1.
Introduction to *Historical Monetary and Financial Statistics for Sweden: Exchange rates, prices, and wages, 1277–2008*

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1.1. Background to the project

This book presents new evidence on the long-run evolution of Sweden's monetary and financial system, beginning in the Middle Ages and leading up to the present day. These new series have been generated as part of a research project run by Sveriges Riksbank, *Historical Monetary and Financial Statistics for Sweden*. In this project, a group of academic scholars from the disciplines of economic history and economics have compiled existing evidence and assembled new data. The present volume presents chapters dealing with exchange rates, consumer prices and wages.

The overall ambition of this project has been to construct time series that are consistent over time and adjusted so as to fit the definitions that are applied today. There is a great difference between compiling contemporary statistics, for which data are often easily accessible, and historical statistics, where the availability of data is more of a problem. Linking long-run time series requires not only an understanding of their economic importance but also thorough knowledge of the relevant historical circumstances under which the data were generated in the past. Needless to say, this makes great demands of the researchers compiling these 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, the relation between money supply and inflation, or detecting specific long-run patterns in the macroeconomy, require that data are consistent and comparable across

The Gate Coin (1885), by Johan August Malmström (1829–1901), a Swedish artist associated with the Symbolist movement. It was quite common in Sweden for children to earn money by opening gates for a passing equipage. The gate money was usually one to five öre per equipage, sometimes more. In 1885, five öre (= 1/20 krona) was the equivalent of a male agrarian worker's pay for around 20 minutes' work; it could buy one kilogram of potatoes or one egg.
Source: http://commons.wikimedia.org/wiki/File:Grindslanten.jpg

time periods. Economic forecasting can also be based on consistent historical series that go a long way back in time, not just the latest 10 to 15 years. 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 to the recent financial turmoil that started in 2007.

It is our intention that the series generated within this project will not only be used in 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 this volume, as well as additional material used to construct the series, are freely available on the web site of the Riksbank.[1] This database also publishes series of

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

money supply, interest and stock returns, and state loans. There are also plans to include other monetary and financial statistics.

A main source of inspiration for this project is a similar recent project at Norges Bank. In the fall of 2004, the Bank published the volume *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 project is arguably unique in its scope and explicit focus on building a broad historical statistical 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 Sveriges Riksbank shoulder the responsibility for building up a new public access database with historical monetary and financial statistics? There are several reasons. First, building and maintaining a scientific database is a public good that individual researchers cannot be expected to provide. As scholars regularly tend to move on to different places or topics, they are unable to provide the continuity needed to maintain a scientific database. 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 a long-standing tradition in taking an active part in promoting the Swedish monetary and financial system, as well as in 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] Third, in the 1920s the Riksbank initiated a research project that much resembles ours. Although it was mainly aimed at writing the history of the Bank, a considerable part of the undertaking was the assembly of historical monetary and financial statistics, including long-run series on prices, interest rates, exchange rates and bank balance sheets (Sveriges

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

3 One can, of course, discuss whether Sveriges Riksbank was the first central bank in a modern sense. The Bank of England was established somewhat later, in 1694, but performed more central bank-like practices, such as lender of last resort, before Sveriges Riksbank did (Brisman, 1918).

Exchange rate notations on the Swedish riksdaler in marks kopparmynt in the primary material used in Chapter 4. The material shows, for example, that in June 1655, one riksdaler was valued at 16 marks 4 öre kopparmynt (=16.5 marks kopparmynt). The sum was the equivalent of a male unskilled labourer's pay for around four days' work in Stockholm (see Chapter 9).

Source: Sandbergska samlingen, vol. OO (Riksarkivet), f. 631a.

Riksbank, 1931).[4] A fourth reason why the Riksbank should take responsibility for a project like this is that it continues where Norges Bank 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.

4 *Sveriges riksbank 1668–1918–1924: bankens tillkomst och verksamhet* was published between 1918 and 1931 and deals with the history of the Riksbank and monetary conditions since the establishment of the Riksbank in 1668 (to some extent, the earlier history of Stockholms Banco is also taken up). This work was produced by the Riksbank's statistical department. Five volumes were published, altogether 2,832 pages. Volumes I–IV are arranged chronologically. Volume V contains a table annex of 221 pages, an overview of the composition of the board of governors and a history of coins and banknotes from the earliest coins until the present. Volume I also contains tables. The statistical table annex in Volume V consists of four parts: 1) statistics on the Riksbank 1668–1924, 2) exchange rates 1668–1924, 3) the private banks 1834–1924, and 4) the Swedish banks' position with regard to other countries.

1.2. Contents of this volume

The nine remaining chapters present novel time-series evidence collected exclusively for this project. In all chapters, the reader is offered a careful description of the making of the series as well as an introduction to the series as such and how they have evolved over time.

The major contribution of the chapters is the detailed accounts of the construction of the series. These accounts include details on how and from where the underlying data were assembled but also to what extent the series have been adjusted so as to guarantee 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, no continuous wage series covering the entire period from the Middle Ages to the present exists, for the simple reason that the nature of work has changed entirely over time. Instead, when constructing a composite long-run series, wages for different types of work are combined by making specific adjustments to possible breaks between the constituent series. Similar problems arise when different price series are to be spliced together when constructing a historical Consumer Price Index.

In Chapter 2, Rodney Edvinsson presents an overview of the monetary standards in Sweden from the Middle Ages to the present, and how they evolved from a commodity to a fiat standard. The monetary history of Sweden is both fascinating and perplexing. The foundation of the Riksbank, the world's oldest central bank, is in itself a consequence of a Swedish peculiarity in the 17th century: the copper standard. At the end of the chapter there is a list of monetary terms historically in use in Sweden, mostly the names of various domestic currencies.

The theme in Chapters 3, 4, 5, 6 and 7 is exchange rates. Chapters 3 and 4 focus on the relation between various currencies used as means of payment in Sweden from the Middle Ages to the early 19th century. In Chapters 5, 6 and 7, foreign exchange rates in 1658–2008 are assessed.

In Chapter 3, Rodney Edvinsson, Bo Franzén and Johan Söderberg present extensive new evidence on the evolution of the Swedish monetary system in the first half of the second millennium. It was in this period that parts of the economy came to be monetarised. However, during the Middle Ages the monetary system was decentralised, with different currencies circulating in different provinces, and it was not until the 16th century that a common monetary system was formed in the Kingdom of Sweden-Finland.

In Chapter 4, Rodney Edvinsson discusses various domestic currencies that circulated in Sweden-Finland 1534–1804. He deals with the period when multiple domestic currencies existed at floating exchange rates relative to each other. These currencies were based on silver, gold and copper, but it was also in this period that pure fiat money came into circulation.

In Chapter 5, Rodney Edvinsson deals with the foreign exchange in 1658–1804. It was during the 17th century that a foreign exchange developed. The most-traded

Left, a copper plate with the nominal value of two daler silvermynt (copy). In 1742 this amount was equivalent to wages for three days' work; today, that would correspond to several thousand SEK (see money on the right).

bills of exchange were on Amsterdam and Hamburg, reflecting Sweden's close economic relations with Germany and Holland.

In Chapter 6, Håkan Lobell deals with foreign exchange during 1803–1914, a period when Sweden was first on a silver standard, and then switched to a gold standard in 1873. The foreign exchange underwent a major transformation. Since the gold points are significantly narrower than the silver points, the volatility of the foreign exchange decreased significantly after 1873. In the 18th and 19th centuries, bills on London became more important, as England overtook Holland economically and London became the centre of the international financial markets.

In Chapter 7, Jan Bohlin provides an overview of Swedish 20th-century exchange rates, including the construction of a composite trade-share weighted exchange rate index for Sweden in 1914–2008. This index is used to trace the strength of the Swedish currency during various periods. In the 20th century the dollar was the most important quoted foreign currency, as the United States overtook Britain as the major power.

In Chapter 8, Rodney Edvinsson and Johan Söderberg present a new long-run series on the consumer price index for Sweden. The authors have compiled newly located evidence in the Middle Ages and spliced it with later series, creating the longest continuous Consumer Price Index series for Sweden to date.

Chapters 9 and 10 compile historical data on wages in Sweden from the Middle Ages to the present, making it possible to assess the long-term development of real wages.

In Chapter 9, Johan Söderberg deals with wages in the pre-industrial era, mainly based on unskilled labourers in Stockholm. He uses the Consumer Price Index to deflate nominal wages, to follow the evolution of real wages. An interesting result is that real wages were basically stagnant before the industrial breakthrough.

In Chapter 10, Svante Prado presents long-run wage series between 1860 and 2007. He focuses on female and male manufacturing workers. During this period real wages have risen continuously, which can be contrasted to the pre-industrial period discussed in Chapter 9. The most astonishing leap took place in the aftermath of the First World War, due to the restriction of working hours.

1.3. A bird's-eye view of the second millennium in Sweden

This book covers the monetary history of Sweden in most of the second millennium. Although the book title sets the beginning at 1277 (as the first documented exchange rate notation is from that year), Chapter 3 also discusses developments of the monetary system during the late Viking Age and its first coins, minted as early as 995. Figures 1.1, 1.2 and 1.3 provide a long-term view of some important monetary variables. Figures 1.1 and 1.2 present the annual growth rates of prices and real wages, respectively, per century. Figure 1.3 presents the indices of silver's purchasing power in Sweden and UK/England.[5] The correlation between the two indices is very strong, which shows that the Swedish CPI presented in Chapter 8 gives reasonable results concerning long-term developments when compared to the UK/England.

Covering such a long period, and attempting to construct various indicators to describe developments over centuries, is of course not without problems. Elements of anachronism are inevitable whenever historical generalizations are to be made. Following exchange rates, inflation and real wages through time requires definitions that are applicable to all of the investigated periods. The chapters of this book therefore put much effort into conceptual issues.

One of the most obvious anachronisms throughout the book is our use of the name Sweden, as also discussed in Chapters 2, 3 and 4. The historical meaning of the Kingdom of Sweden has changed over time, including redrawings of geographic borders, constitutional regime switches determining the right to issue currency, charter banks and so forth.

Monetary history is closely connected to political history. Changed borders usually changed 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

5 The purchasing power of silver is set equal to 100 for the OECD in 2005, which implies that in that year it stood at 82.6 in Sweden and 87.7 in UK. This is based on household PPPs for the final consumption index. See OECD (2009-01-29).

of the European Union and the euro. While macroeconomic historical data, such as GDP, are often constructed for countries within present-day borders, this method is not as meaningful to apply to, for example, exchange rates. Parts of present-day Sweden are therefore disregarded in this volume, which at the same time does cover areas that historically belonged to and were integrated with the Swedish realm, but are not part of present-day Sweden. The monetary history of Sweden is also closely connected to the monetary history of other Nordic countries. Throughout history there have been several monetary and political unions between various Nordic countries.

For the Middle Ages it is particularly difficult to write a distinctly Swedish monetary history. Figure 1.3 shows that the purchasing power of silver was higher in Sweden than in UK/England, which reflects the backwardness of the Swedish economy. As discussed in Chapter 3, during most of the Middle Ages there was no unified monetary system in Sweden. The Swedish mark was linked at times to the mark of other Nordic countries and Lübeck. In the 13th century, present-day Finland became a consolidated part of the Swedish kingdom, and remained so up to 1808/09, when it was conquered by Russia. Although Gotland, an island in the Baltic Sea, was part of Sweden up to 1361, it had its own currency that also circulated in parts of the Swedish mainland up to the 15th century. Scania, Halland and Blekinge in the south of present-day Sweden belonged to Denmark, except for a brief period in the 14th century, while Jämtland in the northwest of present-day Sweden was part of Norway. It was not until the 17th century that these territories, including Gotland, were conquered by Sweden.

Sweden (including Finland), Norway and Denmark formed a union in 1397 under the rule of Queen Margaret I of Denmark. Although Sweden continued to mint its own coins, counting in Danish currency was common in the south of Sweden up to the mid-16th century, as discussed in Chapter 3. Continual tension of an economic nature within the union led to a conflict between Swedes and Danes in the 15th century. The union finally fell apart in the early 1520s, when King Gustav (Eriksson) Vasa assumed power over Sweden and Finland. Denmark and Norway continued the union, which lasted until 1814.

As discussed in Chapter 3, while the fine silver content of the Swedish mark deteriorated during the Middle Ages, prices expressed in Swedish marks were stable (except for a brief period after the mid-14th century). This was an effect of the rising purchasing power of silver (see Figure 1.3), which, in turn, was a consequence of a declining population and trade following the Black Death (probably the most severe economic crisis of the second millennium) and other epidemics. As shown by Johan Söderberg in Chapter 9, real wages reached a high point in the late 15th century, which was also the low point of the population curve. The highest real wage rate during the Middle Ages, reached in 1478, was not surpassed until the 1890s. Such a peak in real wages in the late 15th century has also been observed for England.[6]

6 Campbell (2009, p. 29).

The 16th century was the opposite of the Middle Ages. The process of political decentralization was reversed under Gustav (Eriksson) Vasa . The Protestant Reform and the seizure of Church property further strengthened the central power. The monetary system was unified. The purchasing power of silver and real wages declined due to population growth (see Figures 1.2 and 1.3), expansion of trade and the influx of silver to Europe. Inflation was further accentuated by successive debasements (a well-known practice that has been in use as far back as the Roman Empire). In 16th-century Sweden, the stronger state implied greater possibilities to manipulate the currency in order to increase seignorage during times of war. In fact, as shown in Figure 1.1, the Swedish inflation rate in the 16th century was even higher than in the 20th century.

The 17th century saw the rise of Sweden as a great power, from being an undistinguished country. Due to its involvement in the Thirty Years' War, Sweden was transformed into a leader of Protestantism. Beside Gotland, Scania, Halland, Blekinge and Jämtland, also Estonia (from 1561), Livonia, Kexholm, Ingria, Western Pomerania, Wismar, and Bremen and Verden came under its rule, although the Swedish currency was not introduced in all territories (see, for example, Chapter 5 concerning the exchange rate on Swedish Pomerania). Sweden's power was partly based on the expansion in mining. A monetary innovation was introduced in 1624, the copper standard.

Although the combined copper and silver standard caused some deterioration of the currency, the heavy copper plates limited its magnitude, and inflation was lower than in the previous century (see Figure 1.1). As discussed in Chapter 9, population growth slowed down, which together with the expansion of mining and new incomes from the conquered territories caused real wages to rise somewhat during the 17th century (see Figure 1.2).

As discussed in Chapter 4, 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. Occasionally additional currencies existed. In Sweden, it was during this period of multiple currencies circulating alongside each other that the fiat standard arose. After 1710 the use of transferred notes expanded significantly. However, the first experience of a fiat standard was not with paper money, but with coin tokens towards the end of the Great Northern War (1700–21). As shown in Chapter 5, in comparison with its neighbours, Sweden's currency weakened in the 17th and 18th centuries.

The Great Northern War ended the Swedish empire. Estonia, Livonia, Ingria and parts of Finland were ceded to Russia. During the Age of Liberty (1718–72), monarchy was limited by parliamentary rule (which, however, was not a democracy). The press developed substantially during this period. From this period we also have rich sources on economic statistics, such as prices and exchange rates, published by various papers. The Age of Liberty ended with Gustav III's coup d'état in 1772. An absolute monarchy lasted up to 1809, when King Gustav IV Adolf, the son of Gustav III, was

King Gustav I (Vasa) in 1557 or 1558.
Source: Nationalmuseum.

removed from power by a new coup staged by radicalized officers, fuelled by the defeat of Sweden in its war against Russia. The new Swedish constitution of 1809 was influenced by Montesquieu's ideas of the balance of powers. One of Napoleon's generals became king of Sweden in 1818 as Karl XIV Johan.

Economically, the 18th century exhibited a continuation of some of the trends from the 16th century. The circulation of fiat money, which came to dominate money supply, was followed by an increased rate of inflation (see Figure 1.1). Population growth caused real wages to decline (see Figure 1.2) to a low point at the time of the Napoleonic wars, as discussed in Chapter 9. Various studies of food consumption show that the calorie intake decreased between the 16th and 17th centuries and was then roughly stagnant between the 17th and 18th centuries.[7]

In 1776–7 a major currency reform was implemented; the copper standard was abolished and the riksdaler silver coin was introduced 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. In 1789–1834 the inflation rate was substantial but Sweden was not alone in experiencing a monetary crisis during the Napoleonic wars. For example, the Russian and Danish currencies deteriorated more than the Swedish.

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. At first the union did not lead to any monetary homogenization; Norway formed its own central bank in 1816 and issued its own currency. After positive Swedish experiences of linking the currency to a fixed silver rate since 1834, however, plans for monetary cooperation emerged. Following the introduction of the gold standard in 1873, the krona was introduced as the common currency unit in Sweden, Denmark and Norway, and a formal Scandinavian currency union was formed (see further Håkan Lobell's discussion in Chapter 6). During the entire silver and gold standard periods in the 19th century, Swedish inflation rates were quite low (see Figure 1.1).

As discussed by Johan Söderberg in Chapter 9, in the 19th century the Malthusian trap was avoided thanks to technological development and the spread of potatoes. Real wages started to increase despite the rising population (see Figure 1.2). From 1850, GDP per capita started to rise significantly and doubled during the course of the second half of the 19th century, which was followed by increases in real wages as well. This was preceded by important political changes. The struggle between conservative and liberal political forces peaked at the end of the 1830s and was followed by several important liberal reforms in the period 1840–66. The guild system was abolished in 1846. Full freedom of trade was introduced in 1864.

The First World War ended the monetary stability of the previous century, as discussed in Chapter 7. The gold standard was suspended in 1914, and although it

7 Morell (1986).

was later reintroduced in 1922–31 and under Bretton Woods in 1951–71, price stability could not be maintained.

In Chapter 7 Jan Bohlin concludes that there were two periods when the value of the krona changed significantly: 1915–24, when it appreciated, and 1977–93 when it depreciated in several steps. The exchange rate reflects the relative economic development of Sweden vis-à-vis other rich countries. During and after the First World War, Sweden's relative economic position was strengthened. Sweden developed from one of the poorest countries in Western Europe in the 19th century, to one of the richest in the 1960s. Real wages increased substantially during the course of the 20th century, as shown by Figure 1.2 and further discussed by Svante Prado in the final chapter.

Inflation was aggravated in the 1970s, 1980s and early 1990s. During the recessions in the late 1970s, early 1980s and early 1990s, Sweden's currency weakened, thus contributing to economic revival but also causing price instability. How these devaluations affected long-term Swedish economic growth is still a debated issue. The manipulation of the Swedish currency by political authorities at times of difficulty is a well-established practice, and its historical roots can be traced to the 16th, 17th and 18th centuries. The issue of price and exchange rate stability is not new; it has been debated continually from the Middle Ages to the present. Commitments to a stable currency have been made time and again in history, but great events, such as wars and deep economic crises, often, but far from always, have shattered such assurances.

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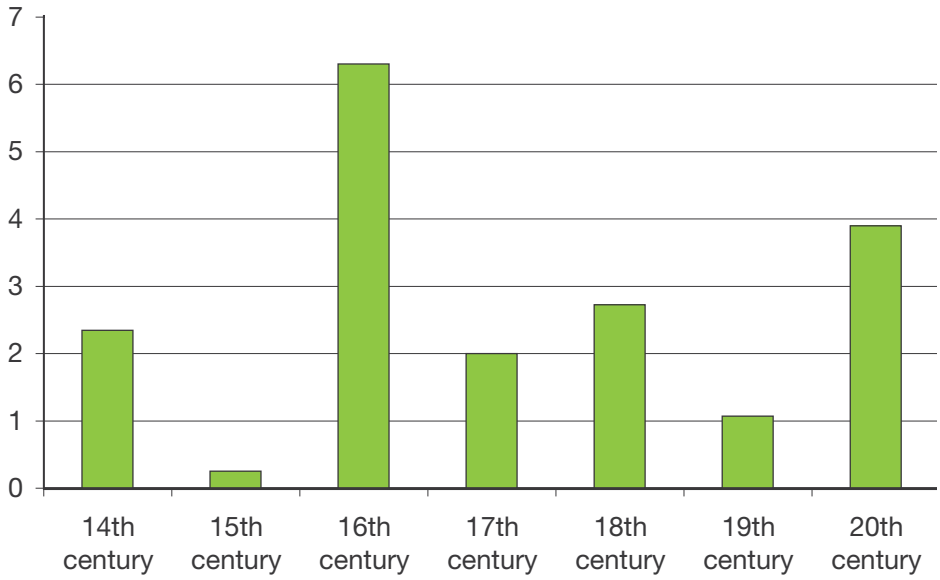
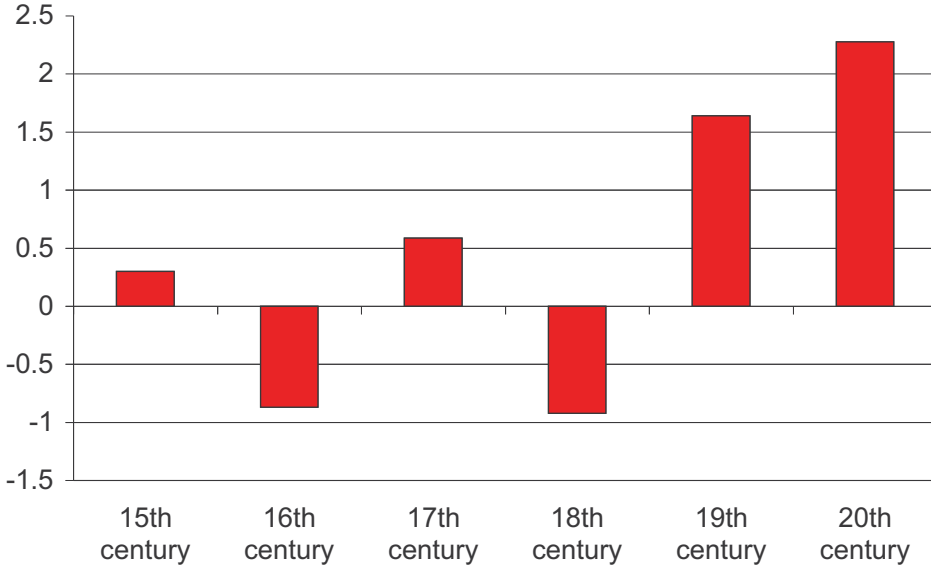
Figure 1.1. *The average annual rate of inflation (per cent) in Sweden from the 14th to the 20th century.*



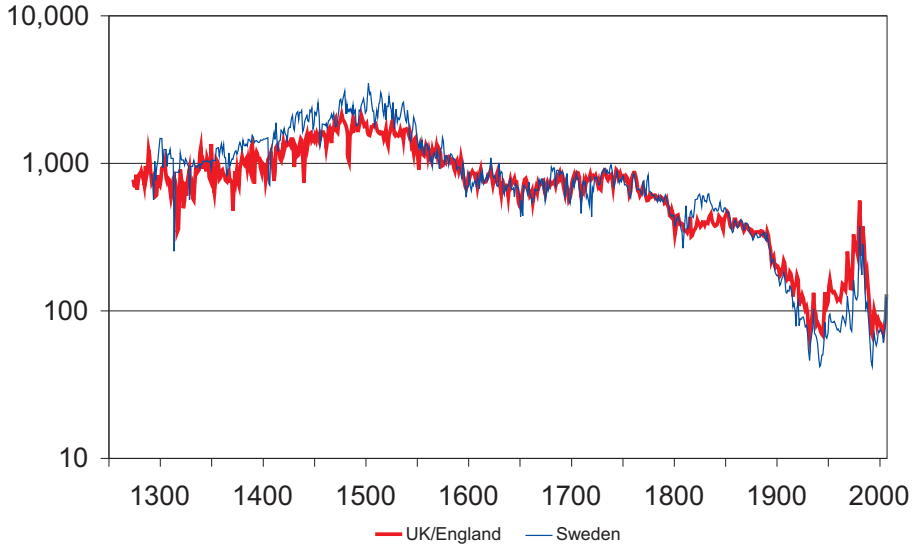
Source: Chapter 8.

Figure 1.2. *The average annual growth rate (per cent) of real wages in Sweden from the 15th to the 20th century.*



Source: Chapters 9 and 10.

Figure 1.3. *The purchasing power of silver in UK/England and Sweden 1273-–2006 (OECD average in 2005 =100).*



Source: Based on Chapters 3, 4, 5, 6, 7 and 8, Officer (2008), Lindert (2006), and OECD (2009-01-29).

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