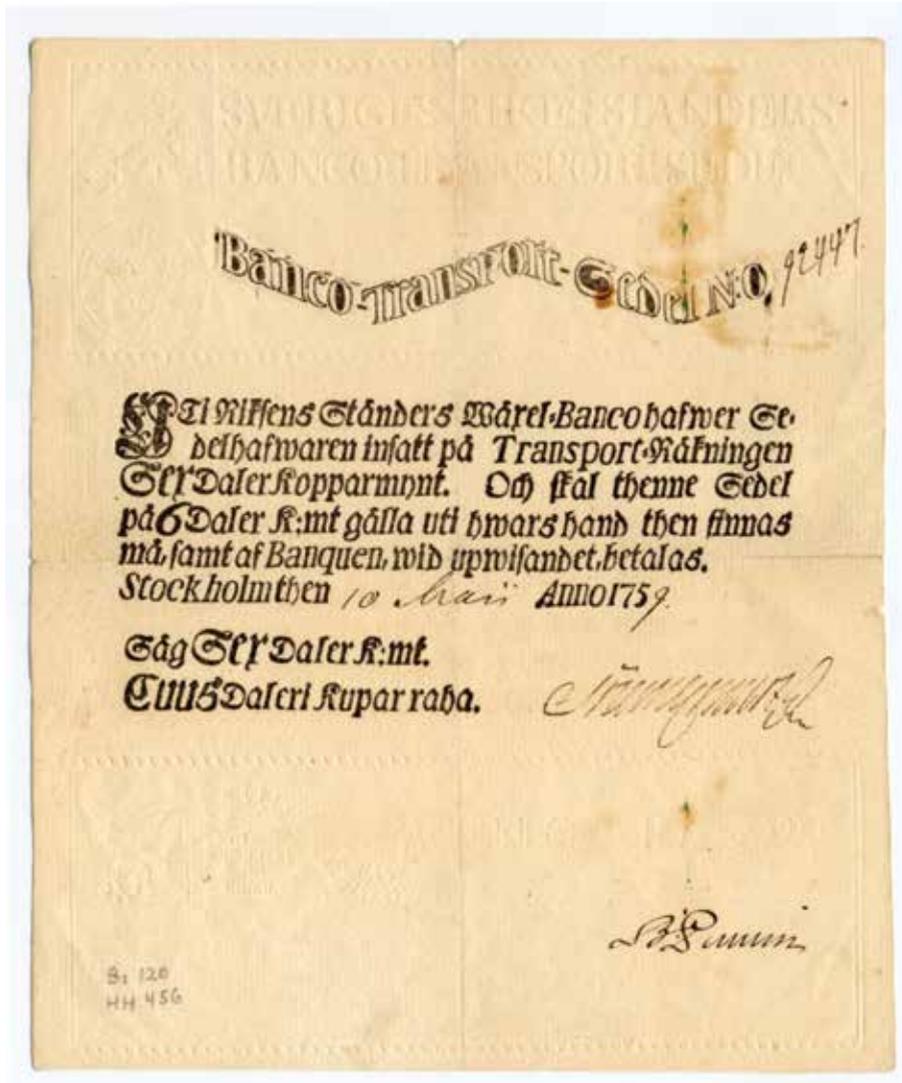
Paper note from 1759 issued by the Riksbank. By this time paper notes replaced coins as the most important means of payment.
Source: The Royal Coin Cabinet.

of coins, and are included in the consolidated category "Notes". Thus, for the period 1986–2012 "Notes" stands for currency. (Coins held at the Riksbank appear on the asset side between 1929 and 1985, here included in "Other assets.)

Figure 8.5 shows the historical connection between convertibility and slow growth of the note issue, with two exceptions. Starting in1803, Riksbank notes began to replace the dominant so-called National Debt Office notes, issued from 1788 to 1802, which explains the rapid increase in the Riksbank note issue. The conversion is described in the box on page 370. Between 1897 and 1904, private bank notes were converted into Riksbank notes, cf. Figure 8.3.

Figure 8.5. *Riksbank note issue 1710–1904.*
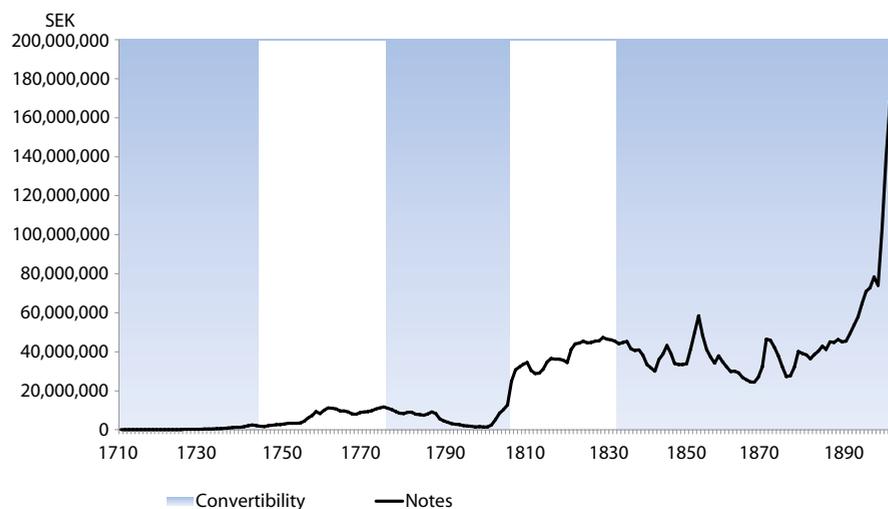
Source: Appendix. For dates on convertibility, see Fregert and Jonung (1996).

From 1835 to 1974, the note issue was subject to a maximum limit on rights to issue notes (*sedeltutgivningsrätt*), which defined the so-called note reserve (note issue right – actual note issue).[45] Both the note issue right and the reserve were reported regularly by the Riksbank.

The importance of these limits for the actual note issue have been questioned by Swedish economists. Heckscher (1930. p. 140) stated that the note issue right "… before the War [WWI], had been only of indirect importance; for so long as the

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45 Descriptions of the note cover rules and historical background are given in the following sources: 1835–60: Davidson (1931, pp. 36–40), 1860–1970: Brisman (1931, pp. 75–79), 1870–1897: Brisman (1931, pp. 162–167), 1904–1924: Simonsson (1931, 8–11). Yearly data for the note issue right and supplementary cover are given in Sveriges Riksbank (1931, vol. V, pp. 52–71) for the period 1830–1924 and in Riksbankens årsbok (1974, p. 10*) for the period 1913–1974.

Gold Standard prevailed, the monetary unit could not diverge, outside very narrow limits, from its value in gold." A maximum limit on the note issue could have an effect during inconvertibility, but then only if it was low enough to be binding, which he deemed was not the case during the inconvertibility of World War I. Brisman (1931b, p. 167) similarly claimed that "it is rather an indifferent issue how the maximum note issue rights are formulated. However the rules are designed, they have no other main effect than that the gold reserve, which stays in the basement of the central bank, will vary in size." Between 1948 and 1974, the maximum note issue was defined as "the gold reserve plus supplementary cover, with a maximum limit of K", where K stands for the "contingency issue", which parliament increased almost every year.[46]

The importance of reserves measured as a share of total assets between 1835 and 2011 is shown in Figure 8.6.
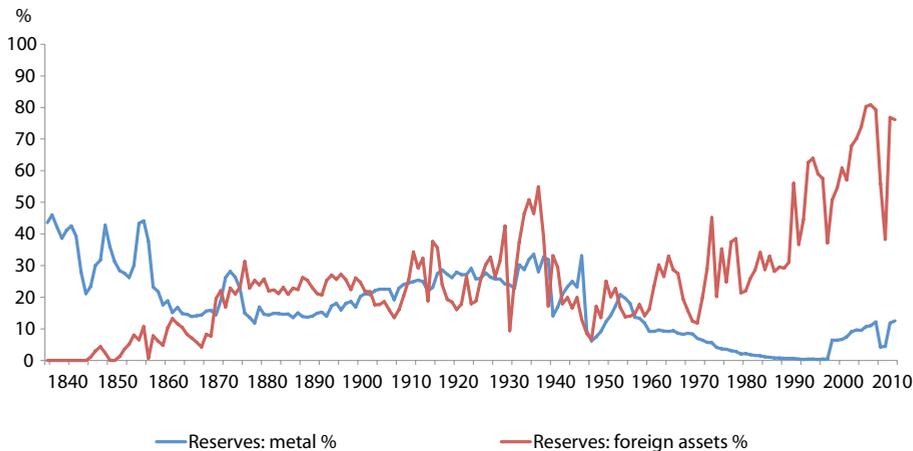
Figure 8.6. *Reserves as a share of total assets 1835–2011.*
Source: Appendix

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46 The constitutional gold standard clause remained in effect until 1974. Note convertibility was abrogated yearly by parliament from 1931 according to the constitutional escape clause introduced in 1915. An offical inquiry published in 1955 (SOU 1955:43) concluded that the gold standard clause in the constitution and the legal note issue rules had ceased to be meaningful. The inquiry suggested that the constitution should include the goal "The Riksbank is instructed that the preservation of the value of money is of great importance for the activity of the bank", akin to the formulation in the Riksbank goal paragraph in the Riksbank Act of 1999.

8.4.2.3. Equity

Equity is Parliament's claim, which would materialize if the Riksbank were to be shut down and the liabilities were paid off.[47] It increases with profits and decreases with losses and dividend payments to the government. It may also increase through equity injections, but this has never been the case for the Riksbank, not even at its start in 1668 (Brisman 1918, p. 128). Profits and losses arise from transaction payments, such as interest payments and operating costs, and from valuation effects. Valuation effects in turn reflect realized and unrealized gains and losses. Realized valuation changes appear with transactions in assets which have been booked at historical cost. Unrealized changes in values of total asset stocks occur when market-based pricing is applied to assets.

Equity differs from the other balance sheet components in that it does not contain specific real or financial assets, being the residual of assets over liabilities. The subdivisions of equity in the balance sheet reflect their origin or intended use. The parts reflecting the origin are profits and unrealized valuation changes.[48] Changes in equity may be: retained as profits ("Reserved profits/Balances at disposal"); kept in the revaluation accounts; placed in funds with specific purposes; or paid out as dividends that reduce equity. These decisions are made by Parliament after proposals from the Riksbank Board or General Council (*Riksbanksfullmäktige*), typically the year after the changes first appear.

Before 1829, no dividends were paid out and profits simply accumulated under the title "Capital", equivalent to equity. A large de facto transfer to the government occurred between 1740 and 1762, when the state borrowed heavily at the Riksbank. Most of these loans were written off in 1778, such that the transfer of funds to the state was confirmed formally through an 80 per cent loss of equity in 1778. The write-down represents the capitalized value of the lending to the government that was not paid back.

In 1823, Parliament decided that dividends were to be paid to the government.[49] In 1829 equity is divided into two items: the "Basic fund" (*grundfond*), and the "Balance at disposal" over which Parliament had full discretion. The sizes of the "Basic fund" and the "Reserve fund", introduced in 1873, are regulated by law; these funds cannot be used for dividends and seldom change. The basic fund corresponds to the

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47 *Note on terminology.* The term "Equity" or "Own capital" (eget kapital) appeared in the accounts for the first time in 1976 and then as a heading. Its meaning has changed over the years as have the meanings of equity's subdivisions: "Capital" and "Reserves". "Equity" in the current balance sheet excludes "This years' profit" and the "Revaluation account" included here. There should be no confusion as we do not use the series labelled "equity", "capital" or "reserves", but their constituent parts. After 1988, these parts are given in the notes to the balance sheet.

48 "Profits before balance sheet dispositions" in the profit and loss statement contains valuation effects, while "Profits after balance sheet dispositions" in the balance sheet may include valuation effects or be net of valuation effects if there is a separate "Revaluation account"; this is the case from 2004, though only for unrealized changes.

49 Brisman (1931a, p. 158).

The Riksbank building.
Source: Sveriges Riksbank.

concept of "Paid-up capital" for a corporation, and the reserve fund is an extra buffer to protect the basic fund. The "Pension fund", introduced in 1908, the "Instalment loan fund"[50], introduced in 1938, and the "Building fund", introduced in 1962, all reflect their intended uses, which restrict their availability. They are consolidated in "Other funds" from 1975.

From 1829 until 1877, Parliament decided the size of the one-time dividend, paid out of the acumulated profits in the "Balance at disposal" since the previous parliamentary session. "Equity" grew between parliamentary sessions and dropped in connection with sessions when dividends were paid. In 1877 the "Balance at disposal" was divided into "Balance at disposal from preceding years", and "Net profit this year".[51] From 1938 the aggregate item "Profits brought forward" (*Vinstmedel/ Reserverade vinstmedel*) appears, corresponding to the "Balance at disposal" before

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50 See the section on loans above on the inclusion of this fund in 1938 to finance instalment loans.

51 Brisman (1931b, pp. 133–137) describes how during the period 1872–1902, hardly any dividends were paid and capital grew steadily to a higher level than in any Swedish private bank or corporation. The policy was predicated on a belief, never explicitly motivated and false in Brisman's opinion, that large equity was necessary to back Riksbank notes in preparation for the Riksbank note monopoly.

1877.[52] From 1975 "Profits brought forward" disappears and the items "Net profit this year" and "Balance at disposal from preceding years" reappear.[53] "Balance at disposal from previous years" is a small item after 1975 and disappears in 1983, as profits from previous years are either paid as dividends or put into the "Contingency fund" (see below). In 1975 the "Exchange adjustment account", reflecting realized valuation changes, is booked in the new "Contingency fund".[54] This fund is used to book previous profits not used for dividends, for write-ups and write-downs and for bringing in off-balance sheet items, such as the Riksbank building in 1994. The "Contingency fund" can be reduced by the General Council's dividend decisions.

The "Valuation reserve for foreign exchange", introduced in 1982 "is ultimately a reserve against losses which can arise from foreign exchange operations". The size of the account should be considered in relation to the size of the foreign exchange reserve and its turnover (*Förvaltningsberättelse 1987*, note 33, p. 64.) Thus it does not measure revaluations as such, but is akin to the "Contingency account". "Valuation reserve for domestic exchange", introduced in 1983, had a similar purpose, which reflects the emergence of a money market in government securities.

In 1988 the General Council decided on a new principle for paying dividends with the aim of smoothing these payments and at the same time ensuring that equity remains substantial: from the latest five-year period, 80 per cent of the accumulated result is to be paid as dividends and 10 per cent set aside in the "Contingency fund". The remaining part of the accumulated result, if positive, is to be credited to the new "Balancing account". The "Valuation accounts", introduced in 1982 and 1983, disappeared in 1988, with the introduction of the "Balancing account". In 2004 a "Revaluation account" appears, which records unrealized valuation changes, previously part of "This year's profits". Details of the dividend procedure since 1988 are given in Gardholm and Gerwin (2011).

8.4.2.4. Other liabilities

The consolidated "Other liabilities" contains liability items that cannot be classified as notes, equity or deposits. The unclassified items appear as "Sundries" or "Other liabilities" between 1720 and 1974, with a special category for "Other liabilities at the exchange bank" from 1720 to 1828. In the period 1975–97, all liabilities are divided into domestic and foreign, hence also "Other domestic liabilities" and "Other foreign liabilities" appear. The classification of liability items changed in

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52 *Riksbankens årsbok* 1938 contains "Profits brought forward" from 1929, which can be compared to *Riksbankens årsbok* 1937 to confirm that: "Profits brought forward" = "Balance at disposal from preceding years" + "Net profit this year".

53 *Förvaltningsberättelse* 1979 and 1980 distinguish between "Net profit this year" and "Balance at disposal from preceding years". From 1979 "Balance at disposal from preceding years" is recorded at 1 million kronor.

54 The Contingency fund first appears in the 1976 Yearbook with values for 1975. Comparing the 1976 and 1975 Riksbank Yearbooks shows that the "Contingency fund" is equivalent to the "Exchange adjustment account" in 1975.

1998, with divisions according to whether the liability is in foreign or domestic currency and whether the counterpart is a foreign or domestic resident.

Many items have arisen for particular temporary needs of very various origins. Several series concern short-term debts to the National Debt Office. Collecting these items under "Other liabilities" reflects their disparate origins and purposes. In principle, they could have been categorized as short-term deposits belonging to the government. A long consistent series is the dividends paid to an account belonging to the National Debt Office, collected in one series 1829–1932.[55] Three series included in "Other liabilities", starting in 1803, concern the recall of notes issued by the National Debt Office in 1788–1802, which are described in the box on page 370.

The Riksbank has borrowed foreign exchange assets or metal to strengthen its reserves since the 18th century, albeit infrequently. Two foreign loans which appear in 1773 were obtained in preparation for the return to convertibility in 1777. In 1858 the government raised a loan in Hamburg to help Swedish companies after the international crisis of 1857; the loan was administered by the Riksbank and appeared on its balance sheet as "Government loan in Hamburg" between 1858 and 1863.[56] In 1877 a "Loan raised in foreign countries" was placed in Hamburg to avert a balance of payment's crisis;[57] it was repaid the same year. During the speculative attack on the Krona in 1992, the Riksbank temporarily borrowed foreign asset reserves from the National Debt Office (NDO), which in turn borrowed abroad. This debt, "Special deposit: National Debt Office", was repaid in 1993. The Riksbank borrowed foreign assets in 2009–2011 via the National Debt Office in connection with the global financial crises; this is included in "Liabilities to residents denominated in foreign currency".

The series "Deposit account: National Debt Office (NDO)" consists of liabilities incurred in 1991 and 1993 by requisitioning Treasury bills from the National Debt Office and using them in monetary policy interventions, supplementing normal lending and borrowing to banks in the standing facilities.

Last but not least, Riksbank debts to banks appear from 1993 as "Riksbank certificates" and from 2009 as "Debt certificates issued" among other liabilities. The Riksbank borrows liquidity from the banks against Riksbank certificates, IOUs issued by the Riksbank. These certificates replaced repo loans to the banks on the asset side for some periods (1993–1996, 2001–2002, 2008–2012). They determine the short-term policy rate, when the banks have a structural liquidity surplus vis-à-vis the Riksbank (banks' deposits at the Riksbank + Riksbank certificates – banks' loans at the Riksbank).[58] The Riksbank controls the short-term interest rate by setting the Riks-

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55 "National Debt Office share of the Riksbank Capital Surplus (NDO)" 1829–64, "To the National Debt Office (NDO) allotted means" 1864–76, "To the State allotted means" 1877–1932.

56 See Davidson (1931, pp. 163–168).

57 Brisman (1931b, p. 177).

58 See Nessén et al (2011) on the determinants of the current structural liquidity surplus, which are unrelated to the financial crisis.

bank certificate interest rate, just as it does when it lends to banks through repo arrangements when banks have a liquidity deficit.[59]

The conversion of National Debt Office notes to Riksbank notes 1803–1850

A new parallel currency, *Riksgäldssedlar*, issued by the National Debt Office (NDO, *Riksgäldskontoret*), newly established under Parliament, began to circulate in 1788. (The background is described in Fregert and Jonung 1996.) These Riksgäld notes soon became inconvertible and depreciated in value against the Riksbank notes, which they replaced in circulation. To restore the convertibility of the main medium of exchange, the Riksgäld notes became convertible to Riksbank notes in 1803 such that 1 *Riksdaler Riksgäld* (rdr rg) could be converted into 2/3 *Riksdaler* in Riksbank notes (Riksdaler banco, rdr b:co) or specie at the Riksbank. The transactions connected with the conversion gave rise to three asset and three liability items on the Riksbank balance sheet between 1803 and 1850.

According to the conversion plan, the Riksbank would be paid back by the National Debt Office. Thus the Riksbank was treated as a private corporation, to be paid in full for taking over the Riksgäld note liability. The plan implied that the converted Riksgäld notes became an asset for the Riksbank, "*Credit for conversion of the notes of the National Board of Debt*", as it was a claim on the NDO.

These claims reached 10 million rdr b:co in 1808. At the same time the Riksbank was to be compensated by gradual payments from the National Debt Office and the government until the total liability of the Riksgäld notes had been paid off. On the liability side we see the accumulated payments from the NDO to the bank as "*Debt for conversion of the notes of the National Board of Debt*", which reached 10 million rdr b:co in 1815, such that the riksbank claim on the NDO was now paid back. These two items thus disappear after 1815. This followed the conversion plan from 1803, according to which the bank would exchange 15 million rdr rg notes to the value of 10 million rdr b:co.

This was, however, not the end of Riksgäld notes, since in addition to the 10 million converted notes, there were still more outstanding Riksgäld notes. According to the 1803 plan, these Riksgäld notes were to be converted into bonds issued by the Riksbank, which were eventually also to be paid back by the National Debt Office. These bonds appear as "*Bonds for conversion of the notes of the National Debt Office*" on the liability side of the Riksbank balance sheet. As the bonds turned out to be unpopular, most of the outstanding Riksgäld notes continued to circulate. In 1823 the remaining Riksgäld note issue was taken over by the Riksbank and appeared on the liability side of its balance sheet as "*National Board of Debt notes in circulation*". As in 1803, the National Debt Office was considered the debtor in 1823 and a corresponding sum of 4 million rdr b:co appeared among Riksbank assets in 1823 as "*Credit for conversion of the notes of the National Board of Debt*". This sum was, however, never paid by the NDO and the claim disappeared in 1828, when the Riksbank equity accordingly decreased by the same amount. It was no longer considered meaningful to continue with transactions between the two government authorities. The Riksgäld notes continued to appear as a liability on the balance sheet from 1829 to1850, now under the title. "*Fund for redemption of notes and copper tokens of the National Debt Office*".

Source: Brisman (1931a, pp. 1-3) and Sveriges Riksbank (1931, vol. V).

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59 An alternative would be to sell securities, an "outright open market operation", to soak up liquidity, which would force the banks to borrow from the Riksbank and thereby enable the Riksbank to set the policy rate.

8.4.3. Balance sheet items arising from Sweden's membership in international financial organizations

Swedens' participation in international financial organizations appears in the balance sheet on both the liability and the asset side. Here we treat them together, since they are connected in practice and constitute items that do not belong to the normal central bank goals discussed in the introduction.

The first item representing a claim on an international financial organization appears in 1930 – and only in that year – with a payment to the new Bank of International Settlements.

In 1951, Sweden joined the International Monetary Fund (IMF) and the International Bank for Reconstruction and Development (IBRD, part of the World Bank). Shares in both appear on the asset side and simultaneously on the liability side, reflecting the part of the contribution that was not paid up directly.

Between 1951 and 1968, the position vis-à-vis the IMF is represented by two asset series: "Quota of Sweden in the International Monetary Fund (IMF)" (1951–1968) and "Lending to the International Monetary Fund (IMF)" (1964–1968), and one liability series: "International Monetary Fund credit" (1951–1968). These three series are included on a net basis from 1969 as the single item "Net position at International Monetary Fund (IMF)" on the asset side until 1975.[60] In 1976, the item "Reserve position at the IMF" represents the net of "Quota of Sweden in IMF" minus "International Monetary Fund credit". "Lending to the International Monetary Fund (IMF)" reappears as a separate item from 1976 to 1982, after which the definition is as before 1976.

In 1969 two new IMF items are introduced: "Special Drawing Rights (SDRs) in the International Monetary Fund (IMF)" on the asset side and "Net allocation of Special Drawing Rights in the International Monetary Fund" on the liability side. The SDRs (on the asset side) represent a "potential claim on the freely usable currencies of IMF holders", which can be traded in for Japanese yen, British pounds, euros or US dollars on a voluntary basis. When allocated, the SDRs appear with equal value on the asset side and the liability side since the alloacted SDR assets are aquired without any payment. During the first ten years, the SDR assets are virtually equal to the SDR liability as no trade in SDRs took place. During the 1980s and 1990s, Sweden's net position (assets minus liabilities) sometimes switched to negative as Sweden used SDRs to aquire foreign exchange. A negative position arose in 1992, when Sweden used some of its SDRs to pay for an increase in the IMF quota. The IMF assets and liabilities are valued at market prices from 1978, when the official dollar-gold-SDR connection was abandoned.

The International Bank for Reconstruction and Development (IBRD, part of the World Bank): "Sweden's shares of the Capital Stock of the International Bank for

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60   The consolidation is checked by comparing the year 1969 according to the 1969 Riksbank yearbook, which uses gross values, and the 1975 Riksbank yearbook, which uses net values.

Reconstruction and Development, paid portion (IBRD)" appears on the asset side 1951–1994. The "Liability to International Bank for Reconstruction and Development" disappeared in 1968, when the capital was paid off.

Finally, Sweden had a claim on the nascent European Central Bank (ECB): "ECU claim on the ECB/EMI" between 1995 and 1997 based on a swap agreement, which disappeared in 1998 when Sweden chose not to join the euro in 1999.

8.5. Conclusions

The authors of Sveriges Riksbank (1918–1931) received the yearly balance sheet data in draft form in 1918; the data were published in the final volume V in 1931 (see Introduction). The balance sheet data thus provided a backbone for the project, as Davidson (1931) testified (see Introductory quote). Still, Heckscher (1934, p. 193) found the history lacking in unity and commented: "To some extent this reproduces the lack of unity in the subject itself, but it goes beyond that. The bond of unity must be sought in the statistical tables."[61] It is hoped that bringing these data together in a digital and consolidated form and extending them to the present will help further explorations of the Riksbank's evolution over time and in relation to other central banks.

The inventory of the consolidated series and their main individual constituent time series reveals significant shifts in the activities of the Riksbank. We have touched on some of the sources of these changes, emanating from changes in "guidelines" and "the open money market" to use Davidson's (1931) terminology. Looking ahead, we can speculate on the impact of the global financial crisis 2008–10 on the Riksbank balance sheet. As a result of the crisis, the size of the Riksbank balance sheet trebled, reflecting the interaction of the goal of financial stability with the events in the financial sector. While this effect was over by 2010, the financial crisis may continue to affect the balance sheet in the longer run through new legislation, as suggested by the report from an official inquiry SOU 2013:9. There it is proposed that the Riksbank's "interest-free capital" (currency and equity) should be set to 75 billion SEK at current prices, including 30 billion SEK in equity, which implies a shrinking of the current balance sheet. Another proposal is a right for the Riksbank to borrow foreign exchange reserves to provide banks with liquidity in foreign currency during a financial crisis. This need in turn reflects the banks' increasing reliance on foreign financing, the latest but not the last change in the "open money market", affecting the Riksbank balance sheet.

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61 He acknowledged that: "Its shortcomings, such as they are, are due more to planning than to individual contributions. And when all is said, the history of the Bank of Sweden is probably more fully treated than that of any other public bank." Heckscher (1936, p. 193).

The main entrence to the Riksbank building.
Source: Sveriges Riksbank.

Appendix

Table A8.1. *Riksbank assets 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Claims on international organisations	Reserves: metal	Reserves: foreign assets	Loans: private	Loans: government	Domestic securities	Other assets
1668		7,837		2,915			
1669		6,853		11,431			
1670		7,704		35,807	3,467		
1671		15,040		63,694	2,167		
1672		12,908		77,875	1,939		
1673		21,109		94,859	2,600		
1674		12,474		107,157	10,129		
1675		28,686		108,670	28,559		
1676		86,469		123,851	57,493		
1677		57,468		143,932	99,859		
1678		53,767		154,019	114,859		
1679		75,841		185,863	142,382		
1680		63,065		244,259	201,351		
1681		40,340		236,783	215,446		
1682		45,812		243,935	193,237		
1683		99,517		273,727	195,820		
1684		78,998		325,755	207,707		
1685		46,522		334,582	222,649		
1686		24,297		355,823	238,204		
1687		77,799		403,751	159,783		
1688		72,668		466,527	99,661		
1689		60,692		480,495	106,262		
1690		146,502		520,236	83,501		
1691		239,682		542,745	19,384		
1692		235,735		569,922	21,067		
1693		229,035		561,854	23,542		
1694		354,150		593,360	25,930		
1695		338,736		624,269	25,930		
1696		360,556		658,060	25,930		
1697		254,961		719,316	25,930		
1698		234,328		697,660	25,930		
1699		133,529		692,083	25,930		
1700		118,415		614,706	25,930		
1701		198,951		565,977	25,930		
1702		230,803		572,177	68,655		
1703		267,672		575,031	154,488		
1704		231,269		553,301	278,388		
1705		273,322		585,398	425,822		
1706		247,794		597,462	607,947		
1707		175,021		597,384	736,947		
1708		137,956		603,826	943,155		

Table A8.1 (cont.). *Riksbank assets 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Claims on international organisations	Reserves: metal	Reserves: foreign assets	Loans: private	Loans: government	Domestic securities	Other assets
1709		34,242		616,009	994,488		
1710		67,259		500,071	994,655		
1711		102,163		625,160	994,655		
1712		131,507		428,866	999,595		
1713		102,834		411,287	998,495		
1714		24,183		379,551	992,145		
1715		65,363		374,712	1,213,199		
1716		145,668		358,996	1,211,793		
1717		266,322		335,537	1,200,288		
1718		555,223		314,705	1,200,708		
1719		219,615		321,142	1,151,799		
1720		279,473		301,174	1,047,369		
1721		317,000		294,510	1,139,555		
1722		362,638		290,742	1,139,555		
1723		408,740		287,034	1,139,555		
1724		415,606		287,546	1,139,555		
1725		429,966		284,316	1,232,050		
1726		479,377		253,871	1,232,141		
1727		590,548		244,919	1,232,141		
1728		608,262		237,601	1,232,141		
1729		672,811		9,350	1,162,684		467,425
1730		748,656		11,223	1,162,684		298,307
1731		808,333		15,698	1,087,310		31,867
1732		852,682		22,963	1,087,310		32,597
1733		870,937		42,719	1,087,310		42,807
1734		854,368		88,061	1,087,310		55,659
1735		913,002		103,580	1,087,310		61,989
1736		1,001,592		102,263	1,087,310		75,141
1737		1,060,950		122,936	1,087,310		82,682
1738		1,051,397		378,398	1,087,310		122,670
1739		1,045,938		575,686	1,087,310		237,586
1740		1,007,401		196,857	1,570,335		229,829
1741		700,395		299,623	1,740,456		230,998
1742		538,178		478,445	2,083,209		149,507
1743		395,852		529,022	2,498,363		107,315
1744		282,025		584,967	2,521,634		69,749
1745		171,639		670,816	2,449,925		75,227
1746		155,287		781,621	2,394,917		88,802
1747		177,468		935,349	2,713,884		126,812
1748		238,007		1,265,094	2,636,646		145,116
1749		313,048		1,544,447	2,593,768		107,440
1750		300,835		1,890,900	2,408,893		123,816
1751		304,043		2,301,742	2,480,278		152,643

Table A8.1 (cont.). *Riksbank assets 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Claims on international organisations	Reserves: metal	Reserves: foreign assets	Loans: private	Loans: government	Domestic securities	Other assets
1752		411,804		2,698,528	2,472,506		239,609
1753		427,278		2,894,625	2,542,113		348,260
1754		543,469		3,148,231	2,594,652		233,405
1755		609,832		3,597,851	2,662,376		523,886
1756		480,055		4,332,116	2,780,423		634,315
1757		533,809		5,048,834	3,580,901		621,873
1758		694,733		5,202,462	4,503,609		626,613
1759		1,406,358		5,987,027	4,833,635		654,307
1760		374,030		6,428,854	5,379,459		530,634
1761		372,479		6,594,821	5,637,554		542,425
1762		344,534		6,301,873	6,902,591		506,108
1763		388,689		6,012,169	7,033,448		525,787
1764		402,916		5,625,836	7,182,034		550,344
1765		373,919		5,151,634	7,345,571		554,626
1766		435,068		4,950,128	7,613,421		302,844
1767		475,828		4,693,487	7,557,719		307,144
1768		545,846		4,596,399	7,212,349		484,027
1769		629,831		4,538,033	7,110,015		518,948
1770		705,869		5,057,168	7,712,926		483,211
1771		754,552		5,079,279	8,253,900		543,936
1772		836,471		4,870,646	9,019,572		503,419
1773		944,785		4,865,910	9,004,843		1,298,033
1774		1,112,558		4,708,350	8,956,008		1,757,470
1775		1,652,690		4,607,408	8,612,879		1,696,431
1776		2,746,759		4,687,667	8,114,350		988,715
1777		4,642,708		4,791,002	7,667,909		422,870
1778		4,368,369		5,043,725	507,284		174,994
1779		3,849,154		4,985,780	429,103		148,870
1780		3,337,955		5,083,735	289,545		164,434
1781		3,419,481		5,081,758	215,000		159,104
1782		4,462,309		4,757,647	101,156		154,392
1783		4,645,181		4,895,884	70,217		154,975
1784		3,839,013		4,896,754	98,119		183,306
1785		3,753,783		4,920,037	80,000		172,797
1786		3,760,764		4,501,059	283,140		204,167
1787		4,499,684		4,310,749	368,267		190,493
1788		5,024,935		4,253,576	538,067		176,931
1789		4,780,668		3,743,698	1,169,364		153,981
1790		3,864,997		3,770,158	1,237,138		163,278
1791		3,218,135		3,754,899	1,090,700		166,875
1792		3,176,014		3,589,700	772,629		148,226
1793		2,249,608		3,567,343	1,123,177		162,823
1794		2,531,593		3,782,072	1,088,371		173,679

Table A8.1 (cont.). *Riksbank assets 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Claims on international organisations	Reserves: metal	Reserves: foreign assets	Loans: private	Loans: government	Domestic securities	Other assets
1795		2,607,102		3,415,536	691,750		174,213
1796		2,484,244		3,318,530	654,128		177,110
1797		2,079,153		3,494,765	633,198		171,456
1798		1,504,298		4,423,001	665,732		213,407
1799		1,645,915		5,190,554	741,747		269,397
1800		1,855,316		5,661,903	721,909		262,435
1801		2,147,938		7,689,827	47,716		298,090
1802		3,075,458		8,428,157	44,664		305,217
1803		5,227,976		9,828,179	2,814,778		277,543
1804		5,155,848		12,254,351	3,253,394		294,251
1805		5,104,581		13,799,280	5,945,756		289,823
1806		4,953,855		15,311,880	7,158,285		286,911
1807		4,363,928		17,146,443	9,137,393		285,701
1808		8,155,671		18,130,128	16,821,984		330,618
1809		7,836,041		18,301,724	25,940,847		343,787
1810		7,617,123		17,915,208	28,594,652		581,778
1811		7,496,229		17,114,889	30,207,548		804,203
1812		7,436,696		18,460,215	30,695,804		596,657
1813		7,309,646		18,615,942	29,954,177		529,229
1814		7,245,810		17,742,761	29,641,709		499,053
1815		7,240,523		18,952,941	29,582,304		310,125
1816		7,195,578		22,666,022	29,241,480		304,586
1817		7,199,058		26,292,329	13,306,623		363,824
1818		7,157,313		29,537,634	13,773,078		415,683
1819		7,152,420		31,766,598	13,861,221		457,236
1820		7,261,526		32,823,246	13,463,481		508,215
1821		7,352,991		32,727,831	14,567,687		625,401
1822		7,325,895		32,527,041	14,364,288		683,937
1823		7,327,922		34,437,281	19,903,776		691,362
1824		7,334,895		35,864,081	19,961,430		753,479
1825		8,189,291		34,879,310	19,510,974		1,908,752
1826		8,271,929		36,056,222	20,392,151		1,605,801
1827		8,380,143		35,162,838	20,145,575		1,671,446
1828		8,940,059		34,933,634	19,153,113		622,926
1829		25,342,313		22,699,377	10,825,155		540,060
1830		25,452,563		24,297,201	10,671,606		516,897
1831		26,357,478		25,208,831	10,583,622		531,116
1832		26,433,278		25,361,973	10,661,054		496,064
1833		26,431,194		25,361,174	10,634,576		363,684
1834		26,018,598		24,191,408	10,162,103		359,513
1835		26,358,651		23,630,625	9,581,243		898,064
1836		28,737,056		24,801,522	8,478,836		373,928
1837		27,032,388		27,499,949	8,867,364		459,902

Table A8.1 (cont.). *Riksbank assets 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Claims on international organisations	Reserves: metal	Reserves: foreign assets	Loans: private	Loans: government	Domestic securities	Other assets
1838		22,977,813		27,671,540	8,368,433		451,016
1839		25,526,709		27,782,372	8,189,541		467,019
1840		27,487,718		28,408,104	8,240,703		479,994
1841		25,349,099		29,950,188	8,759,091		331,935
1842		16,778,912		33,221,162	9,868,008		413,597
1843		12,007,407		33,432,471	10,059,399		1,422,546
1844		12,829,584	560,000	31,462,200	9,827,205		434,372
1845		18,250,532	1,815,755	29,876,267	9,992,049		812,651
1846		20,861,517	2,852,301	28,847,660	12,523,250		595,685
1847		31,338,981	1,790,616	26,218,283	13,232,714		603,749
1848		23,579,372	23,574	28,588,503	12,807,830		592,610
1849		19,390,737	911	29,480,789	12,416,205		609,665
1850		17,566,983	763,068	30,240,236	12,591,713		634,142
1851		17,230,638	2,201,939	29,971,044	12,432,125		508,053
1852		16,331,297	3,192,965	30,355,089	12,052,878		495,773
1853		21,136,496	5,676,824	31,279,844	11,770,172		504,236
1854		35,830,142	5,358,404	29,261,549	11,637,681		499,032
1855		41,910,414	10,104,092	30,539,141	11,647,652		699,123
1856		30,208,277	510,281	34,896,443	13,655,309		764,121
1857		17,243,937	5,832,375	36,275,909	14,330,537		609,135
1858		17,656,562	4,968,748	37,398,324	12,050,000	8,287,780	772,821
1859		13,091,721	3,625,062	39,407,263	9,050,000	8,307,310	1,042,516
1860		15,007,071	8,236,054	40,299,796	5,964,333	9,457,865	810,919
1861		11,741,548	10,234,532	40,956,708	3,040,000	10,607,959	892,396
1862		12,066,178	8,337,724	38,975,977	221,643	11,685,172	827,136
1863		10,270,541	7,220,677	39,826,177	164,553	11,234,093	759,503
1864		10,498,831	5,953,237	43,888,486		10,997,977	861,287
1865		10,516,093	5,387,087	48,162,904		10,713,941	803,259
1866		10,463,456	4,233,531	46,126,826		12,178,875	946,004
1867		10,524,649	3,121,762	46,052,398		12,891,367	832,132
1868		10,832,592	5,721,528	41,970,642		10,260,604	744,970
1869		10,649,050	5,186,085	40,333,162		10,465,078	723,597
1870		10,580,046	14,204,529	36,311,278		10,155,523	1,565,016
1871		14,514,909	17,026,528	34,989,746		10,031,593	628,115
1872		22,961,954	14,830,425	39,376,599		9,832,232	608,473
1873		29,405,870	23,898,105	42,593,596		7,775,830	627,961
1874		26,573,602	21,247,352	45,562,045		6,820,102	851,437
1875		21,163,152	21,737,061	44,184,531		5,664,588	747,174
1876		15,033,749	31,536,175	48,060,437		5,426,372	839,290
1877		12,965,758	21,734,327	49,991,260		9,073,745	1,066,469
1878		11,728,742	25,029,774	55,924,987		4,833,895	1,432,781
1879		17,661,117	24,914,166	46,990,148		10,616,906	4,127,514
1880		16,977,157	29,928,083	54,536,949		12,799,177	1,780,254

Table A8.1 (cont.). *Riksbank assets 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Claims on international organisations	Reserves: metal	Reserves: foreign assets	Loans: private	Loans: government	Domestic securities	Other assets
1881		16,431,045	25,145,145	57,645,603		13,402,258	1,866,178
1882		16,802,904	25,071,382	59,667,274		9,838,293	1,219,302
1883		16,226,654	23,206,598	57,590,840		11,291,523	1,470,216
1884		17,026,916	27,037,056	61,959,612		9,268,089	1,798,401
1885		17,715,529	25,084,770	65,662,157		9,926,754	1,775,828
1886		17,699,280	29,839,497	69,371,839		11,667,225	2,027,001
1887		20,136,555	29,872,265	68,746,568		12,505,169	2,126,975
1888		19,024,814	35,831,827	67,845,004		12,176,673	1,884,416
1889		19,206,564	35,503,428	67,991,526		15,496,627	1,770,033
1890		19,649,240	32,298,384	70,280,206		16,609,995	1,804,880
1891		19,945,907	28,251,550	70,883,224		12,657,473	1,960,031
1892		20,649,300	27,917,405	71,290,470		13,181,949	2,185,747
1893		19,741,512	35,426,336	71,734,781		11,715,162	1,745,190
1894		25,390,483	39,760,718	69,908,123		9,499,101	2,641,391
1895		26,940,748	38,305,213	73,125,953		10,049,916	1,113,591
1896		25,673,482	43,728,328	77,756,511		10,272,241	3,360,317
1897		32,257,248	45,600,836	86,090,194		10,768,398	3,586,014
1898		35,313,833	42,494,159	97,313,083		10,009,290	4,597,947
1899		38,159,861	59,040,875	113,338,187		9,403,505	5,919,816
1900		45,016,138	54,930,400	105,901,267		8,413,333	8,127,134
1901		51,902,311	53,556,616	122,742,182		6,598,933	10,455,415
1902		56,679,086	59,023,181	149,178,153		6,552,420	845,336
1903		62,622,261	49,907,582	164,533,940		5,487,380	850,607
1904		66,816,956	52,312,490	173,847,203		2,260,600	1,233,966
1905		71,657,460	59,045,892	183,215,978		1,912,800	1,751,257
1906		74,430,190	52,241,471	201,458,241		1,912,800	397,853
1907		73,489,844	51,947,699	255,745,000		1,178,400	620,731
1908		82,625,519	57,731,300	220,668,869		112,800	698,077
1909		85,078,756	72,047,503	196,820,774		112,800	462,302
1910		85,642,024	89,454,826	174,276,910		112,800	614,769
1911		89,887,717	123,126,903	146,301,438		112,800	269,833
1912		105,126,280	120,428,689	186,693,761		112,800	750,617
1913		107,335,559	138,793,712	180,147,868		3,411,370	608,172
1914		110,425,285	94,779,091	220,137,641		6,275,387	71,972,650
1915		126,705,908	206,455,194	140,788,920		11,290,833	63,963,437
1916		185,858,594	240,954,209	177,018,809		6,301,684	66,389,872
1917		246,057,727	206,388,127	309,037,009		13,494,214	85,031,317
1918		285,931,023	203,524,226	462,051,845		7,763,789	92,310,905
1919		282,173,196	198,984,974	556,136,975		8,004,763	29,958,815
1920		284,509,602	163,846,256	558,208,083		6,884,363	4,070,256
1921		286,059,794	187,864,854	567,902,269		8,880,112	3,573,275
1922		293,237,550	286,548,685	490,734,043		8,323,369	1,990,224
1923		284,613,205	175,483,685	498,906,639		19,266,599	2,070,087

Table A8.1 (cont.). *Riksbank assets 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Claims on international organisations	Reserves: metal	Reserves: foreign assets	Loans: private	Loans: government	Domestic securities	Other assets
1924		241,144,113	176,186,348	502,801,218		16,383,150	1,717,028
1925		234,447,328	231,789,620	420,805,388		14,673,147	1,490,393
1926		228,921,886	250,896,452	333,178,123		12,065,348	1,279,891
1927		233,713,621	289,923,637	348,241,129		12,164,185	2,332,285
1928		238,632,338	244,697,614	435,466,002		6,750,105	608,919
1929		244,658,587	298,293,450	378,852,918		22,901,596	4,232,341
1930	1,800,000	240,831,390	423,709,168	320,691,755		3,719,940	5,543,350
1931		205,820,050	81,345,580	558,125,954		3,824,129	11,493,392
1932		205,979,096	227,270,834	204,577,744		238,363,683	27,909,480
1933		370,338,846	458,022,812	56,342,439		226,672,507	114,585,307
1934		351,255,419	569,108,395	43,550,696		149,348,500	110,243,523
1935		407,782,741	649,127,430	42,007,398		32,586,200	145,527,131
1936		529,204,506	732,224,519	37,474,906		33,272,810	244,925,944
1937		538,712,835	1,055,475,380	38,165,157		10,056,957	280,020,218
1938		707,229,753	846,967,530	94,187,395		105,951,300	408,273,198
1939		678,514,201	367,430,041	456,901,987		236,468,725	394,834,815
1940		352,585,959	829,836,404	303,117,662	273,536,915	482,345,987	263,006,541
1941		492,331,287	858,303,105	146,691,302	308,940,963	709,663,048	400,117,902
1942		738,139,414	634,599,378	189,630,530	675,046,904	547,964,172	745,030,666
1943		853,971,007	727,475,126	138,278,509	625,168,699	495,306,563	826,453,523
1944		1,019,436,671	676,388,461	106,848,655	785,110,690	491,557,811	1,000,459,090
1945		1,062,073,346	907,655,308	81,616,819	1,066,068,841	433,994,451	1,019,336,837
1946		1,371,237,030	538,090,290	225,201,528	282,307,843	1,544,141,598	173,755,856
1947		378,602,937	345,595,938	185,972,275	188,767,843	2,746,528,002	219,117,401
1948		290,205,596	314,733,978	216,590,973	188,767,843	3,316,793,876	377,514,720
1949		361,770,317	827,806,043	199,828,224	126,767,843	3,183,608,947	143,630,485
1950		465,610,901	688,081,705	271,773,214	6,767,843	3,443,277,471	182,086,926
1951	620,785,200	784,986,419	1,593,510,949	308,692,587	6,767,843	2,821,469,589	235,542,701
1952	620,785,200	954,079,801	1,349,993,497	381,428,655	6,767,843	3,240,499,207	141,405,101
1953	620,785,200	1,130,394,873	1,490,767,712	414,942,705	6,767,843	2,785,805,131	89,803,450
1954	620,785,200	1,370,000,155	1,104,353,159	153,666,786	6,767,843	3,266,864,847	81,026,140
1955	620,785,200	1,426,201,521	1,003,605,335	78,303,812	6,767,843	4,023,057,509	113,588,042
1956	620,785,200	1,375,899,488	1,071,661,546	73,631,915	6,767,843	4,389,688,833	85,566,190
1957	620,785,200	1,134,171,951	1,226,191,164	142,359,684	6,767,843	5,050,102,297	145,442,909
1958	620,785,200	1,053,164,414	1,392,234,894	148,323,364	6,767,843	4,545,234,445	124,478,404
1959	879,445,700	987,073,012	1,179,237,880	297,324,517	6,767,843	4,893,482,340	128,003,803
1960	879,445,700	881,034,621	1,554,254,723	64,730,893	6,767,843	6,004,821,350	181,554,387
1961	879,445,700	933,535,702	2,384,792,540	63,311,383	6,767,843	5,702,016,025	165,171,526
1962	879,445,700	935,349,775	2,933,897,367	94,739,446	6,767,843	4,683,087,890	164,512,398
1963	879,445,700	939,914,688	2,678,817,635	307,174,340	6,767,843	5,037,465,835	240,882,203
1964	957,043,700	977,900,931	3,498,462,180	182,137,901	6,767,843	4,706,560,700	261,801,533
1965	1,047,574,700	1,046,433,899	3,160,427,884	458,583,152	6,767,843	5,121,020,595	215,472,994
1966	1,456,255,800	1,049,013,158	3,330,841,289	130,324,047	6,767,843	6,063,798,805	83,685,339

Table A8.1 (cont.). *Riksbank assets 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Claims on international organisations	Reserves: metal	Reserves: foreign assets	Loans: private	Loans: government	Domestic securities	Other assets
1967	1,378,657,800	1,050,906,527	2,461,817,112	1,344,534,944	6,767,843	6,341,041,580	72,544,550
1968	1,575,239,400	1,163,477,084	2,123,090,108	1,023,369,762	6,767,843	7,530,045,660	49,195,676
1969	646,610,000	1,167,665,344	1,719,599,000	1,730,592,000		8,589,218,955	70,327,000
1970	973,758,000	1,034,850,000	1,739,803,000	1,309,506,000		9,657,652,000	61,823,000
1971	951,526,000	1,046,151,000	3,210,948,000	155,127,000		10,837,235,000	65,648,000
1972	1,162,400,000	1,046,842,000	5,254,458,000	156,611,000		10,223,219,000	267,522,000
1973	1,216,113,000	1,114,748,000	9,057,401,000	182,285,000		8,232,958,000	218,883,000
1974	1,221,866,000	1,114,748,000	5,527,264,000	3,201,311,000		15,911,502,000	328,159,000
1975	1,162,136,000	1,114,748,000	10,663,865,000	566,419,000		15,544,623,000	1,122,743,000
1976	1,795,603,000	1,114,748,000	7,890,541,000	3,146,349,000		16,911,139,000	957,977,000
1977	2,077,939,000	1,141,525,000	13,648,374,000	4,039,224,000		14,419,768,000	1,084,075,000
1978	1,865,174,000	1,155,010,000	15,554,084,000	439,738,000		19,641,992,000	1,672,938,000
1979	2,129,919,000	1,168,397,000	12,106,968,000	6,629,935,000		33,256,593,000	1,317,048,000
1980	2,282,000,000	1,168,000,000	11,944,000,000	6,871,000,000		31,555,000,000	685,000,000
1981	2,686,000,000	1,168,000,000	16,806,000,000	1,672,000,000		41,447,000,000	770,000,000
1982	2,892,000,000	1,168,000,000	21,430,000,000	327,000,000		48,372,000,000	792,000,000
1983	3,317,000,000	1,168,000,000	28,043,000,000	13,690,000,000		35,315,000,000	621,000,000
1984	4,084,000,000	1,168,000,000	28,867,000,000	1,363,000,000		64,542,000,000	236,000,000
1985	4,577,000,000	1,168,000,000	39,274,000,000	6,621,000,000		65,237,000,000	2,113,000,000
1986	4,633,000,000	1,168,000,000	40,222,000,000	4,790,000,000		88,550,000,000	3,710,000,000
1987	4,475,000,000	1,168,000,000	45,089,000,000	2,742,000,000		95,697,000,000	3,231,000,000
1988	5,006,000,000	1,168,000,000	48,011,000,000	17,544,000,000		92,910,000,000	45,000,000
1989	4,813,000,000	1,167,000,000	55,317,000,000	27,907,000,000	30,442,000,000	58,461,000,000	108,000,000
1990	4,129,000,000	1,167,000,000	99,083,000,000	19,677,000,000	14,862,000,000	37,780,000,000	92,000,000
1991	5,375,000,000	1,167,000,000	93,802,000,000	23,557,000,000		131,721,000,000	238,000,000
1992	5,329,000,000	1,167,000,000	157,606,000,000	18,841,000,000	42,131,000,000	145,470,000,000	105,000,000
1993	6,258,000,000	1,167,000,000	168,900,000,000	1,263,000,000		97,251,000,000	135,000,000
1994	6,031,000,000	1,167,000,000	174,584,000,000	10,000,000		87,326,000,000	3,641,000,000
1995	18,536,000,000	925,000,000	151,859,000,000	2,607,000,000		71,025,000,000	12,349,000,000
1996	17,032,000,000	905,000,000	122,304,000,000	9,638,000,000		59,045,000,000	3,670,000,000
1997	19,840,000,000	909,000,000	70,239,000,000	40,333,000,000		53,088,000,000	4,760,000,000
1998	13,707,000,000	13,834,000,000	108,705,000,000	43,846,000,000		32,842,000,000	1,440,000,000
1999	12,949,000,000	14,774,000,000	125,018,000,000	45,633,000,000		28,998,000,000	1,393,000,000
2000	10,671,000,000	15,428,000,000	141,948,000,000	43,204,000,000		20,728,000,000	1,276,000,000
2001	13,293,000,000	17,436,000,000	134,405,000,000	69,135,000,000			1,263,000,000
2002	14,306,000,000	18,210,000,000	136,288,000,000	30,721,000,000			1,459,000,000
2003	12,267,000,000	18,030,000,000	130,809,000,000	23,826,000,000			1,372,000,000
2004	10,148,000,000	17,393,000,000	135,108,000,000	17,002,000,000			3,205,000,000
2005	5,729,000,000	22,235,000,000	167,429,000,000	9,601,000,000			3,613,000,000
2006	4,892,000,000	22,222,000,000	162,292,000,000	7,088,000,000			4,191,000,000
2007	4,614,000,000	25,827,000,000	167,942,000,000	9,129,000,000			4,414,000,000
2008	6,261,000,000	29,976,000,000	390,311,000,000	266,462,000,000			7,201,000,000
2009	30,898,000,000	31,691,000,000	271,450,000,000	368,802,000,000			5,997,000,000

Table A8.1 (cont.). *Riksbank assets 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Claims on international organisations	Reserves: metal	Reserves: foreign assets	Loans: private	Loans: government	Domestic securities	Other assets
2010	31,175,000,000	38,537,000,000	251,380,000,000	500,000,000			5,334,000,000
2011	35,294,000,000	43,508,000,000	264,892,000,000				4,223,000,000

Table A8.2. *Riksbank liabilities and equity 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Liabilities to international organisations	Notes	Deposits: non-interest bearing	Deposits: interest-bearing	Deposits: special	Equity	Other liabilities	Total assets = total liabilities
1668			7,144	9,577				16,721
1669			11,695	21,685		39		33,419
1670			52,510	41,349		972		94,830
1671			85,184	38,758		7,892		131,834
1672			96,090	41,762		6,543		144,395
1673			125,991	49,917		7,647		183,556
1674			128,690	58,073		10,663		197,426
1675			158,109	82,414		11,502		252,025
1676			226,901	167,396		11,614		405,911
1677			299,121	145,504		17,788		462,412
1678			361,351	120,917		20,201		502,469
1679			473,692	121,583		23,124		618,399
1680			611,782	124,925		33,490		770,196
1681			570,434	128,268		45,687		744,389
1682			576,381	104,425		60,118		740,924
1683			647,770	139,555		68,697		856,022
1684			724,174	111,224		73,676		909,073
1685			755,317	66,246		84,365		905,928
1686			708,517	101,538		96,364		906,419
1687			745,270	105,687		112,451		963,409
1688			728,787	104,681		132,221		965,688
1689			757,799	87,991		144,939		990,729
1690			911,079	99,597		147,176		1,157,851
1691			928,739	186,183		151,928		1,266,850
1692			958,914	248,168		166,630		1,373,712
1693			1,001,760	419,366		177,857		1,598,983
1694			1,033,773	391,042		164,176		1,588,990
1695			1,088,935	399,855		155,546		1,644,335
1696			1,136,579	447,241		153,069		1,736,889
1697			1,186,911	363,988		149,666		1,700,565
1698			1,173,474	323,053		156,316		1,652,842
1699			1,098,008	228,999		170,824		1,497,831
1700			932,112	216,067		162,017		1,310,195
1701			890,906	277,789		154,187		1,322,882
1702			943,664	278,046		160,766		1,382,475
1703			1,128,263	270,825		180,893		1,579,980
1704			1,279,402	237,429		133,490		1,650,321
1705			1,513,352	316,689		171,859		2,001,900
1706			1,754,566	315,410		173,880		2,243,855
1707			1,874,346	245,683		210,357		2,330,387
1708			2,109,600	228,758		238,103		2,576,460

Table A8.2 (cont.). *Riksbank liabilities and equity 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Liabilities to international organisations	Notes	Deposits: non-interest bearing	Deposits: interest-bearing	Deposits: special	Equity	Other liabilities	Total assets = total liabilities
1709			2,164,660	105,300		265,339		2,535,299
1710		1,205	1,995,819	112,980		310,834		2,420,838
1711		1,543	1,896,692	140,354		330,641		2,369,230
1712		3,549	1,843,034	187,931		337,349		2,371,863
1713		2,778	1,807,246	140,887		340,543		2,291,454
1714		3,466	1,695,107	80,825		343,107		2,122,506
1715		5,027	1,875,550	84,413		276,049		2,241,038
1716		3,631	1,876,657	158,525		200,245		2,239,058
1717		5,804	1,839,564	240,291		114,044		2,199,703
1718		2,849	1,842,324	693,262		49,582		2,588,017
1719		2,726	1,749,120	252,904		-30,112		1,974,638
1720		1,834	1,722,453	316,774		-112,870		1,928,191
1721		2,490	1,713,097	309,952		-184,585		1,840,955
1722		3,055	1,704,884	341,153		-263,942		1,785,150
1723		55,686	1,727,809	422,679		-341,533		1,864,641
1724		69,600	1,710,040	428,428		-415,423		1,792,644
1725		88,598	1,661,243	418,265		605,762		2,773,868
1726		151,963	1,623,147	459,531		744,518		2,979,159
1727		176,293	1,560,846	599,200		674,867		3,011,206
1728		188,678	1,526,850	645,640		818,950		3,180,118
1729		197,775	679,458	1,419,845		1,023,592	146,582	3,467,251
1730		244,083	734,439	1,376,654		820,280	155,462	3,330,917
1731		328,511	693,362	1,255,568		460,897	169,789	2,908,126
1732		373,967	693,193	1,243,897		490,859	173,342	2,975,258
1733		447,193	661,488	1,217,464		539,235	155,537	3,020,916
1734		488,193	653,466	1,219,553		573,509	151,920	3,086,641
1735		539,070	711,923	1,202,340		595,355	141,006	3,189,694
1736		743,584	645,221	1,199,545		618,946	129,363	3,336,658
1737		830,943	671,619	1,176,176		650,777	114,731	3,444,245
1738		1,052,004	820,783	1,176,097		722,200	102,283	3,873,367
1739		1,331,180	1,078,527	1,013,422		800,578	136,653	4,360,360
1740		1,316,250	1,087,397	1,032,682		883,458	116,848	4,436,634
1741		1,581,272	1,004,706	950,419		728,614	137,173	4,402,184
1742		2,045,039	919,303	814,098		879,078	142,133	4,799,650
1743		2,380,216	779,016	821,066		1,071,341	159,912	5,211,550
1744		2,138,018	651,182	885,979		1,272,171	151,327	5,098,677
1745		1,783,973	577,928	958,944		1,491,304	129,604	4,941,754
1746		1,661,117	507,023	989,044		1,697,551	108,902	4,963,637
1747		2,106,250	587,186	973,336		1,923,356	129,819	5,719,947
1748		2,359,546	523,991	1,017,512		2,134,667	184,194	6,219,911
1749		2,540,180	490,059	1,050,835		2,358,603	207,719	6,647,395

Table A8.2 (cont.). *Riksbank liabilities and equity 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Liabilities to international organisations	Notes	Deposits: non-interest bearing	Deposits: interest-bearing	Deposits: special	Equity	Other liabilities	Total assets = total liabilities
1750		2,708,476	408,840	1,072,496		2,549,242	135,861	6,874,913
1751		2,983,336	563,644	1,076,933		2,799,956	203,828	7,627,697
1752		3,364,344	642,113	1,234,435		3,073,963	217,342	8,532,198
1753		3,307,028	602,828	1,525,727		3,356,257	322,931	9,114,770
1754		3,386,404	642,686	1,733,082		3,668,056	133,887	9,564,115
1755		3,449,744	764,880	2,130,524		3,997,046	483,042	10,825,235
1756		4,254,240	819,015	2,108,347		4,141,321	548,076	11,870,999
1757		6,078,353	820,636	2,254,529		4,374,829	583,776	14,112,122
1758		7,307,950	638,651	2,909,732		4,663,580	567,101	16,087,012
1759		9,221,638	965,882	3,016,235		4,826,477	651,795	18,682,028
1760		8,300,053	1,362,855	2,863,601		5,152,897	596,507	18,275,912
1761		9,904,095	1,411,975	1,889,589		5,457,494	591,398	19,254,551
1762		11,263,882	1,131,585	1,777,840		5,804,707	571,366	20,549,380
1763		11,005,884	1,191,927	1,503,152		6,009,830	542,034	20,252,826
1764		10,631,459	866,735	1,458,886		6,369,901	560,364	19,887,345
1765		9,642,411	897,745	1,506,589		6,748,252	597,556	19,392,552
1766		9,565,161	1,081,987	1,273,009		7,129,831	151,962	19,201,949
1767		9,086,766	791,174	1,143,127		7,641,247	99,954	18,762,267
1768		8,158,238	924,176	1,117,335		8,137,516	129,236	18,466,500
1769		7,942,694	780,420	995,992		8,507,641	146,396	18,373,143
1770		8,785,240	1,405,974	931,828		8,930,143	209,674	20,262,858
1771		9,105,331	1,809,623	816,026		9,365,090	148,678	21,244,748
1772		9,383,764	2,105,275	841,861		9,635,714	259,295	22,225,909
1773		9,893,186	1,237,385	961,148		9,188,063	2,412,954	23,692,735
1774		10,658,536	1,078,640	976,770		9,218,564	2,399,877	24,332,387
1775		11,120,457	900,061	942,092		9,050,919	2,351,701	24,365,229
1776		11,749,365	755,449	855,933		10,736,251	153,958	24,250,955
1777		10,956,675	785,309	1,166,126		13,320,668	57,957	26,286,734
1778		10,378,887	665,265	1,266,909		2,752,748	77,750	15,141,558
1779		9,237,309	742,020	1,177,016		2,910,596	52,421	14,119,361
1780		8,482,994	619,832	1,151,973		3,005,822	52,884	13,313,504
1781		8,350,112	617,978	1,159,172		3,134,244	51,510	13,313,015
1782		8,916,192	788,606	1,156,802		3,281,508	70,149	14,213,256
1783		8,892,311	1,110,362	1,159,514		3,429,713	57,488	14,649,386
1784		7,942,971	880,520	1,066,277		3,570,800	65,222	13,525,788
1785		7,723,277	919,764	976,322		3,705,758	64,806	13,389,926
1786		7,401,531	878,921	983,943		3,796,485	62,816	13,123,695
1787		8,019,776	999,017	1,024,317		3,961,895	48,786	14,053,790
1788		9,100,886	678,690	1,038,522		4,094,406	77,760	14,990,264
1789		8,290,649	781,934	1,171,545		4,222,833	86,307	14,553,267
1790		5,562,669	1,236,203	1,274,990		4,356,689	130,485	12,561,035

Table A8.2 (cont.). *Riksbank liabilities and equity 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Liabilities to international organisations	Notes	Deposits: non-interest bearing	Deposits: interest-bearing	Deposits: special	Equity	Other liabilities	Total assets = total liabilities
1791		4,547,294	710,334	1,230,554		4,469,256	125,070	11,082,507
1792		3,812,358	748,101	1,183,055		4,581,837	99,473	10,424,823
1793		3,069,320	588,698	1,171,601		4,691,870	42,632	9,564,119
1794		2,787,669	579,620	1,196,628		4,787,135	48,099	9,399,150
1795		2,573,544	468,026	1,175,829		4,895,351	104,826	9,217,575
1796		2,192,615	490,406	1,142,577		4,989,978	214,388	9,029,963
1797		1,877,294	546,213	1,066,814		5,073,639	94,736	8,658,695
1798		1,730,208	449,384	961,343		5,200,356	41,024	8,382,314
1799		1,502,961	462,321	976,707		5,316,212	43,224	8,301,425
1800		1,543,113	441,446	1,364,081		5,425,011	51,503	8,825,153
1801		1,473,929	1,505,651	1,209,728		5,548,772	506,963	10,245,041
1802		1,451,228	982,223	1,221,803		5,673,671	2,422,727	11,751,650
1803		2,373,038	2,278,577	1,276,313		5,729,715	6,382,593	18,040,235
1804		5,257,823	2,779,959	1,187,864		5,848,413	5,883,785	20,957,843
1805		8,429,201	2,164,638	1,359,339		5,889,566	7,296,696	25,139,439
1806		10,267,515	2,300,259	1,057,071		5,960,165	8,125,922	27,710,931
1807		12,767,091	1,552,389	1,075,511		6,041,672	9,496,802	30,933,464
1808		24,848,894	1,422,596	1,055,247		6,197,924	9,913,742	43,438,401
1809		30,671,856	3,349,680	1,051,460		6,456,662	10,892,741	52,422,398
1810		32,264,178	3,271,469	1,054,322		6,802,236	11,316,557	54,708,761
1811		33,536,219	2,027,558	1,088,241		7,166,699	11,804,153	55,622,868
1812		34,404,045	1,429,226	996,428		7,531,020	12,828,653	57,189,371
1813		30,347,394	3,529,277	922,457		7,957,733	13,652,133	56,408,993
1814		28,743,257	2,712,150	944,876		8,308,230	14,420,820	55,129,332
1815		28,964,226	2,100,722	972,402		8,708,918	15,339,626	56,085,893
1816		31,086,827	2,675,018	957,057		9,138,051	15,550,713	59,407,665
1817		34,782,635	2,007,131	862,827		9,370,802	138,440	47,161,833
1818		36,504,989	2,195,048	937,448		10,207,193	1,039,032	50,883,708
1819		36,228,129	3,330,050	996,735		11,194,041	1,488,491	53,237,445
1820		36,141,873	3,249,314	970,664		12,376,166	1,318,452	54,056,468
1821		35,717,138	3,312,017	959,979		13,414,548	1,870,229	55,273,910
1822		34,507,701	3,157,238	890,201		14,470,937	1,875,086	54,901,161
1823		41,184,021	3,569,792	945,008		15,481,952	1,179,569	62,360,340
1824		44,071,758	2,733,221	953,570		15,278,160	877,176	63,913,884
1825		44,456,051	3,062,942	941,898		15,365,096	662,340	64,488,326
1826		45,379,760	3,834,087	928,278		15,180,065	1,003,913	66,326,102
1827		44,550,923	3,407,495	888,701		14,978,963	1,533,921	65,360,001
1828		44,735,117	4,314,050	882,048		13,095,737	622,781	63,649,731
1829		45,454,403	5,949,876	987,120		6,600,000	415,506	59,406,905
1830		45,631,137	6,797,565	988,581		7,319,292	201,692	60,938,267
1831		47,325,200	6,428,877	1,077,936		7,706,433	142,601	62,681,046

Table A8.2 (cont.). *Riksbank liabilities and equity 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Liabilities to international organisations	Notes	Deposits: non-interest bearing	Deposits: interest-bearing	Deposits: special	Equity	Other liabilities	Total assets = total liabilities
1832		46,503,333	7,145,837	1,000,899		8,104,673	197,627	62,952,368
1833		46,147,760	7,037,873	946,461		8,360,435	298,100	62,790,627
1834		45,353,948	6,317,931	925,146		7,500,000	634,596	60,731,621
1835		43,990,626	6,665,625	902,784		8,428,884	480,663	60,468,582
1836		44,711,040	7,104,911	914,790		9,456,837	203,763	62,391,341
1837		45,192,248	7,076,613	885,170		10,440,392	265,181	63,859,602
1838		41,436,732	5,418,447	851,523		11,455,253	304,146	59,466,101
1839		40,703,502	7,632,129	783,590		12,466,824	379,596	61,965,641
1840		40,955,702	8,729,916	816,389		13,677,852	436,661	64,616,519
1841		38,313,312	10,580,769	742,979		11,406,117	3,347,136	64,390,313
1842		33,393,194	10,713,065	798,693		12,671,589	2,705,138	60,281,678
1843		31,689,989	8,335,703	774,986		14,107,163	2,013,984	56,921,823
1844		29,951,408	7,684,467	738,132		15,377,354	1,362,000	55,113,360
1845		35,938,976	6,918,939	918,561		16,934,583	36,194	60,747,252
1846		38,752,335	7,251,294	833,909		18,805,626	37,248	65,680,412
1847		43,287,674	9,057,446	827,144		19,972,371	39,708	73,184,342
1848		39,015,932	6,360,920	760,823		16,555,995	2,898,219	65,591,888
1849		33,983,703	7,711,913	760,109		17,972,403	1,470,179	61,898,306
1850		33,453,488	8,133,641	802,625		19,366,778	39,611	61,796,141
1851		33,487,479	8,100,000	955,091		17,661,416	2,139,813	62,343,798
1852		33,734,394	7,732,674	732,432		19,139,940	1,088,561	62,428,001
1853		41,258,546	7,744,193	714,035		20,620,839	29,958	70,367,570
1854		49,843,058	11,426,280	711,945		17,872,568	2,732,957	82,586,807
1855		58,470,242	15,262,319	727,230		19,059,980	1,380,651	94,900,421
1856		48,414,623	10,038,344	713,669		20,836,994	30,801	80,034,429
1857		41,138,789	9,939,917	682,301		21,499,994	1,030,893	74,291,892
1858		37,166,935	7,592,530	573,717		23,217,488	12,583,565	81,134,235
1859		34,204,805	5,704,945	470,242		24,955,524	9,188,356	74,523,872
1860		37,889,232	9,115,008	465,075		25,515,563	6,791,160	79,776,038
1861		34,894,394	10,954,865	454,083		27,614,686	3,555,115	77,473,143
1862		32,250,827	9,349,492	442,301		29,628,066	443,144	72,113,830
1863		29,875,127	9,138,982	442,243		26,512,575	3,506,617	69,475,544
1864		30,025,751	6,222,571	5,207,205		28,434,833	2,345,208	72,235,568
1865		29,081,755	7,520,950	8,183,121		30,295,193	534,515	75,615,534
1866		26,785,100	6,114,863	9,768,294		29,007,797	2,272,638	73,948,692
1867		25,648,698	7,227,609	10,810,881		29,203,445	531,675	73,422,308
1868		24,531,018	6,015,349	9,125,413		29,239,053	619,503	69,530,336
1869		24,443,445	6,005,939	7,394,791		27,381,985	2,130,812	67,356,972
1870		27,001,878	8,875,549	7,836,560		27,233,313	1,869,092	72,816,392
1871		32,239,431	8,732,707	7,107,089		27,306,528	1,805,136	77,190,891

Table A8.2 (cont.). *Riksbank liabilities and equity 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Liabilities to international organisations	Notes	Deposits: non-interest bearing	Deposits: interest-bearing	Deposits: special	Equity	Other liabilities	Total assets = total liabilities
1872		46,386,691	6,338,078	5,586,167		28,830,389	468,358	87,609,683
1873		46,012,436	9,178,208	17,441,084		31,242,046	427,588	104,301,362
1874		42,315,336	18,059,662	6,312,993		33,243,581	1,122,966	101,054,538
1875		37,912,441	11,271,252	7,792,099		34,596,408	1,924,306	93,496,506
1876		32,179,883	12,130,868	19,495,929		35,117,100	1,972,240	100,896,020
1877		27,228,628	8,478,829	18,060,028		36,960,565	4,103,509	94,831,559
1878		27,580,145	9,069,925	21,992,952		38,233,398	2,073,759	98,950,179
1879		32,098,919	6,657,596	22,549,958		39,304,484	3,698,894	104,309,851
1880		40,149,223	8,063,011	25,004,380		40,637,662	2,167,344	116,021,620
1881		39,155,273	10,705,409	20,114,212		42,649,385	1,865,950	114,490,229
1882		38,448,366	12,188,157	15,161,229		43,686,991	3,114,412	112,599,155
1883		36,337,520	11,095,022	13,759,773		45,018,738	3,574,778	109,785,831
1884		38,621,871	15,007,610	15,317,709		46,246,124	1,896,760	117,090,074
1885		40,337,490	14,714,408	15,199,952		47,819,134	2,094,054	120,165,038
1886		42,795,323	14,831,191	20,276,663		50,316,072	2,385,593	130,604,842
1887		41,103,428	13,444,670	22,693,303		51,769,776	4,376,355	133,387,532
1888		45,069,918	15,279,993	20,965,549		52,934,269	2,513,005	136,762,734
1889		44,689,924	12,136,314	20,617,030		54,255,995	8,268,915	139,968,178
1890		46,216,920	12,879,306	19,020,567		56,663,480	5,862,432	140,642,705
1891		45,011,352	14,185,165	13,200,603		58,386,631	2,914,434	133,698,185
1892		45,344,641	13,472,662	11,818,258		59,438,078	5,151,232	135,224,871
1893		49,393,256	11,953,662	14,560,492		59,119,919	5,335,652	140,362,981
1894		53,687,682	18,107,138	13,681,890		59,243,106	2,480,000	147,199,816
1895		57,916,968	21,064,365	8,284,556		59,929,532	2,340,000	149,535,421
1896		64,845,376	21,503,710	8,346,510		60,347,744	5,747,539	160,790,879
1897		70,941,074	25,938,529	8,283,117		61,875,667	11,264,303	178,302,690
1898		72,761,588	43,205,053	2,018,571		63,762,041	7,981,059	189,728,312
1899		78,294,410	70,236,887	504,189		68,117,120	8,709,638	225,862,244
1900		74,068,877	71,246,711	429,298		72,296,063	4,347,323	222,388,272
1901		103,191,140	61,930,610	1,412,719		73,314,822	5,406,166	245,255,457
1902		139,760,621	53,738,433	1,465,875		74,255,302	3,057,945	272,278,176
1903		167,905,158	47,720,185	712,491		62,918,090	4,145,846	283,401,770
1904		171,974,368	47,353,304	611,337		64,623,434	11,908,772	296,471,215
1905		185,510,623	53,165,059	1,620,915		65,729,695	11,557,095	317,583,387
1906		203,757,813	45,101,517	1,733,861		67,313,091	12,534,273	330,440,555
1907		192,579,570	103,147,733	1,222,220		70,552,114	15,580,037	383,081,674
1908		203,933,105	70,511,830	776,957		70,855,099	15,759,574	361,836,565
1909		204,212,905	64,627,936	523,031		68,821,050	16,337,213	354,522,135
1910		209,412,317	56,601,301	375,802		68,999,702	14,712,207	350,101,329
1911		220,177,609	54,569,283	400,649		68,950,094	15,601,056	359,698,691
1912		229,887,457	94,135,037	1,503,680		69,734,701	17,851,272	413,112,147

Table A8.2 (cont.). *Riksbank liabilities and equity 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Liabilities to international organisations	Notes	Deposits: non-interest bearing	Deposits: interest-bearing	Deposits: special	Equity	Other liabilities	Total assets = total liabilities
1913		236,443,903	107,899,738	1,461,365		71,516,213	12,975,462	430,296,681
1914		306,106,762	107,016,589	1,128,538		71,518,834	17,819,331	503,590,054
1915		330,494,089	126,575,286	2,493,282		70,926,995	18,714,640	549,204,292
1916		421,115,083	148,420,421	24,710,052		69,347,153	12,930,459	676,523,168
1917		581,543,712	191,012,726	6,435,234		79,083,114	1,933,608	860,008,394
1918		825,011,329	134,192,700	7,231,049		84,829,047	317,663	1,051,581,788
1919		757,912,575	213,725,323	7,743,615		90,860,957	5,016,253	1,075,258,723
1920		765,238,101	171,517,696	5,255,551		70,608,840	4,898,372	1,017,518,560
1921		632,167,906	331,359,103	4,746,116		78,582,918	7,424,261	1,054,280,304
1922		589,450,339	389,460,287	3,099,532		82,211,319	16,612,394	1,080,833,871
1923		579,610,443	305,322,055	3,991,137		80,378,227	11,038,353	980,340,215
1924		539,206,926	303,726,846	4,727,281		82,402,257	8,175,548	938,238,858
1925		531,231,975	275,827,640	4,390,819		83,098,340	8,657,103	903,205,877
1926		526,642,144	204,429,097	4,109,351		81,971,999	9,189,110	826,341,701
1927		528,063,373	267,573,418	3,635,769		78,380,183	8,722,112	886,374,855
1928		548,190,467	284,918,512	2,167,108		83,408,947	7,469,944	926,154,978
1929		571,134,197	271,532,660	2,762,027		94,268,630	9,241,379	948,938,893
1930		595,028,966	291,922,937	1,328,361		89,491,318	18,524,020	996,295,602
1931		583,872,814	172,081,130	3,871,669		88,306,633	12,476,858	860,609,104
1932		599,203,562	201,567,470	6,440,458		88,993,348	7,896,000	904,100,838
1933		649,155,358	469,451,752	18,854,042		85,745,268	2,755,494	1,225,961,914
1934		709,417,731	405,487,245	26,524,576		80,187,408	1,889,564	1,223,506,524
1935		787,835,549	382,519,642	17,460,026		77,588,133	11,627,551	1,277,030,901
1936		900,205,719	587,269,655			76,187,605	13,439,704	1,577,102,683
1937		1,009,119,381	751,353,958			77,425,472	84,531,735	1,922,430,546
1938		1,064,465,214	849,334,351			125,143,116	123,666,494	2,162,609,175
1939		1,423,890,653	424,483,385	162,000		127,747,961	157,866,769	2,134,150,768
1940		1,485,773,775	709,263,582	36,742,625		150,836,998	121,812,490	2,504,429,470
1941		1,703,546,928	719,904,807	176,071,468		147,313,336	169,211,068	2,916,047,607
1942		2,018,797,639	931,649,097	218,942,508		147,194,710	214,827,111	3,531,411,065
1943		2,270,998,304	698,824,005	317,918,911		136,603,939	242,308,268	3,666,653,427
1944		2,498,644,369	808,165,629	366,233,630		133,343,018	273,414,730	4,079,801,376
1945		2,790,843,354	952,718,120	301,541,683		134,347,670	391,294,776	4,570,745,603
1946		2,883,826,311	875,101,157	230,492,009		144,766,745	547,925	4,134,734,147
1947		2,899,478,095	899,488,444	68,659,248		152,426,399	44,532,211	4,064,584,397
1948		3,117,355,339	1,138,442,925	190,998,188		234,752,768	23,057,766	4,704,606,986
1949		3,295,138,908	906,810,637	286,063,958		338,396,740	17,001,616	4,843,411,859
1950		3,516,647,144	866,887,536	420,543,049		250,693,384	2,826,947	5,057,598,060
1951	522,486,040	4,092,724,323	1,109,835,070	315,402,159		330,605,974	701,723	6,371,755,289
1952	480,309,148	4,579,771,469	1,029,481,213	186,446,093		390,195,668	28,755,714	6,694,959,305
1953	476,411,947	4,837,562,767	544,948,791	208,405,922		457,219,553	14,717,935	6,539,266,915

Table A8.2 (cont.). *Riksbank liabilities and equity 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Liabilities to international organisations	Notes	Deposits: non-interest bearing	Deposits: interest-bearing	Deposits: special	Equity	Other liabilities	Total assets = total liabilities
1954	469,550,705	5,090,662,672	440,889,793	98,215,941		495,598,754	8,541,263	6,603,459,128
1955	466,588,250	5,322,483,497	747,259,958	210,089,485		511,374,138	14,513,934	7,272,309,262
1956	462,807,240	5,601,949,756	504,382,515	519,371,289		529,513,491	5,976,722	7,624,001,013
1957	419,276,068	5,842,574,385	414,791,537	1,044,409,074		561,179,979	43,590,006	8,325,821,049
1958	415,078,005	6,062,511,199	323,108,562	360,547,678		691,847,228	37,895,893	7,890,988,565
1959	581,870,742	6,273,413,882	285,243,647	387,329,975		810,669,594	32,807,255	8,371,335,095
1960	582,165,703	6,562,857,979	274,213,708	1,155,490,799		952,285,336	45,595,992	9,572,609,517
1961	452,563,105	6,880,584,296	373,505,991	1,253,963,031		1,059,424,356	115,001,439	10,135,042,218
1962	531,177,965	7,350,028,558	334,927,245	904,031,357		557,455,290	20,180,005	9,697,800,420
1963	505,266,225	7,872,515,594	309,185,139	866,870,537		530,438,804	6,191,946	10,090,468,245
1964	401,427,392	8,392,573,583	219,870,043	968,881,016		597,761,302	10,161,453	10,590,674,789
1965	207,618,062	8,750,046,206	239,021,726	1,139,867,051		713,148,466	6,579,556	11,056,281,067
1966	478,866,224	9,299,117,920	217,619,697	1,276,928,168		843,927,809	4,226,462	12,120,686,280
1967	538,096,000	9,970,883,024	240,943,999	989,584,641		911,315,685	5,447,006	12,656,270,355
1968	601,478,254	10,589,764,236	278,184,321	882,754,843		1,109,146,539	9,857,340	13,471,185,533
1969	0	10,962,486,000	632,690,000		1,073,077,000	1,236,031,000	19,727,000	13,924,011,000
1970	195,547,000	11,318,999,000	594,100,000		1,250,072,000	1,406,217,000	12,456,000	14,777,391,000
1971	375,445,000	12,703,640,000	676,211,000		1,050,737,000	1,444,870,000	15,731,000	16,266,634,000
1972	553,662,000	13,924,590,000	1,094,316,000		1,047,279,000	1,478,779,000	12,426,000	18,111,052,000
1973	588,738,000	15,229,410,000	1,174,574,000		1,240,551,000	1,770,597,000	18,520,000	20,022,390,000
1974	588,738,000	17,273,886,000	4,890,732,000		2,280,952,000	2,150,363,000	120,182,000	27,304,853,000
1975	539,406,000	20,106,216,000	1,794,367,000		4,466,240,000	2,338,930,633	929,374,202	30,174,533,835
1976	522,144,000	22,112,967,000	2,049,474,000		3,319,976,000	2,885,402,307	926,392,630	31,816,355,937
1977	605,772,000	24,419,324,000	1,924,184,000		2,864,347,000	4,589,357,510	2,007,920,862	36,410,905,372
1978	589,470,000	27,747,414,000	2,391,149,000		2,387,263,000	3,839,715,963	3,374,282,971	40,329,294,934
1979	840,904,000	31,580,294,000	10,212,891,000		5,569,815,000	6,582,584,000	1,822,342,000	56,608,830,000
1980	1,126,000,000	34,420,000,000	2,905,000,000		5,718,000,000	8,738,000,000	1,598,000,000	54,505,000,000
1981	1,573,000,000	37,055,000,000	4,755,000,000		4,169,000,000	15,313,000,000	1,684,000,000	64,549,000,000
1982	1,624,000,000	38,985,000,000	5,632,000,000		3,889,000,000	22,762,000,000	2,089,000,000	74,981,000,000
1983	1,998,000,000	42,719,000,000	2,501,000,000		4,502,000,000	29,122,000,000	1,203,000,000	82,045,000,000
1984	2,064,000,000	46,520,000,000	1,715,000,000		12,953,000,000	36,511,000,000	497,000,000	100,260,000,000
1985	2,190,000,000	48,095,000,000	1,670,000,000		28,204,000,000	38,330,000,000	501,000,000	118,990,000,000
1986	2,039,000,000	55,869,000,000	9,435,000,000		36,215,000,000	37,724,000,000	1,791,000,000	143,073,000,000
1987	2,047,000,000	58,225,000,000	10,168,000,000		28,012,000,000	53,588,000,000	362,000,000	152,402,000,000
1988	2,035,000,000	61,514,000,000	19,404,000,000		23,519,000,000	56,036,000,000	2,176,000,000	164,684,000,000
1989	2,017,000,000	68,308,000,000	21,247,000,000		26,530,000,000	57,011,000,000	3,102,000,000	178,215,000,000
1990	1,985,000,000	71,979,000,000	22,873,000,000		14,962,000,000	61,956,000,000	3,035,000,000	176,790,000,000
1991	1,978,000,000	76,099,000,000	12,460,000,000		6,874,000,000	68,366,000,000	90,083,000,000	255,860,000,000
1992	2,413,000,000	73,945,000,000	20,604,000,000		2,386,000,000	64,084,000,000	190,815,000,000	354,247,000,000
1993	2,835,000,000	75,722,000,000	21,128,000,000		1,457,000,000	83,437,000,000	85,394,000,000	269,973,000,000
1994	2,699,000,000	76,442,000,000	16,576,000,000		922,000,000	64,536,000,000	111,584,000,000	272,759,000,000

Table A8.2 (cont.). *Riksbank liabilities and equity 1668–2011 in SEK. For conversion factors, see Table 8.1.*

	Liabilities to international organisations	Notes	Deposits: non-interest bearing	Deposits: interest-bearing	Deposits: special	Equity	Other liabilities	Total assets = total liabilities
1995	2,457,000,000	76,660,000,000	18,935,000,000		586,000,000	76,571,000,000	82,092,000,000	257,301,000,000
1996	2,448,000,000	80,791,000,000	1,473,000,000		121,000,000	87,332,000,000	40,429,000,000	212,594,000,000
1997	2,641,000,000	82,795,000,000	1,968,000,000		34,000,000	93,884,000,000	7,847,000,000	189,169,000,000
1998	2,838,000,000	86,268,000,000	1,679,000,000			119,133,000,000	4,456,000,000	214,374,000,000
1999	2,899,000,000	98,450,000,000	4,457,000,000			115,458,000,000	7,501,000,000	228,765,000,000
2000	3,066,000,000	97,663,000,000	108,000,000			125,490,000,000	6,928,000,000	233,255,000,000
2001		107,111,000,000	48,000,000			116,568,000,000	11,805,000,000	235,532,000,000
2002		106,984,000,000	87,000,000			89,197,000,000	4,716,000,000	200,984,000,000
2003	2,654,000,000	108,940,000,000	540,000,000			72,417,000,000	1,753,000,000	186,304,000,000
2004	2,537,000,000	108,894,000,000	613,000,000			65,340,000,000	5,472,000,000	182,856,000,000
2005	2,797,000,000	111,075,000,000	250,000,000			84,038,000,000	10,447,000,000	208,607,000,000
2006	2,540,000,000	112,380,000,000	121,000,000			71,410,000,000	14,234,000,000	200,685,000,000
2007	2,517,000,000	114,324,000,000	143,000,000			82,629,000,000	12,313,000,000	211,926,000,000
2008	2,979,000,000	112,273,000,000	206,696,000,000			119,417,000,000	258,846,000,000	700,211,000,000
2009	25,216,000,000	110,663,000,000	171,163,000,000			116,298,000,000	285,498,000,000	708,838,000,000
2010	23,275,000,000	105,401,000,000	5,142,000,000			108,299,000,000	84,809,000,000	326,926,000,000
2011	23,754,000,000	100,136,000,000	16,875,000,000			119,266,000,000	87,886,000,000	347,917,000,000

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