8.
The evolution of Swedish consumer prices, 1290–2008[1]

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8.1. Introduction

The purpose of this chapter is to describe the construction of a Consumer Price Index (CPI) for Sweden 1290–2008. The aim is not to present new empirical material, but rather to use the rich empirical material collected in earlier studies on the price history of Sweden to construct a price index that as far as possible uses a consistent method over time.[2]

The chapter also discusses some theoretical and conceptual problems in relation to constructing a historical CPI. An index covering a span from the Middle Ages to the present raises much more questions than modern-type consumer price indices. It raises the issue of what inflation actually is.

8.2. Methodological issues

A price index is a measure of the level of prices in the compared year (*t*) in relation to the level of prices in the price reference period (*0*). A volume (or real) index is derived by dividing the ratio between nominal values in two years by the price index, a procedure termed 'deflation'. The price indices can be constructed in various ways, depending on how the individual prices are weighted.

The two most common price indices are the CPI and the GDP deflator in market prices (the deflator is used to transform nominal values into volume values, and can be seen as a price index). The GDP deflator is in a certain sense a broader price

1 We want to thank Ulf Jonsson, Astrid Kander, Per Simonsson and Daniel Waldenström for commenting earlier versions of this chapter.

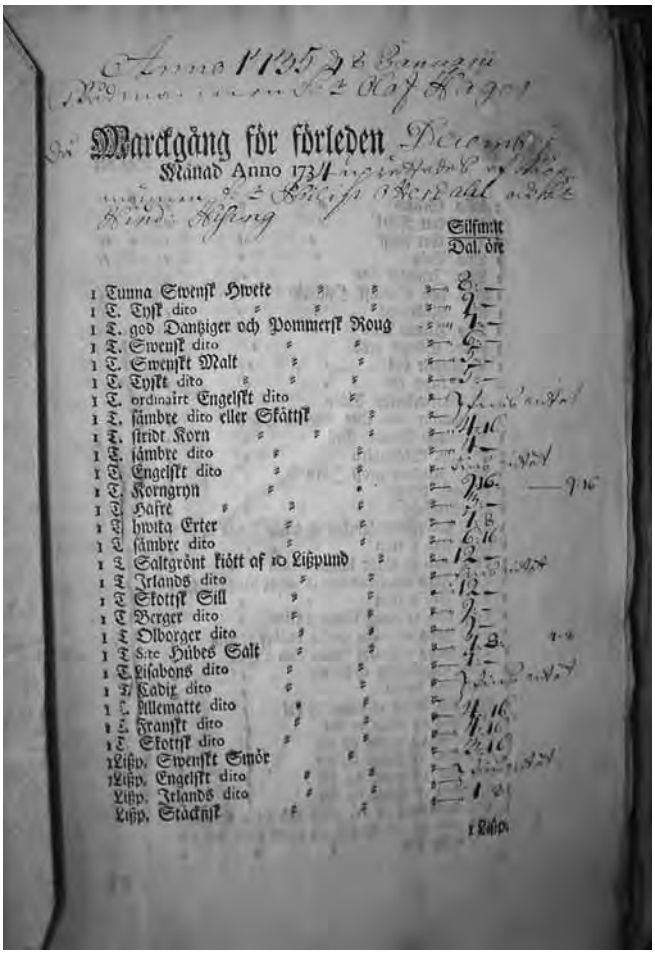
2 The terminology of this chapter follows as closely as possible the one used in *Consumer price index manual* (ILO and others, 2004).

A store in Stockholm in 1910.
Source: Stockholm City Museum.

index, and is a weighted average of the price indices for the final demand of households and NPISH (Non-Profit Institutions Serving Households), government final demand, gross fixed capital formation and net export.

The CPI should not be confused with the deflator of household and NPISH final consumption used in the national accounts; they are based on different methods.[3] The deflator of household and NPISH final demand shall include all types of consumption. This is not necessarily the case in calculations of a CPI. A CPI can be based on a narrower range of goods and services, for example, only private consumption in towns. The CPI normally also covers a smaller number of households (for example, the wealthiest households are sometimes excluded). Often imputed values of rents for self-owned dwellings are included, while imputed values of agricultural products for own use are excluded. The latter are included in the deflator of household and NPISH final demand. The index principles of the two indices often differ. While the CPI mostly uses quantities from an earlier period, for example in a Laspeyres price index, the national accounts mostly use quantities of a later period,

3 ILO and others (2004, p. 58).



Marckgång för förleden Månad Anno 1734

Stilsmitt Dal. öre

1 T.	Tunna Swenſk Hwete	8 —
1 T.	Tyſk dito	4 —
1 T.	god Dantziger och Pommerſk Roug	4 —
1 T.	Swenſk dito	6 —
1 T.	Swenſkt Malt	5 —
1 T.	Tyſkt dito	5 —
1 T.	ordinairt Engelſkt dito	4 16
1 T.	ſämbre dito eller Skåttſk	4 16
1 T.	ſtridt Korn	4 —
1 T.	ſämbre dito	
1 T.	Engelſkt dito	9 16 — 9 16
1 T.	Korngryn	
1 T.	Hafre	7 8
1 T.	hwita Erter	6 16
1 T.	ſämbre dito	12 —
1 T.	Saltgrönt kiött af 10 Lißpund	12 —
1 T.	Irlands dito	7 —
1 T.	Skottſk Sill	4 8
1 T.	Berger dito	4 —
1 T.	Oldorger dito	
1 T.	Ste Hubes Salt	4 —
1 T.	Liſabons dito	
1 T.	Cadix dito	4 16
1 T.	Allematte dito	4 16
1 T.	Franſkt dito	2 16
1 T.	Skottſk dito	
1 Lißp.	Swenſkt Smör	1 —
1 Lißp.	Engelſkt dito	1 —
Lißp.	Irlands dito	
Lißp.	Stackfiſk	

There are a number of sources for pre-industrial prices in Sweden. These are price notations in Göteborg from December 1734 according to the market scales, which were semi-market prices. Source: Göteborgs rådhusrätts och magistrats arkiv före år 1900, L 1, vol. 6 (Göteborgs landsarkiv).

for example in a Paasche price index. The differences between the index principles are usually quite small if an annual chain index is applied.

One problem with price indices is that the pattern of consumption changes over time. Comparison over time becomes increasingly difficult. This makes chaining necessary, i.e. the price reference period is changed regularly, and the different consecutive time series are linked to each other with one common period as the base period. Chaining is preferable if the studied period is very long, as is the case with a historical CPI. The price level in the 21st century cannot be reasonably estimated on the basis of consumption weights pertaining to the 17th century. The preferred option is an annual chain index, but this presupposes knowledge of the composition of consumption in every year, which can be difficult to obtain for a historical price index (although historical national accounts could provide certain information in

The Christmas Fair*, by Georg von Rosen (1843–1923).*
Source: Nationalmuseum.

that direction). The second best option is to change the weights regularly, although not as often as annually. The period with a common price reference year or period is named a deflation period. This is also the chosen option in the present study for the period before 1914.

Furthermore, there is a theoretical difference between the cost of a representative basket of consumption products and the cost of guaranteeing a certain level of utility or welfare of a consumer. The former is called a Consumer Price Index, while the latter is a Cost-of-Living Index. A CPI measures the average change of prices, and is therefore best represented by the concept of a basket of products, a so-called Lowe

type index. This purpose also reflects the central bank concept of inflation, even though the CPI is not specifically designed to measure general inflation. The main purpose of a Cost-of-Living Index is, however, not to provide a general measure of inflation, but rather to serve as an instrument for deflating nominal wages in order to calculate real wages.[4] For example, the introduction of potatoes in the late 18th century enabled consumers to partly switch from rye and barley to potatoes. If the weight reference period is situated earlier in time, when potatoes were not part of consumption, a constant basket index will overestimate the cost of living in later periods compared to earlier periods.

Nevertheless, a Consumer Price Index (CPI) can be assumed to roughly approximate a Cost-Of-Living Index (COLI), especially if the basket of consumed products is changed regularly and a chain index is constructed.

There are also some price indices that can be assumed to better approximate a COLI, which has to do with consumer preferences and cross-elasticities of demand for the consumed products (i.e. the responsiveness of the quantity demanded for a good to the price change of another good). The more often the weight reference period is changed, when a chain index is constructed, the more such a price index tends to, at least theoretically, approach a COLI. The substitution effects depend on the cross-elasticity of various products.[5] Since we do not have access to annual changes in the composition of consumer products for earlier periods, the annual fluctuations in relative prices are actually the most reliable indicator of annual fluctuations in relative consumption quantities. Another problem is that the cross-elasticity of demand can vary significantly both between products and between types of expenditure at a more aggregated level. The price elasticity of individual foodstuffs can be high, but the price elasticity of food expenditures as a whole is probably quite low.

The main consideration behind constructing a historical CPI in this study is the central bank concept of inflation and to a lesser degree the notion of a cost-of-living index. This partly stands in contrast to previous studies on the cost of living in Sweden, for example Gunnar Myrdal's *The Cost of Living in Sweden 1830–1930*, whose main purpose was to 'serve as a means for the investigation of real wages in Sweden'.[6]

This study mainly uses the Laspeyres formula. The weights are quite difficult to estimate and the calculations are based on estimates of expenditure shares during certain base periods, which is possible if the Laspeyres formula is used. The Laspeyres price index is a measure of the level of prices of products i in period t in relation to period 0, the price reference period, which for the Laspeyres price index is the same as the weight reference period, b, the period of the quantities, q:

4 Statistiska centralbyrån (2001, pp. 7–9).
5 Grytten (2004).
6 Myrdal (1933, p. 49).

$$P_{0,t}^{L} = \frac{\sum_{i} p_{t,i} q_{0,i}}{\sum_{i} p_{0,i} q_{0,i}} = \sum_{i} \left(\frac{p_{t,i}}{p_{0,i}} s_{i}^{0,0} \right) \quad (1)$$

Formula 1 shows that the Laspeyres price index can be rewritten as a weighted arithmetic average of the price relatives using the expenditure shares in the price reference period ($s_i^{0,0}$) as weights.

Prior to 1850, consumption patterns generally did not change as much as they have done later. In a long-term perspective, volume GDP per capita was stagnant. Hence, the deflation periods are longer for the earlier periods.

Furthermore, the further back in time, the fewer the products that could be represented by longer price data time series; moreover, the data are often restricted to some or only one region. This of course makes it virtually impossible to construct an annual chain index, whereby the quantities are changed every year. The weights and the duration of deflation periods must take this into account.

Calculations of a CPI for modern times normally ignore barter transactions.[7] However, if the economy is dominated by barter transactions, such an approach is problematic. One theoretical problem is that prices only relate to goods sold on the market, while most produced goods were not traded. However, the existence of a market implies that producers had the alternative of either consuming the product or selling it on the market. Hence, there was an alternative cost for the use of product, which could be measured in price terms. Such an alternative cost would, of course, be lower than the market price since we have to deduct various transaction costs involved in trade. Nevertheless, the alternative cost should be related to the market price to some degree.

Periods of hyperinflation or high inflation also cause problems for the construction of a historical CPI. This is because in such periods prices can be expressed in prices of different types, one in the debased currency and one in a more stable currency unit, for example a foreign currency or previously minted coins in precious metal. At the end of such inflation periods the currency unit is often changed by devaluing the weaker currency, causing prices to fall back to previous levels. This is specifically addressed in this study by constructing two different CPIs, one that can be used to deflate other price series and another that better functions as a measure of inflation.

8.3. The currency unit for the CPI in this study

Since 1873, the Swedish currency unit has been the krona (SEK). However, before that year, the Swedish currency was changed on numerous occasions (see Chapters 2, 3, 4 and 6), which must be taken account of when constructing a historical CPI.

7 ILO and others, (2004, p. 19).

There were also periods, most notably 1624–1803, when domestic currencies existed side-by-side, with a fluctuating exchange rate between them. The development of a price index expressed in one of these currencies may, therefore, differ from the development of a price index expressed in another currency. As a general rule, the CPI should follow the currency that was used most frequently in transactions. Table 8.1 presents the currencies that are followed by the Consumer Price Index of this study for different periods.

Table 8.1: *The currencies followed by the Consumer Price Index presented in this study.*

Period	Currency
1290–1624	Mark penningar
1624–1776	Mark kopparmynt (in 1624 equal to mark penningar)
1776–89	Riksdaler specie (in 1776 equal to 72 marks kopparmynt)
1789–1855	Riksdaler riksgälds (in 1789 equal to the riksdaler specie)
1855–73	Riksdaler riksmynt (in 1855 equal to riksdaler riksgälds)
1873 onwards	Krona (SEK)

The currencies in Table 8.1 are the basis for the construction of a first variant of a CPI, which we call a deflator index. It is an index of prices expressed in the main currency unit: 1 SEK = 72 marks. This index is most suitable for deflating other price series, i.e. to estimate real or relative prices (see section 8.9 for concrete examples). However, a second variant, an inflation index, is also constructed to take into consideration times of very high inflation, when inflation money was circulated which later was replaced by a more stable currency. This occurred in six periods: 1351–4, 1361–4, 1521–4, 1561–76, 1590–3 and 1715–9. At the end of these inflation periods, the inflation coins could be exchanged for new coins, albeit at a much lower rate than was nominally assigned to the inflation coins. When prices were expressed in proper coins, they have been converted into prices in inflation coins by using the exchange rate between the inflation coins and proper coins.

This could be compared to modern times when zeros have been struck from inflation notes on various occasions, for example when the new mark was introduced in Germany in 1924 and was set equal to one trillion old marks. The introduction of new notes implies that prices of products are sold at a lower nominal figure, but in such a situation an inflation index should not record any dramatic deflation, since this is just a matter of changing one currency for another. This is most clearly shown when prices are recorded in both currencies during the overlapping period.

Genuine deflation can occur following a period of inflation, when the inflation money is appreciated for various reasons. An example of this is the deflation in Sweden in the early 1920s, when the CPI fell by more than 30 per cent. The direct cause was the reintroduction of the same relation of the krona to gold as before the First World War (see also Chapter 7).

Hungary in 1946, illustrating the effects of hyperinflation.

The inflation index is based on the exchange rate between the inflation money and the new coins that were introduced (see Chapters 3 and 4), and the annual change in the deflator index is corrected accordingly.

There were also two other inflation periods, 1624–1665 and 1789–1834, where it is not clear which currency to follow. The deflator index in these cases follows the inflation coins. The difference between those two periods and the six periods mentioned above is that in the former the inflation currency became the main currency afterwards, while in the periods 1351–4, 1361–4, 1521–4, 1561–76, 1590–3 and 1715–9 the old currency was restored.

The problem is most clearly illustrated by the development of the deflator index between 1574 and 1576, during which this index records a fall by 82 per cent. This should, however, not be interpreted as a period of severe deflation. What happened was that a new mark was introduced in 1575 with a higher fine silver content than the old mark (see Chapter 4). For example, while a 4-öre coin (a half mark) of 1572 contained 0.5142 grams fine silver, a 4-öre coin of 1575 contained 3.088 grams fine silver, i.e. a six-fold increase.[8]

8 Wallroth (1918, pp. 37 and 41).

The *Consumer Price Manual* argues that it is not necessary to refrain from having more than one CPI:[9]

'There is no necessity to have only a single CPI. When only a single CPI is compiled and published, there is a risk that it may be used for purposes for which it is not appropriate. More than one CPI could be published in order to meet different analytic or policy needs.'

The deflator and inflation indices, respectively, partly reflect different purposes of price indices. If the price index is to measure the cost-of-living in order to deflate nominal wages over time or to estimate the real price of various goods, then a deflator index could be used. However, if the price index is to measure inflation, the inflation index should be preferable, since a simple deflator does not always reflect actual inflation when currencies with the same name, but at different exchange rates, are used through time.

The two CPIs are presented in Table A8.1. To calculate price indices expressed in other Swedish currencies (for example riksdaler banco instead of riksdaler riksgälds in 1789–1803, or daler carolin instead of daler kopparmynt in 1624–1777), the exchange rates presented in Chapter 4 can be used to transform the CPI of this study.

8.4. The period 1290–1539

The data for constructing a CPI for the period 1290–1539 are based on price data collected by Bo Franzén and Johan Söderberg (2006).[10]

From the early 15th century the price data are quite rich for the most important commodities, though not for every year. Before that period, only a few years and a few commodities can be covered. The missing years have been interpolated for various commodities. The price of barley or unspecified grain has been interpolated using the price of rye, and vice versa. The interpolations are based on silver prices (see section 8.4.4 below); only in the second stage are they transformed into nominal prices.

The best data exist for seven goods: grain, beer, salt, oxen, butter, wax, and iron. Only for these goods, it seems, can price series covering fifty years or more be assembled. Grain prices are the most frequent. Before 1500, grain prices usually refer to unspecified grain or barley, not to rye, which was more expensive. The cultivation of rye gradually spread at the expense of barley, but the latter crop still dominated in the 16th century. The CPI of the present study also uses data on the prices of three other goods – rye, hops and copper. For these three goods data exist mainly from the 1460s onwards.

Though the focus on these goods is motivated by the state of the sources, the mix

9 ILO and others (2004, p. 33).

10 See also Söderberg (2007).

has some advantages. Iron and butter were Swedish export articles. During the Middle Ages, iron (and copper) became the dominant export articles from Sweden. Salt is the only good that was always imported. It also was the only imported good, besides hops in the late Middle Ages, that was vital in popular consumption. Oxen were exported in certain periods, but the beef trade was also subject to substantial changes in organization. Grain was of course the most essential good in the domestic economy, but in foreign trade it was rather marginal. Beer was an increasingly popular and important consumption good. The beer market widened during the late Middle Ages. This is closely linked to the increased use of hops in brewing, making for a more tasteful and durable beer. Compared to these goods, wax played a smaller role in the economy. It was mainly used for making candles for religious ceremonies.

8.4.1. Sources

The major part of the price quotations are from the province of Uppland, which included Stockholm, the largest town. Uppland probably was the most commercialized part of medieval Sweden, at least from the late 14th century.

Several oxen and butter prices, however, are from the southern province of Småland, bordering on Denmark. This reflects the regional division of labour, in which Småland and some western provinces had a prominent role in cattle-raising, but also the fact that oxen and cows were sometimes used as partial payment in land sales.

Finland was part of the kingdom of Sweden in the medieval era. For this reason, Finnish prices are also included, though their number is not large. Nearly all of them come from Turku (Åbo) in south-western Finland, which appears to have been fairly price-integrated with Uppland.

The majority of the price quotations stem from market transactions carried out by various institutions. Three sources are of particular importance:

Parish churches regularly sold the surplus of grain that resulted from tithes delivered by their tenants.[11] Many grain price quotations, and most wax prices, refer to transactions involving these churches.

The accounts of the City of Stockholm report many kinds of purchase. For instance, the City bought considerable amounts of beer to be consumed on festive occasions. About seven litres of beer per person was consumed at the annual May feast in Stockholm City Hall in the 1460s.

A third, very useful source is the large collection of medieval letters that has been published on the Internet by Riksarkivet (The National Archives): 'Svenskt Diplomatariums huvudkartotek över medeltidsbreven'. Currently, more than 40,000 documents have been registered and are digitally searchable. These documents report many market transactions in various goods. Some prices are valuations in connection

11 See, e.g., Andræ (1965).

From an exhibition at the Museum of National Antiquities, Stockholm.
No Swedish market price notations for consumer goods exist before 1290. However, a few prices are recorded in the provincial laws, mainly in connection with various fines. According to the Gutalag from the early 13th century, a dead person's relatives could demand the following payments for manslaughter:
- Slave – 225 grams of silver (above)
- Free non-Gotlander – 2 kg of silver (middle)
- Free Gotlander – 4.8 kg of silver (below).

with land transactions or the bequeathing of property. These prices seem to conform well to outright market prices.

Price tariffs set by the authorities are not used in this study. Tariffs generally aimed at lowering market prices during dearth, and it is not known to what extent such maximum prices were followed.

8.4.2. Units of measurement

For beer, one barrel is assumed to comprise 117.5 litres.[12]

For butter and wax, prices are often given per *lispund.* The *lispund* is assumed to equal 6.647 kg, which is the weight known from the 16th century.[13] Butter prices could also be given per barrel. This constitutes a problem, since there were at least three barrels in use in the butter trade: one of 13 (or 13½), one of 16 and one of 18 *lispund*.[14] The use of the 13 (or 13½) *lispund* barrel seems to have been limited to West Sweden, whereas the 16 *lispund* barrel was commonly used in Uppland and other parts of East Sweden. The 18 *lispund* barrel is documented from southern Sweden.

For copper, prices are usually given per ship pound (*skeppund* = 20 *lispund*). The weight of the medieval ship pound is not known for certain but was probably about 133 kg, which is the weight known from the 16th century.[15]

12 Sahlgren (1981, col. 58), and Morell (1988, p. 33).
13 Morell (1988, p. 10).
14 Hammarström (1956, p. 380 n 20), Dovring (1947, p. 204), and Jansson (1995, p. 274).
15 Jansson (1981, col. 544), and Morell (1988, pp. 10 and 46).

For grain, one *last* is assumed to equal 45 hectolitres.[16]

For iron, prices are usually given per *last* or *fat* (1 *last* = 12 *fat*). The weight of the medieval *fat* is not known for certain but is generally assumed to have been about 170 kg.[17] Hence, the iron *last* would correspond to about 2,040 kg. Prices refer to cut pieces of iron (osmonds), not to bar iron, which was not introduced until after the medieval period.

For salt, prices are usually given per barrel. The salt barrel is assumed to equal 15 *lispund* according to a regulation from 1478.[18] The *lispund* is assumed to equal 6.647 kg.[19] Consequently a barrel of salt is assumed to amount to 99.7 kg.

8.4.3. Nominal prices

Prices are expressed in the nominal currency, *mark penningar* (which during the late Middle Ages commonly was labelled *mark örtug*). Throughout the Middle Ages the following relations were defined in the monetary system (see also Chapter 3):

1 *mark penningar* = 8 *öre* = 24 *örtug* = 192 *penningar*.[20]

8.4.4. Silver prices

As mentioned above, the interpolation of missing values is based on so-called silver prices, which express prices in grams of silver per modern metric weight or volume unit. Silver prices also facilitate comparisons with international prices. It is particularly during periods of debasement, followed by recoinage, that interpolating missing values using silver prices is preferable to interpolating such values based on nominal prices, since the latter method could completely miss price increases caused by such debasements.

The fine silver content of the Swedish mark was gradually reduced during the Middle Ages, which is discussed further in Chapter 3. People were aware of this and therefore often specified the exchange ratio between the currency actually used and the stable silver mark (*mark lödig*) that was to be applied in each particular economic transaction. The gross weight of the silver mark is here, as in previous research, assumed to be 210.6 grams of silver, although the fine silver content was somewhat lower (assumed in Chapter 3 to be between 184 and 197 grams).

The calculation of the silver price of the various goods is based on these exchange rates. One example: in 1346, the price of an ox was 3 mark penningar. At the same time, the exchange rate of mark penningar to the silver mark was 5.0. For that year

16 Jansson (1981, col. 132).

17 *Nationalencyklopedin*, article 'Fat'.

18 *Stockholms stads tänkeböcker 1474-1483* (p. 183).

19 Morell (1988).

20 For the period after 1450 it is not completely clear whether some of the prices were expressed in mark penningar or mark danska, equal to ¾ mark penningar (see Chapter 3).

the fine silver content of the silver mark was 197 grams according to Chapter 3. Thus, one mark penningar was exchanged for 197/5 ≈ 39 grams of fine silver. The silver price of this ox of 3 mark penningar then equals (3/5)*197 ≈ 118 grams of fine silver.

8.4.5. Index construction

The index is constructed differently for each of the periods 1290–1330, 1330–1420 and 1420–1539 (see Table 8.2). For the period 1420–1539 ten commodities are covered: grain, rye, bear, butter, iron, copper, oxen, wax, salt and hops. With the exception of 1445, price data exist for at least one commodity in every year of this period. For 1330–1420 the price index is based on seven commodities: grain, rye, bear, butter, iron, copper and oxen. For 1290–1330 the index is mainly based on the price of grain, complemented with some annual data on the price of butter.

For the period 1420–1539, rye, grain and beer weigh most heavily (55 per cent), since vegetable products were the most important part of consumption.[21] The five per cent weight given to beer may seem rather small, but here we assume that the price of beer was largely determined by the price of rye and grain. Animal products (butter and oxen) are assumed to have accounted for 25 per cent of the total budget. The weight for non-food products is only 12 per cent. The relative weights for earlier periods are the same as for 1420–1539 (see Table 8.2), with the difference that some commodities are missing.

The annual fluctuations of the CPI in the period 1420–1539 should be interpreted with caution, since not all years could be covered. For the period 1290–1420, the CPI is an indicator, not of annual fluctuations, but rather of the long-term trend.

Table 8.2. *The weights (in per cent) in the present study for calculating the CPI in 1290–1539.*

Period	Grain	Rye	Beer	Butter	Iron	Copper	Oxen	Wax	Salt	Hops	Sum
1290–1330	46.15	30.77		23.08							100
1330–1420	33.71	22.47	5.62	16.85	6.74	3.37	11.24				100
1420–1539	30.00	20.00	5.00	15.00	6.00	3.00	10.00	3.00	3.00	5.00	100

8.4.6. Possible high inflation in the 1350s and 1360s

Periods of high inflation caused by debasement cycles are reliably documented from the 16th century onwards. Prior to that, there are indications of two debasement cycles following the Black Death, roughly in 1351–4 and 1361–4, as discussed fur-

21 See Jansson, Andersson Palm, och Söderberg (1991), for a further discussion on the budget composition in the 16th century.

ther in Chapter 3. The fine silver content of the debased *penning* coins was less than 1/5 and 1/10, respectively, of the fine silver content of previously minted *penning* coins (minted in 1332–50), suggesting an inflation rate of more than 1000 per cent if prices followed debasement.[22]

Prices are missing for several years. The only price data that exist to support the hypothesis of high inflation is a price notation for copper in 1361, which cost 50 mark penningar per ship pound. This was 100 per cent above the price in 1366–67 and five times the price in 1333. It may be suspected that the debased coins were exchanged for newer, better coins at a significant discount, although the debased coins may also have functioned as token coins, i.e. circulated substantially above their intrinsic metal value. In this study it is assumed (as in Chapter 3) that the debased coins were devalued by two thirds in 1354 and by half in 1364; this is the basis for calculating the difference between the deflator index and the inflation index for this period.

8.4.7. The high-inflation period of 1521–23

In 1521–23 Christian II and Gustav Eriksson (Vasa) minted so called klipping coins with a very low silver content compared to their nominal value, which is discussed further in Chapter 3.

It is not completely clear how common the klipping coins were in trade in these years, or whether the older, better coins dominated trade instead. The older coins were probably hoarded and taken out of circulation in those years, but returned as means of payment from 1524 onwards.[23] For foreign trade there are many examples of foreign coins being used as means of payment, but this was also common during periods of low inflation. According to Ingrid Hammarström, prices increased many times over in 1522 and 1523, not only for foreign products but also for domestic ones, which favours the hypothesis that the klipping coins were, in fact, the main coins in circulation.[24]

As discussed in Chapter 3, in early 1524 the klipping coin was devalued by one third. However, the exchange rates of mark lödig in proper and klipping coins, respectively, suggests that the klipping coins were worth less than half (19.25/50) of their nominal value in proper coins. In this study it is therefore assumed that 1 new mark = 50/19.25 old marks, which is the basis for calculating the difference between the deflator index and the inflation index for this period.

8.5. The period 1539–1732

Eli Heckscher has constructed a price index for Sweden for the period 1540–1620 based on Stockholm prices. This price index has been improved by Johan Söderberg,

22 Franzén (2006, pp. 77 and 232).
23 Hildebrand (1983, p. 870), and Thordeman (1936, p. 51).
24 Hammarström (1956, p. 388).

with additional data. Söderberg has constructed a Laspeyres-type cost-of-living index for Stockholm for the period 1539–1719.[25] This is the basis of the present CPI. One difference for the period 1539–1620 is that the price of rye has been changed from the consumption year to the harvest year (which is the practice internationally). The price index for the period 1719–32 is based on data presented in Fregert and Gustafsson (2005), which in turn are based on Stockholm prices in Jansson *et al.* (1991).

The prices in Jansson *et al.* (1991) have been collected from various accounts, most importantly those of the Town Council of Stockholm and of Stockholm Castle.[26] Price scales set by the authorities have not been used, since they cannot be assumed to reflect market prices. Substantial quantities were traded on the market, and the price data are therefore to be seen as producer prices. The citizens of Stockholm most probably had to pay higher prices for their daily needs but in this context it is important that the sources are of the same character throughout the period.

The most important source for food prices during the first half of the 17th century is the accounts of Stockholm Castle. This material provides information about the purchases in cash of various commodities, as well as deliveries in kind from the castles and counties. From 1650 the main source in Jansson *et al.* (1991) is the food prices on the accounts of the orphanage of Stockholm (*Allmänna barnhuset*). The accounts of Danviken Hospital provide some complementary information.

The main source for prices of building materials in Jansson *et al.* (1991) is the accounts of the Town Council of Stockholm. This material contains detailed descriptions of the building works initiated by the Town Council and the wages of various building workers. Also the Church accounts (for example, those of Storkyrkoförsamlingen and the German Church) provide information on prices of building materials as well as wages. Cloth prices are gathered from the accounts of Stockholm Castle (*klädkammaren*, Slottsarkivet).

The grain price for the period 1600–27 is the average of the prices of rye and barley. For the years when rye and barley prices are missing, the price of grain (*spannmål*) has been used. This type of price generally referred to rye and barley in equal amounts, although the proportion could have shifted somewhat over time. For the period 1635–1719, Jansson *et al.* (1991) draw on the grain prices presented by Hegardt for the sales of Uppsala Academy in Stockholm.[27] These are barley prices from Uppland.[28]

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25 Söderberg (2002) and Jansson, Andersson Palm, och Söderberg (1991).

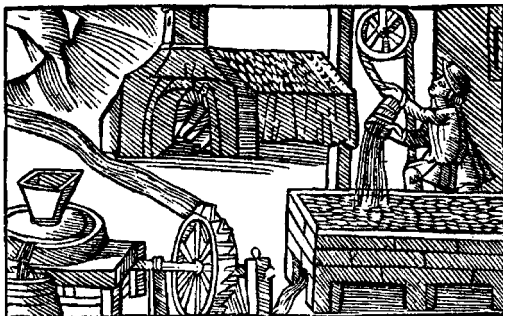
26 On the accounts of the Town Council of Stockholm during the first decades of the 17th century, see Sandström (1983) and Ericson (1988). See also Söderberg (1987).

27 Hegardt (1975).

28 The price of barley was somewhat lower than the price of rye and therefore also somewhat lower than the price of grain ('spannmål'), which consisted of half rye and half barley. However, the price difference between barley and grain was most probably not so large that a systematic distortion would arise when the price series of grain ('spannmål') up to 1635 is linked to Hegardt's barley price thereafter. In 1600–20, the price of rye in the accounts of Crown trade at Stockholm (the 'handling') was, on average, 15 per cent above the price of barley.

Beer brewing

Exchange without money. The Nordic people to the left offer flour, dried pike fish, axes, scissors, knives, and cloth. The Russians to the right offer skins, arrows, butter, and bows.



Processing barley

Foreign wines

Drawings by Olaus Magnus.

Certain lacunae in the accounts make the source material more problematic for some of the years before 1635. Grain prices in the years around 1630 are not available for Stockholm, so the price series of Kungsåra Church in Västmanland county are used instead in Jansson *et al.* (1991) (with corrections by Kurt Ågren).[29] This series starts in 1624 and continues for a very long period. For the period 1635–49, the price level in the Kungsåra accounts was somewhat above the price level of the sales of Uppsala Academy in Stockholm. Hegardt's prices are 7.8 per cent below the prices in Kungsåra. To correct for this difference in price levels in Västmanland and Stockholm, the Kungsåra prices for the period 1628–34 have been reduced by this difference in Jansson *et al.* (1991). Some quotations that exist for Stockholm for those years do not seem to differ significantly from the calculated prices based on Kungsåra accounts.

For weights and measures, information about changes is often lacking, especially before 1600. Here, the following assumptions concern the grain barrel in Stockholm. The medieval grain barrel of 117.5 litres is assumed to have been in use until 1570, when it increased to 127 litres. By 1600, it had grown further to 146.6 litres, using a linear interpolation from 1570. The barrel was further changed to 156 litres in 1665 and to 165 litres in 1739.[30] The pound, which was used to weigh butter and meat, also increased on several occasions. Furthermore, the barrel in which salted commodities and fish were measured was changed in 1665. The assumption in Jansson *et al.* (1991) follows Mats Morell in the case of the pound as well as the fish barrel.[31] Prices have been interpolated for the years when direct data are missing.

8.5.1. The high-inflation period 1561–76

In the period 1560–75 the mark coin was debased continually, which caused substantial price increases, as discussed further in Chapter 4.

In 1575 a recoinage took place and one new mark was exchanged for 6.5 marks

29 von Schwerin (1903, pp. 25 onwards). The series was used by Heckscher, but some corrections have been made to the series by Kurt Ågren (1964, pp. 25 onwards) after checking the original accounts.

30 As in Hegardt (1975, p. 202), the assumption in Jansson *et al.* (1991) is that the grain barrel was not changed in Mälardalen by the decision on targets, measures and weights in 1638. It is likely that the so-called old Stockholm barrel of 146.6 litres continued to be used throughout the first half of the 17th century. Hence, Jansson *et al.* (1991) makes the same assumption as Hannerberg and Morell that the Royal decree on weights and measurement in 1605 did not entail any change in the barrel used in the Mälardalen region. See Hannerberg (1946, p. 423), and Morell (1988, p. 36).

31 Morell (1988). The pound used as measure for commodities such as butter, tallow and meat, was according to Morell changed from 6.04 kg to 8.31 kg in 1605. In 1634 the pound was increased to 8.43 kg and in 1665 to 8.5 kg. The fish barrel (the same as the salt and flour barrel) was increased from 117.5 to 125.6 litres. Jansson *et al.* (1991) assumes that the barrel for lime and tar was increased by the same amount in 1665. In Jansson *et al.* (1991) the prices are transformed to the measures and weights that were valid from 1665 onwards.

minted 1571–74,[32] which is the basis for estimating the inflation index from the deflator index.

The deflator index shows a high figure in both 1574 and 1575, followed by an 80 per cent decrease in 1576. This would imply that the prices were still expressed in the old currency in 1575. To calculate an inflation index, the ratio of the deflator index in 1576 to 1575 is multiplied by the factor 6.5, based on the exchange rate between new and old marks.

8.5.2. The high-inflation period 1590–93

In the final years of the reign of Johan III (d. 1592), the value of the Swedish mark deteriorated rapidly and the rampant inflation caused much confusion, as discussed further in Chapter 4.

In 1593 and 1594 the debased coins were exchanged for new coins, and the worst one-mark coins were reduced to ¼ of their face value. In this study it is therefore assumed that 1 new mark = 4 old marks.

The price material, for example the accounts of Crown trade (*Handlingsräkenskaperna*) that form the basis for the deflator index, often displays a surprising stability in the early 1590s, which would suggest that the debased coins were accepted at their face value and did not cause any substantial inflation. Thus the deflator index does not show any increase in the recorded price level (it actually indicates a slight fall). Exactly which currency the CPI follows is not completely clear, but it does not show the expected upward trend. The effect of debasement on prices came with a time lag. As discussed in Chapter 4, it was not until 1592 that the debasement had a significant impact on prices and exchange rates, but it was in that year that a recoinage took place and prices were reported in the new coins. Thus the deflator index partly conceals the inflation of 1592.

To calculate the inflation index from the deflator index in the period 1589–93, the deflator index is adjusted according to the exchange rate of the silver daler in the period 1589–92 (see Chapter 4) while the relation 1 new mark = 4 old marks is assumed for 1593. Between 1589 and 1593 the inflation index increased by 291 per cent.

8.5.3. The inflation period 1715–19

Another period of high inflation occurred in 1715–19, as a consequence of the circulation of token coins, as discussed in more detail in Chapter 4. Although initially the coin tokens did not cause any large price increase, at the end of this period prices did rise significantly. In 1719 the value of the coin tokens was reduced by 50 per cent; for that year it is therefore assumed here that 1 daler silvermynt in token coins = ½ daler silvermynt in proper money.

32 Wallroth (1918, p. 23).

The emergency coins that were minted towards the end of the Great Nordic Wars circulated at the nominal value of 1 daler silvermynt, the equivalent in 1716 of an unskilled labourer's wage for two days' work in Stockholm. 'Hoppet' (The Hope), the last emergency coin, minted in 1719, circulated at the nominal value of 2 öre silvermynt, which in that year was equivalent to an unskilled labourer's wage in Stockholm for only 45 minutes' work.
Photo: The Royal Coin Cabinet, Stockholm.

One question is whether the prices on which the deflator index is based are in proper coins or in token coins. The price of rye is based on proper coins,[33] while the prices of other products are probably in token coins. Since regulations depressed prices in token coins in Stockholm, the assumption in this study is that the basis for the deflator index was, in fact, prices in proper coins.

In order to calculate an inflation index for 1717 and 1718 it is necessary to estimate the price level in token coins and in proper coins, which involves setting the exchange rate between the two types of currency (see Chapter 4). To transform the deflator index into the inflation index, the assumption here is that the ratio of prices in tokens coins to prices in proper coins was 1.06 in 1716, 1.24 in 1717, 1.5 in 1718 and 2 in 1719 (end-of-year figures).

8.6. The period 1732–1914

Gunnar Myrdal's (1933) annual cost of living index extends back to 1830 and is still used by Statistics Sweden.[34] However, Myrdal's index must be regarded as somewhat dated. A number of supplements can be made to this index in the light of new price data that have been produced by various researchers.

A variety of consumer price indices for the 18th century are presented in Jörberg

33 The price of rye for Stockholm in Jansson, Andersson Palm, och Söderberg (1991) is based on the sales of Uppsala Akademi in Stockholm in proper coins. The latter series can be found in Hegardt (1975).

34 Statistiska centralbyrån (2005).

A Stockholm Market in 1750*, by an unknown artist.*
Source: Nordiska museet.

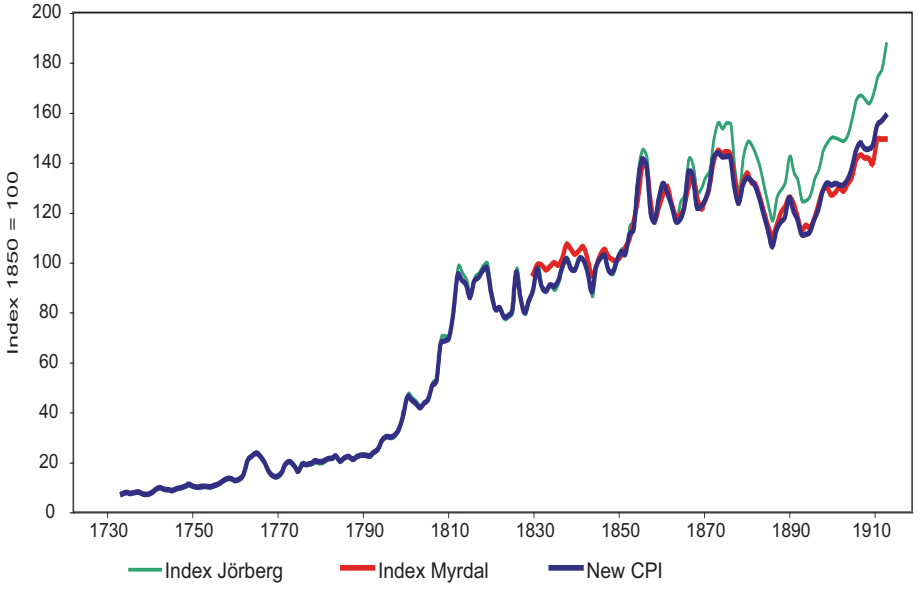
(1972) and Åmark (1921). For the period 1732–1914 the present CPI is based on data in Jörberg (1972) and Myrdal (1933), supplemented with data on salt published in Stefan Carlén (1997) and price indices of various industrial products presented by Lennart Schön (1988). Different weights apply to each of the periods 1732–82, 1782–1830, 1830–70 and 1870–1913 (see Table 8.3). The weights have been adjusted in accordance with earlier studies by Gunnar Myrdal and Lennart Jörberg, and to fit the patterns of consumption according to historical national accounts.[35]

Figure 8.1 compares the present Consumer Price Index with Jörberg's for 1732–1914 and Myrdal's for 1830–1914. The differences between the new CPI and Jörberg's index are negligible from 1732 up to about 1870. After that year, the new CPI does not increase as much as Jörberg's index. This is due to the differences in the composition of index weights. For the period 1870–1914, the new CPI includes goods such as potatoes, sugar, coffee, gas and coke, which are missing in Jörberg's index. For the period 1865–1914 lighting is not included in Jörberg's index, whereas the new index includes goods that reflect this cost (rape oil and tallow candles). The new index thus includes more industrial goods and imported goods, which tended to become relatively cheaper in the decades after 1870. Compared to Myrdal's index for the period 1830–1914, the differences with the new index are quite small.

35 Edvinsson (2005).

Market Day in Linköping in 1891.
Source: Östergötlands Länsmuseum.

Figure 8.1. *The present Consumer Price Index compared to Jörberg's and Myrdal's, 1732–1914 (1850 = 100).*



Sources: Table A8.1, Jörberg (1972) and Myrdal (1933).

Table 8.3. *CPI weights (in per cent) in the present study, 1732–1914.*

	1732–82	1782–1830	1830–70	1870–1913
Rye	21	21	14.4	9.8
Barley	7.5	7.5	7.2	4.2
Wheat	2.25	2.25	2.16	4.9
Oats	4.5	4.5	4.32	2.8
Hard ryebread			1.44	1.4
Coffee			0.72	0.7
Sugar			0.72	0.7
Salt	0.75	0.75	0.72	0.7
Potatoes			2.88	2.8
Peas	2.25	2.25	2.16	1.4
Beef	4.5	4.5	4.32	5.6
Pork	6.75	6.75	6.48	9.8
Butter	18.75	18.75	2.88	4.9
Milk			15.12	12.6
Cheese	1.5	1.5	1.44	2.1
Eggs	0.75	0.75	0.72	1.4
Baltic herring	2.25	2.25	2.16	2.1
Dried fish	2.25	2.25	2.16	2.1
Birch wood	3	3	3	2
Pine wood	3	3	3	2
Charcoal	1	1	1	1
Gas				1
Coke				1
Tallow	2.3	1	1	1
Rape oil		0.65	0.8	
Tallow candles		0.65	0.8	2.5
Linen	6	6	6.5	7
Coarse cloth	6	6	6.5	7
Tanned cow hides	1.2	1.2	1.4	1.5
Pig iron	0.5	0.5	1	1
Bar iron	0.5	0.5	1	1
Bricks	1	1	1.5	1.5
Tar	0.5	0.5	0.5	0.5
Sum	100	100	100	100

8.7. The period 1914–2008

For the period after 1914, the CPI is the same as the index presented by Statistics Sweden.

The first official cost-of-living index was calculated from July 1914 and onwards.[36] The main concern was to represent the conditions of the life of the less well-to-do and it was therefore not a general CPI. Regional coverage was fairly wide. The quotations did not reflect prices in purely rural districts with agricultural production, but rather in towns, municipalities and important industrial districts. From 1918 the cost-of-living index was calculated four times a year, on about the 1st of January, April, July and October and the prices referred to the 15th of the last month of each quarter, i.e. 15th of December, 15th of March, 15th of July and 15th of October. Taxes were also included but are easily eliminated to obtain an index without taxes. This index continued on a quarterly basis up to 1954, when it was replaced by the monthly CPI. From September 1916 monthly indices were also calculated, but only for foodstuffs and fuel and lighting.

In the period 1914–31, the quantities of the cost-of-living index were based on a budget enquiry in 1913–14[37] which happened to coincide with the price reference period (July 1914). During this period the cost-of-living index could therefore be considered to be of a Laspeyres type. In 1932 a revision was made; the new weights were based on the budget inquiry of 1923, while the price reference period was shifted to 1931.[38] The budget inquiry of 1923 was broader and also included some middle social layers. In 1939 a revision was made based on the budget enquiry of 1933. Since the weight reference period was not the same as the price reference period, the cost-of-living in the period 1932–43 was strictly speaking not a Laspeyres price index, but rather a Lowe price index.[39]

In 1943 a major revision was made to the cost-of-living index based on the findings of a Commission in 1943, which recommended a chain index of Edgeworth's type. The Edgeworth price index is a basket index (Lowe index) whose quantities are the arithmetic average of the quantities in two periods.[40] The revision of the household budget was to be made every December.[41]

One problem for the cost-of-living index arose during the World Wars. For example, during the First World War the deterioration in the quality of clothes was not taken into consideration, implying that the price increase was underestimated.[42]

When Sweden left the gold standard in September 1931, it was feared that this would lead to price increases. Because of its special character, the cost-of-living index was seen as a not entirely satisfactory measure of changes in retail prices. This explains

36 Bouvin (1933).
37 Bouvin (1933, p. 160).
38 Kungl. Socialstyrelsen (1961, p. 92).
39 See ILO and others, (2004, p. 2).
40 ILO and others, (2004, p. 268).
41 Kungl. Socialstyrelsen (1961, pp. 101–4).
42 Bouvin (1933, p. 158).

why the Riksbank constructed a monthly price index, called a consumption price index, in the period 1931–48 with the aim of obtaining an index that reflected price changes for the whole of private consumption, not just consumption by a specific type of household. Besides being monthly, this price index had the advantage that its weights were changed more frequently. The quantities used were in principle an average of the two periods compared. This was an advantage particularly during the Second World War, when several goods disappeared from the market. Seasonal fluctuations were eliminated for potatoes, eggs, fruit and vegetables by replacing the monthly price by the average of prices in the previous 12 months.[43]

In 1931–7 the Riksbank's consumption price index applied an arithmetic formula of the price index type, but from 1937 this was replaced by the geometric formula of a Törnqvist price index type. The Törnqvist price index is a weighted geometric average of price relatives using the arithmetic average of the expenditure shares in two periods.

In 1949, the index was taken over by the Social Welfare Board, its name was changed to the General CPI of the Social Welfare Board and there was a return to the arithmetic formula. The method of changing weights annually was also applied to the cost-of-living index on the recommendation of the Commission from 1943. The formula used by the Riksbank in 1931–7 was adopted for the cost-of-living index from 1943 onwards.[44]

The present official monthly CPI has been published by Statistics Sweden since June 1954. This index replaced the other indices. The fictive lower-income family was dropped and the index came to be a measure of price changes generally for the whole of private consumption. The CPI was linked to the cost-of-living index, not to the monthly Riksbank index, in spite of the fact that the Riksbank index was more similar to the construction of the CPI. The choice was made because the cost-of-living index had a more official character.[45]

Chaining was based on a long-term index, which estimated the change from December in the previous year to December in the present year, and a short-term index, which estimated the change from December in the previous year to the month in question in the present year. This followed the recommendation of the Commission in 1943.[46]

The long-term index (L) used the weights for the present year, and was of an Edgeworth type. It was calculated as follows:

$$L_{t-1,12}^{t,12} = \frac{\sum_i p_i^{t,12} q_i^t}{\sum_i p_i^{t-1,12} q_i^t} \qquad (2)$$

43 Kungl. Socialstyrelsen (1961, pp. 104–6), Sveriges Riksbank, (1949, pp. 21*–30*), and Sveriges Riksbank, (1949, pp. 25 and 84–5).

44 Kungl. Socialstyrelsen (1961, pp. 104–6).

45 Kungl. Socialstyrelsen (1961, p. 107).

46 Statistiska centralbyrån (2001, pp. 18–9).

The short term index (K) used the weights of the previous year, and was of a Laspeyres type. It was calculated as follows:

$$K_{t\text{-}1,12}^{t,m} = \frac{\sum_i p_i^{t,m} q_i^{t\text{-}1}}{\sum_i p_i^{t\text{-}1,12} q_i^{t\text{-}1}} \tag{3}$$

From January 2005 Statistics Sweden has changed its method once again. The computations are made in two steps, applying an annual chain index. The long-term chaining is no longer made from December to December, but from one whole year to another using the Walsh formula (where the price reference period is the previous year, i.e. 0 = t-1).[47] The Walsh price index is a basket index (Lowe index) whose quantities are the geometric average of the quantities in the two periods. However, to estimate a monthly index, the price level of one month is compared to the price level two years earlier using that year's quantities, i.e. in that case the Laspeyres formula is used. Hence, to calculate the price level of month m in year t in the price level of year r the following formula would be used ($r > 2003$, since Statistics Sweden used another method up to 2004):

$$I_r^{t,m} = \frac{\sum_i p_i^{t,m} q_i^{t\text{-}2}}{\sum_i p_i^{t\text{-}2} q_i^{t\text{-}2}} \prod_{k=r+1}^{t-2} \left(\frac{\sum_i \left(p_{k,i} \sqrt{q_{k,i} q_{k\text{-}1,i}} \right)}{\sum_i \left(p_{k\text{-}1,i} \sqrt{q_{k,i} q_{k\text{-}1,i}} \right)} \right) \tag{4}$$

One problem with Statistics Sweden's officially produced CPI is that it is legally fixed and cannot be changed, even though errors are sometimes detected later. Therefore, a so-called shadow index is computed with corrections for these mistakes. In the period 1980–2000, six such mistakes were corrected in the shadow index.[48] For its historical CPI series, Statistics Sweden seems to use the shadow index rather than the legally fixed CPI.

Statistics Sweden also produces other consumer-type price indices that are not considered here.

8.8. A short overview

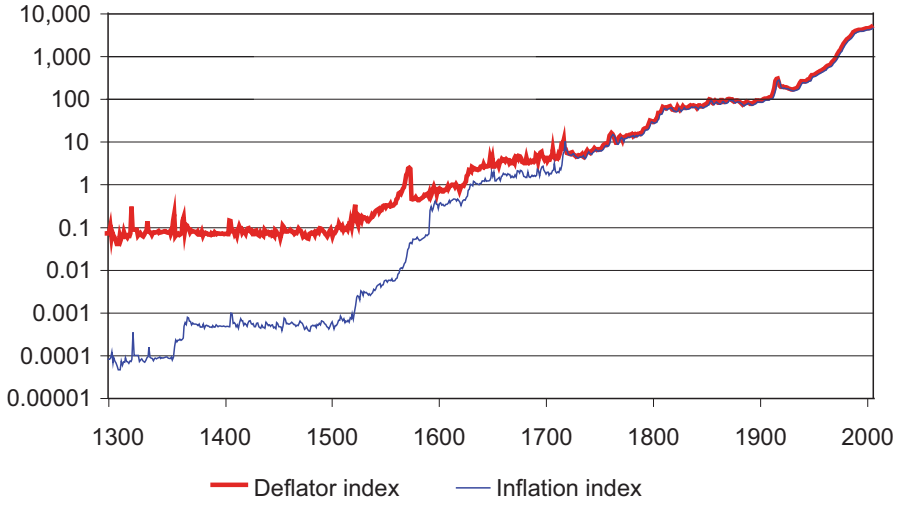
Figure 8.2 presents the deflator index and the inflation index for the period 1290–2008. The scale is logarithmic. Between 1290 and 2008 the price level increased by a factor of 55 million, or, on average, by 2.5 per cent per year, which can be compared to the Riksbank's present inflation target of two per cent per annum.

Figure 8.2 shows that there is a secular pattern of inflation demarcated by international events such as major wars.

47 Statistiska centralbyrån (2004) and Statistiska centralbyrån (2006, p. 61).

48 Statistiska centralbyrån (2001, p. 72).

Figure 8.2 *The two CPIs, the deflator index and the inflation index, 1290–2008 (July 1914 = 100).*



Source: Table A8.1.

High inflation typified the 1350s and 1360s, and the 16th, 18th and 20th centuries. The average annual rate of inflation was 18 per cent in 1351–64, 6.3 per cent in 1518–1633, 3.5 per cent in 1715–1812 and 4.7 per cent in 1914–91. The high inflation in the 18th and 20th centuries was caused by the circulation of fiat monies. If the relative price of bullion does not change considerably, commodity money should be accompanied by price stability. Nevertheless, inflation under commodity money is well known. The highest inflation rate can be recorded for the 16th century, not the 20th, despite the presence of a commodity standard at the time (see Chapter 2).

Most of the Middle Ages, the 17th and 19th centuries, and the period from the early 1990s onwards were accompanied by stability of prices. The average annual rate of inflation was 0.1 per cent in 1290–1351, 0.04 per cent in 1364–1518, 0.8 per cent in 1633–1715, 0.5 per cent in 1812–1914 and 1.7 per cent in 1991–2008. While the price stability in earlier periods was connected with the prevalent commodity standards, the recent low inflation is combined with a fiat standard.

Interestingly, Ola Grytten, who presents a CPI for Norway back to 1516, finds a similar pattern of the secular movement of prices as in Sweden, from the 16th century to today.[49]

49 Grytten (2004, pp. 73–4).

The Dannemora Iron Mine in Uppland, *by Elias Martin (1739–1818).*

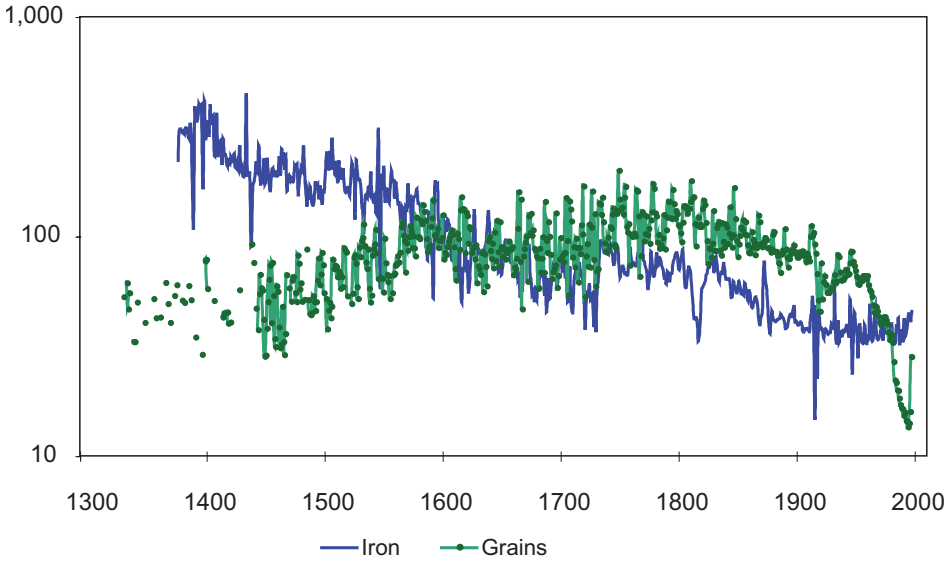
8.9. The CPI at work

It is time for some illustrations of the potential usefulness of the new CPI. Below we briefly present two applications, relating to iron and grain prices, and land prices, respectively. A further example concerning the real wage is given in Chapter 9. Deflating the price of an item by the CPI could be interpreted as a calculation of that item's real price, since such a series shows how much the item could buy in terms of goods and services constituting the CPI.

8.9.1. Iron and grain prices

Figure 8.3 presents the evolution of the price of iron in Stockholm, deflated by the CPI deflator index, in the very long term. The medieval prices refer to osmond iron, but from 1540 onwards they pertain to bar iron (the two series have been linked at

Figure 8.3: *Prices of iron and grains in Sweden deflated by the CPI deflator index, 1291–2007 (index 1580–99 = 100).*



Source: See the main text.

that year). Bar iron was a more refined product which cost about twice as much per weight unit as osmond iron.

From the latter 14th century up to the First World War, the real price of iron was reduced by a factor of ten. It is striking that this decline in the real price of iron did not accelerate in the early modern era. Instead, the reduction of the deflated price proceeded at a fairly constant rate up to the early 18th century, when the real price rose. Presumably, technological progress and economies of scale was the main factors behind the long-term decline in the relative price of iron.

However, the upward shift in the deflated price curve around 1720 is probably due to the Swedish authorities' deliberate attempts to hold back output and limit the supply of exported iron in the hope that this would raise the price in the major market, England. As a result, exports were largely constant for half a century up to about 1780, despite a growing demand for iron in the world market.

The real price of grains, on the other hand, roughly follows an inverted U-shaped curve. The real price of grains rose during the late Middle Ages and the 16th century, stagnated during the 17th century, climbed again and peaked during the latter decades of the 18th century. These trends conform to the trends in population, with the 16th and 18th centuries as growth periods. In the first half of the 19th century, however, something decisive happened. The relative price of grain began to drop. For the first time, there were long periods when per capita harvests rose.

These price relations capture the fundamental production problems of pre-indus-

trial society. Agricultural per capita growth came late, and this large but relatively immobile sector dominated the economy for centuries. Once agriculture began to industrialize, however, the changes were dramatic and rapid. During the second half of the 20th century, the drop in the real price of grains was much larger than for iron. The fall in the relative price of grains has continued until very recently. Signs of a reversal occur at the very end of the series, though this is an upsurge from a historically extremely low level of the relative price of grain.

8.9.2. *Land prices*

Even though land was one of the most important commodities in the pre-industrial economy, land prices in Sweden have not been studied extensively. An exception is the recent pioneering study by Bo Franzén (2006), presenting the evolution of land prices for part of the medieval era up to 1370.

Figure 8.4 presents results from a pilot study of land prices, deflated by the CPI deflator index. It is based on 605 land sales, primarily in the province of Uppland, from 1294 to 1651. The long-term decline in this relative price is notable. Previous research has observed that the relative price of land dropped after the Black Death. It is clear from these data that the decline continued throughout most of the 16th century, and that the relative price of land did not turn upwards until after about 1580. This may at first sight seem surprising, since population growth was probably substantial during the 16th century as a whole. The longevity of the decline may be explained by restrictions on the land market, forcing the seller to offer the land to his or her relatives before selling to anybody else. Land purchases had to be registered in the local court, which sometimes applied fixed prices per land that were considerably below prices in the unrestricted market.

8.10. Summary and conclusions

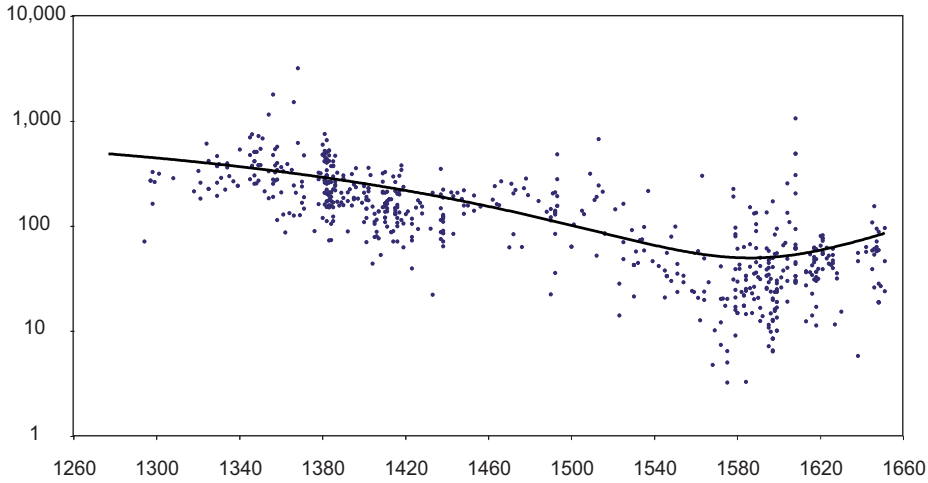
The purpose of this chapter is to present a CPI for Sweden for the period 1290–2008. The index is linked up with the present CPI published by Statistics Sweden.

The basic advantage of the CPI presented in this chapter is that it allows the linking of medieval price data to those of more recent periods. It makes it possible to estimate the inflation rate during various periods and to compare the price level in one year with the price level in an earlier year. This also opens up for broader international comparisons, making possible an extended analysis of Swedish prices in a European and global context.

Constructing an index that covers more than seven centuries poses conceptual as well as empirical problems. It raises many more questions than do modern type consumer price indices.

For example, the currency unit was changed on numerous occasions, and in some periods multiple currencies were used at a floating exchange rate relative to each

Figure 8.4. *Land prices per öresland in East Sweden, 1294–1651, deflated by the CPI (1500 = 100).*



Sources: Table A8.1, Svenskt diplomatariums huvudkartotek över medeltidsbreven, *Svenska riksarchivets pergamentsbref: från och med år 1351*, vol 1 and 2 (1866–1868); Uppländska domböcker (1925–1956), vol. 1–9, *Sjuhundra härads domböcker 1601–1651* (1984).

Note. The *öresland* was part of the medieval and early modern land measurement system in East Sweden, in which 1 *markland* = 8 *öresland* = *24 örtugland*. These units aimed at capturing the yield of a farming unit rather than measuring its area. Therefore, no exact translation can be made into modern measurements. It is clear, however, that one *öresland* was not a large landholding. Dovring (1947, p. 31) estimates the median size of the *markland* at about 14 hectares by the mid-16th century. The normal size of the *öresland* would then be slightly less than 2 hectares.

other. During so-called debasement cycles, the currency deteriorated and was later replaced by a stronger currency at a reduced value. There are different ways of constructing a price index under such circumstances.

The chapter presents two different CPIs: a deflator index and an inflation index.

The deflator index follows the main currency unit through time; mark for the period 1290–1624, daler kopparmynt 1624–1776, specie riksdaler 1776–89, riksdaler riksgälds 1789–1855, riksdaler riksmynt 1855–73, and krona for the period 1873 onwards. The deflator index is an index of prices expressed in the main Swedish currency unit: 1 SEK = 72 marks.

The inflation index is constructed to take into consideration times of very high inflation, when inflation money was circulated and was later replaced by a more stable currency. This occurred in six periods: 1351–4, 1361–4, 1521–4, 1561–6, 1590–3 and 1715–9. At the end of these inflation periods, the inflation coins could

be exchanged for the new coins, albeit at a much lower rate than was nominally assigned to the inflation coins. The inflation index takes into account that the inflation coins were devalued by two thirds in 1354, by 50 per cent in 1364, by 61.5 per cent in 1524, by 11/13 in 1576, by 75 per cent in 1593 and by 50 per cent in 1719, whereas the deflator index does not. When prices were expressed in proper coins, they have been converted into prices in inflation coins by using the exchange rate between these coins. This chapter argues that if the purpose is to measure the rate of inflation over longer time spans, a price index should be measured in the currency most in use, which usually is the weaker one. Under such assumptions the old, debased currency, and the new, better currency must be viewed as two different currencies (going under the same name), which our inflation index takes into account.

This study finds that in the period 1290–2008 the average annual rate of Swedish inflation was 2.5 per cent, only slightly above the Riksbank's present inflation target. There was also a clear secular movement in prices. While the 14th, 16th, 18th and 20th centuries saw high rates of inflation, the 15th, 17th and 19th centuries were characterised by relative price stability. Whether the 21st century will once again mark the return of price stability is an open question.

The chapter also presents some examples of how our CPI could be used. By deflating various relative prices by the CPI, some long-term economic trends can be analysed.

Our study finds that the relative price of iron declined significantly from the latter 14th century to the early 18th century. On the other hand, the relative price of grain either increased or stagnated before the industrial revolution. In Chapter 9 it is shown that real wage rates even declined between the 15th and the early 19th centuries. These price relations capture the fundamental production problems of pre-industrial society. The iron industry shows that there was a dynamic sector in the pre-industrial period that could achieve significant advances in productivity. However, before the industrial revolution this sector was too small to generate substantial increases in the living standards of a majority of the population. Agricultural per capita growth came first in the 19th century, and this large but relatively immobile sector dominated the pre-industrial economy.

Appendix A8: Summary table

Table A8.1. *The two Consumer Price Indices, the deflator and inflation indices, for Sweden, 1290–2008 (July 1914 = 100).*

Year	Deflator index	Inflation index	Year	Deflator index	Inflation index	Year	Deflator index	Inflation index
1290	0.0644	0.000079	**1335**	0.0666	0.000082	**1380**	0.0570	0.000422
1291	0.0645	0.000080	**1336**	0.0687	0.000085	**1381**	0.0656	0.000485
1292	0.0708	0.000087	**1337**	0.0703	0.000087	**1382**	0.0671	0.000497
1293	0.0954	0.000118	**1338**	0.0730	0.000090	**1383**	0.0652	0.000482
1294	0.0523	0.000065	**1339**	0.0674	0.000083	**1384**	0.0648	0.000480
1295	0.0707	0.000087	**1340**	0.0703	0.000087	**1385**	0.0608	0.000450
1296	0.0584	0.000072	**1341**	0.0687	0.000085	**1386**	0.0605	0.000448
1297	0.0522	0.000064	**1342**	0.0700	0.000086	**1387**	0.0601	0.000445
1298	0.0445	0.000055	**1343**	0.0715	0.000088	**1388**	0.0653	0.000483
1299	0.0368	0.000045	**1344**	0.0729	0.000090	**1389**	0.0607	0.000449
1300	0.0368	0.000045	**1345**	0.0732	0.000090	**1390**	0.0605	0.000448
1301	0.0368	0.000045	**1346**	0.0681	0.000084	**1391**	0.0681	0.000504
1302	0.0584	0.000072	**1347**	0.0672	0.000083	**1392**	0.0650	0.000482
1303	0.0465	0.000057	**1348**	0.0669	0.000083	**1393**	0.0623	0.000461
1304	0.0560	0.000069	**1349**	0.0738	0.000091	**1394**	0.0651	0.000482
1305	0.0550	0.000068	**1350**	0.0624	0.000077	**1395**	0.0641	0.000475
1306	0.0702	0.000087	**1351**	0.0713	0.000088	**1396**	0.0640	0.000474
1307	0.0571	0.000071	**1352**	0.1272	0.000157	**1397**	0.0633	0.000469
1308	0.0561	0.000069	**1353**	0.1831	0.000226	**1398**	0.0651	0.000482
1309	0.0512	0.000063	**1354**	0.0555	0.000205	**1399**	0.0635	0.000470
1310	0.0579	0.000072	**1355**	0.0596	0.000221	**1400**	0.0623	0.000462
1311	0.0572	0.000071	**1356**	0.0596	0.000221	**1401**	0.0628	0.000465
1312	0.0644	0.000079	**1357**	0.0628	0.000233	**1402**	0.0637	0.000472
1313	0.2737	0.000338	**1358**	0.0596	0.000221	**1403**	0.0624	0.000462
1314	0.0797	0.000098	**1359**	0.0620	0.000229	**1404**	0.0621	0.000460
1315	0.0797	0.000098	**1360**	0.0678	0.000251	**1405**	0.1300	0.000962
1316	0.0797	0.000098	**1361**	0.1263	0.000467	**1406**	0.1274	0.000943
1317	0.0797	0.000098	**1362**	0.1548	0.000573	**1407**	0.0741	0.000549
1318	0.0797	0.000098	**1363**	0.0699	0.000518	**1408**	0.0771	0.000571
1319	0.0575	0.000071	**1364**	0.1026	0.000760	**1409**	0.0721	0.000534
1320	0.0626	0.000077	**1365**	0.0997	0.000738	**1410**	0.0623	0.000462
1321	0.0659	0.000081	**1366**	0.0845	0.000626	**1411**	0.0690	0.000511
1322	0.0593	0.000073	**1367**	0.0819	0.000607	**1412**	0.0567	0.000420
1323	0.0569	0.000070	**1368**	0.0687	0.000509	**1413**	0.0777	0.000575
1324	0.0553	0.000068	**1369**	0.0766	0.000567	**1414**	0.0953	0.000705
1325	0.0610	0.000075	**1370**	0.0716	0.000530	**1415**	0.0867	0.000642
1326	0.0695	0.000086	**1371**	0.0721	0.000534	**1416**	0.0856	0.000634
1327	0.0753	0.000093	**1372**	0.0719	0.000532	**1417**	0.0680	0.000503
1328	0.1230	0.000152	**1373**	0.0708	0.000524	**1418**	0.0746	0.000553
1329	0.0710	0.000088	**1374**	0.0653	0.000483	**1419**	0.0707	0.000524
1330	0.0692	0.000085	**1375**	0.0712	0.000527	**1420**	0.0627	0.000464
1331	0.0676	0.000083	**1376**	0.0608	0.000450	**1421**	0.0741	0.000549
1332	0.0602	0.000074	**1377**	0.0610	0.000452	**1422**	0.0837	0.000619
1333	0.0676	0.000083	**1378**	0.0612	0.000453	**1423**	0.0865	0.000641
1334	0.0684	0.000084	**1379**	0.0710	0.000526	**1424**	0.0725	0.000537

Table A8.1 (cont.). *The two Consumer Price Indices, the deflator and inflation indices, for Sweden, 1290–2008 (July 1914 = 100).*

Year	Deflator index	Inflation index	Year	Deflator index	Inflation index	Year	Deflator index	Inflation index
1425	0.0700	0.000518	**1471**	0.0783	0.000580	**1517**	0.1004	0.000744
1426	0.0727	0.000538	**1472**	0.0750	0.000555	**1518**	0.0953	0.000706
1427	0.0621	0.000460	**1473**	0.0644	0.000477	**1519**	0.1228	0.000909
1428	0.0621	0.000460	**1474**	0.0542	0.000402	**1520**	0.0931	0.000690
1429	0.0741	0.000549	**1475**	0.0561	0.000415	**1521**	0.1371	0.001015
1430	0.0757	0.000561	**1476**	0.0619	0.000459	**1522**	0.1922	0.001423
1431	0.0619	0.000458	**1477**	0.0533	0.000394	**1523**	0.3017	0.002234
1432	0.0600	0.000444	**1478**	0.0499	0.000370	**1524**	0.1259	0.002421
1433	0.0573	0.000424	**1479**	0.0482	0.000357	**1525**	0.1215	0.002336
1434	0.0667	0.000494	**1480**	0.0636	0.000471	**1526**	0.1015	0.001951
1435	0.0591	0.000437	**1481**	0.0649	0.000480	**1527**	0.1646	0.003166
1436	0.0593	0.000439	**1482**	0.0669	0.000496	**1528**	0.1546	0.002973
1437	0.0567	0.000420	**1483**	0.0649	0.000481	**1529**	0.1305	0.002510
1438	0.0797	0.000590	**1484**	0.0677	0.000501	**1530**	0.1597	0.003072
1439	0.0736	0.000545	**1485**	0.0596	0.000441	**1531**	0.1491	0.002867
1440	0.0661	0.000489	**1486**	0.0702	0.000520	**1532**	0.1526	0.002934
1441	0.0686	0.000508	**1487**	0.0675	0.000500	**1533**	0.1442	0.002773
1442	0.0632	0.000468	**1488**	0.0747	0.000553	**1534**	0.1328	0.002555
1443	0.0673	0.000498	**1489**	0.0685	0.000507	**1535**	0.1390	0.002673
1444	0.0687	0.000509	**1490**	0.0844	0.000625	**1536**	0.1289	0.002478
1445	0.0587	0.000435	**1491**	0.0833	0.000616	**1537**	0.1402	0.002696
1446	0.0607	0.000450	**1492**	0.0807	0.000597	**1538**	0.1485	0.002855
1447	0.0563	0.000417	**1493**	0.0731	0.000541	**1539**	0.1789	0.003440
1448	0.0780	0.000577	**1494**	0.0707	0.000524	**1540**	0.1693	0.003255
1449	0.0731	0.000541	**1495**	0.0627	0.000464	**1541**	0.1806	0.003474
1450	0.0614	0.000455	**1496**	0.0590	0.000437	**1542**	0.2115	0.004068
1451	0.0615	0.000455	**1497**	0.0553	0.000410	**1543**	0.2223	0.004276
1452	0.0605	0.000448	**1498**	0.0622	0.000461	**1544**	0.2316	0.004454
1453	0.0508	0.000376	**1499**	0.0727	0.000538	**1545**	0.2450	0.004712
1454	0.0643	0.000476	**1500**	0.0802	0.000593	**1546**	0.2042	0.003927
1455	0.0987	0.000731	**1501**	0.0648	0.000480	**1547**	0.2262	0.004349
1456	0.0923	0.000683	**1502**	0.0546	0.000404	**1548**	0.2306	0.004434
1457	0.0728	0.000539	**1503**	0.0657	0.000487	**1549**	0.2827	0.005436
1458	0.0749	0.000554	**1504**	0.0657	0.000486	**1550**	0.2942	0.005657
1459	0.0709	0.000525	**1505**	0.0728	0.000539	**1551**	0.2892	0.005562
1460	0.0722	0.000535	**1506**	0.0873	0.000646	**1552**	0.2635	0.005067
1461	0.0751	0.000556	**1507**	0.0875	0.000648	**1553**	0.2927	0.005629
1462	0.0795	0.000589	**1508**	0.1102	0.000816	**1554**	0.2913	0.005603
1463	0.0738	0.000546	**1509**	0.0969	0.000718	**1555**	0.2873	0.005525
1464	0.0703	0.000520	**1510**	0.0866	0.000641	**1556**	0.3165	0.006086
1465	0.0696	0.000516	**1511**	0.0960	0.000711	**1557**	0.2826	0.005435
1466	0.0639	0.000473	**1512**	0.0781	0.000578	**1558**	0.2829	0.005440
1467	0.0666	0.000493	**1513**	0.0841	0.000623	**1559**	0.2887	0.005552
1468	0.0666	0.000493	**1514**	0.0808	0.000598	**1560**	0.3170	0.006096
1469	0.0758	0.000561	**1515**	0.0873	0.000647	**1561**	0.3285	0.006318
1470	0.0847	0.000627	**1516**	0.0800	0.000592	**1562**	0.4035	0.007759

Table A8.1 (cont.). *The two Consumer Price Indices, the deflator and inflation indices, for Sweden, 1290–2008 (July 1914 = 100).*

Year	Deflator index	Inflation index	Year	Deflator index	Inflation index	Year	Deflator index	Inflation index
1563	0.4326	0.008318	**1609**	0.7138	0.3569	**1655**	2.555	1.277
1564	0.5541	0.01066	**1610**	0.8212	0.4106	**1656**	2.702	1.351
1565	0.5765	0.01109	**1611**	0.7326	0.3663	**1657**	2.880	1.440
1566	0.5484	0.01055	**1612**	0.8189	0.4094	**1658**	2.423	1.211
1567	0.6269	0.01206	**1613**	0.8410	0.4205	**1659**	3.025	1.512
1568	0.7167	0.01378	**1614**	0.8950	0.4475	**1660**	3.068	1.534
1569	0.7803	0.01501	**1615**	0.8882	0.4441	**1661**	3.562	1.781
1570	1.0237	0.01969	**1616**	0.8830	0.4415	**1662**	3.359	1.680
1571	1.5058	0.02896	**1617**	0.8033	0.4017	**1663**	3.405	1.703
1572	1.6848	0.03240	**1618**	0.9029	0.4514	**1664**	3.175	1.588
1573	2.1575	0.04149	**1619**	0.8223	0.4112	**1665**	3.473	1.736
1574	2.2457	0.04319	**1620**	0.7584	0.3792	**1666**	3.362	1.681
1575	2.1036	0.04045	**1621**	0.6264	0.3132	**1667**	3.387	1.693
1576	0.4141	0.05177	**1622**	0.7185	0.3593	**1668**	2.877	1.439
1577	0.4021	0.05026	**1623**	0.8199	0.4099	**1669**	3.074	1.537
1578	0.4142	0.05177	**1624**	0.8536	0.4268	**1670**	2.843	1.422
1579	0.4169	0.05211	**1625**	0.8475	0.4237	**1671**	2.834	1.417
1580	0.4583	0.05729	**1626**	0.9672	0.4836	**1672**	3.298	1.649
1581	0.4132	0.05165	**1627**	1.044	0.5220	**1673**	2.929	1.465
1582	0.3843	0.04803	**1628**	1.428	0.7139	**1674**	4.127	2.063
1583	0.3904	0.04881	**1629**	1.520	0.7600	**1675**	4.013	2.007
1584	0.4034	0.05043	**1630**	1.984	0.9918	**1676**	3.636	1.818
1585	0.4211	0.05264	**1631**	1.941	0.9703	**1677**	4.234	2.117
1586	0.4421	0.05526	**1632**	1.839	0.9197	**1678**	4.093	2.047
1587	0.4597	0.05746	**1633**	2.309	1.155	**1679**	3.731	1.865
1588	0.5159	0.06449	**1634**	2.220	1.110	**1680**	3.058	1.529
1589	0.5003	0.06253	**1635**	2.042	1.021	**1681**	2.960	1.480
1590	0.5219	0.06523	**1636**	2.079	1.039	**1682**	2.850	1.425
1591	0.5448	0.06810	**1637**	1.996	0.998	**1683**	2.865	1.432
1592	0.4895	0.2448	**1638**	1.956	0.978	**1684**	3.857	1.928
1593	0.5978	0.2989	**1639**	2.076	1.038	**1685**	2.982	1.491
1594	0.4716	0.2358	**1640**	2.048	1.024	**1686**	2.859	1.429
1595	0.5266	0.2633	**1641**	2.386	1.193	**1687**	3.003	1.502
1596	0.6918	0.3459	**1642**	2.398	1.199	**1688**	3.215	1.607
1597	0.8003	0.4001	**1643**	2.340	1.170	**1689**	3.058	1.529
1598	0.6755	0.3378	**1644**	2.690	1.345	**1690**	3.129	1.564
1599	0.6759	0.3379	**1645**	2.328	1.164	**1691**	3.003	1.502
1600	0.5360	0.2680	**1646**	2.380	1.190	**1692**	3.193	1.597
1601	0.6980	0.3490	**1647**	2.358	1.179	**1693**	4.425	2.212
1602	0.7235	0.3618	**1648**	2.414	1.207	**1694**	4.155	2.077
1603	0.6457	0.3229	**1649**	2.822	1.411	**1695**	3.111	1.555
1604	0.6779	0.3390	**1650**	3.894	1.947	**1696**	4.244	2.122
1605	0.6231	0.3115	**1651**	3.040	1.520	**1697**	5.036	2.518
1606	0.6231	0.3115	**1652**	3.854	1.927	**1698**	5.266	2.633
1607	0.6761	0.3381	**1653**	2.395	1.198	**1699**	4.244	2.122
1608	0.6674	0.3337	**1654**	2.386	1.193	**1700**	3.894	1.947

Table A8.1 (cont.). *The two Consumer Price Indices, the deflator and inflation indices, for Sweden, 1290–2008 (July 1914 = 100).*

Year	Deflator index	Inflation index	Year	Both indices	Year	Both indices	Year	Both indices
1701	3.454	1.727	**1747**	6.007	**1793**	15.43	**1839**	61.43
1702	3.805	1.902	**1748**	6.453	**1794**	17.72	**1840**	61.02
1703	3.765	1.882	**1749**	6.022	**1795**	18.63	**1841**	63.81
1704	3.252	1.626	**1750**	5.764	**1796**	18.51	**1842**	63.40
1705	3.556	1.778	**1751**	6.070	**1797**	19.04	**1843**	60.35
1706	3.504	1.752	**1752**	6.067	**1798**	20.63	**1844**	55.46
1707	4.130	2.065	**1753**	5.923	**1799**	23.93	**1845**	61.63
1708	4.327	2.163	**1754**	6.202	**1800**	28.66	**1846**	63.87
1709	6.098	3.049	**1755**	6.627	**1801**	27.87	**1847**	64.63
1710	3.976	1.988	**1756**	7.364	**1802**	27.06	**1848**	60.93
1711	3.651	1.825	**1757**	7.949	**1803**	25.98	**1849**	60.41
1712	3.863	1.931	**1758**	7.967	**1804**	27.10	**1850**	63.43
1713	3.715	1.858	**1759**	7.511	**1805**	28.01	**1851**	65.58
1714	4.680	2.340	**1760**	7.824	**1806**	31.70	**1852**	64.99
1715	4.348	2.174	**1761**	9.079	**1807**	32.82	**1853**	70.05
1716	5.266	2.791	**1762**	12.65	**1808**	42.37	**1854**	71.50
1717	7.913	4.906	**1763**	13.71	**1809**	43.00	**1855**	83.40
1718	7.790	5.843	**1764**	14.49	**1810**	43.82	**1856**	89.23
1719	9.983	9.983	**1765**	13.58	**1811**	50.29	**1857**	87.34
1720	6.172	6.172	**1766**	12.05	**1812**	59.73	**1858**	75.22
1721	6.038	6.038	**1767**	9.80	**1813**	58.36	**1859**	73.23
1722	4.964	4.964	**1768**	8.61	**1814**	57.13	**1860**	79.24
1723	4.830	4.830	**1769**	8.50	**1815**	54.06	**1861**	82.92
1724	4.703	4.703	**1770**	9.48	**1816**	58.12	**1862**	80.56
1725	4.673	4.673	**1771**	11.66	**1817**	59.04	**1863**	77.43
1726	5.079	5.079	**1772**	12.24	**1818**	60.78	**1864**	73.41
1727	5.140	5.140	**1773**	11.28	**1819**	61.33	**1865**	73.81
1728	4.606	4.606	**1774**	9.92	**1820**	55.13	**1866**	76.62
1729	4.327	4.327	**1775**	11.62	**1821**	51.05	**1867**	85.84
1730	4.272	4.272	**1776**	11.61	**1822**	51.42	**1868**	85.10
1731	4.054	4.054	**1777**	11.85	**1823**	49.06	**1869**	76.91
1732	4.084	4.084	**1778**	12.48	**1824**	49.30	**1870**	77.17
1733	4.401	4.401	**1779**	12.30	**1825**	50.83	**1871**	78.68
1734	4.242	4.242	**1780**	12.39	**1826**	60.37	**1872**	82.17
1735	4.414	4.414	**1781**	13.05	**1827**	54.04	**1873**	89.44
1736	4.604	4.604	**1782**	13.09	**1828**	50.22	**1874**	90.78
1737	4.148	4.148	**1783**	13.67	**1829**	53.24	**1875**	89.84
1738	3.985	3.985	**1784**	12.43	**1830**	55.88	**1876**	89.80
1739	4.389	4.389	**1785**	13.29	**1831**	61.32	**1877**	89.60
1740	5.149	5.149	**1786**	13.60	**1832**	56.94	**1878**	81.71
1741	5.716	5.716	**1787**	12.83	**1833**	55.65	**1879**	77.94
1742	5.312	5.312	**1788**	13.58	**1834**	57.20	**1880**	82.62
1743	5.136	5.136	**1789**	13.95	**1835**	56.81	**1881**	84.34
1744	4.912	4.912	**1790**	13.91	**1836**	58.34	**1882**	83.73
1745	5.432	5.432	**1791**	13.72	**1837**	61.69	**1883**	82.03
1746	5.669	5.669	**1792**	14.63	**1838**	63.82	**1884**	78.99

Table A8.1 (cont.). *The two Consumer Price Indices, the deflator and inflation indices, for Sweden, 1290–2008 (July 1914 = 100).*

Year	Both indices	Year	Both indices	Year	Both indices	Year	Both indices	Year	Both indices
1885	74.88	**1910**	91.69	**1935**	155	**1960**	407	**1985**	2246
1886	71.05	**1911**	92.80	**1936**	157	**1961**	416	**1986**	2341
1887	66.91	**1912**	97.72	**1937**	162	**1962**	436	**1987**	2440
1888	71.00	**1913**	98.80	**1938**	165	**1963**	449	**1988**	2582
1889	73.15	**1914**	100.1	**1939**	170	**1964**	463	**1989**	2748
1890	74.40	**1915**	115	**1940**	193	**1965**	487	**1990**	3036
1891	79.27	**1916**	130	**1941**	219	**1966**	519	**1991**	3319
1892	75.95	**1917**	164	**1942**	234	**1967**	540	**1992**	3395
1893	73.85	**1918**	241	**1943**	235	**1968**	551	**1993**	3553
1894	70.01	**1919**	266	**1944**	234	**1969**	566	**1994**	3631
1895	70.07	**1920**	271	**1945**	233	**1970**	605	**1995**	3723
1896	70.63	**1921**	221	**1946**	234	**1971**	650	**1996**	3740
1897	73.80	**1922**	184	**1947**	241	**1972**	689	**1997**	3760
1898	76.27	**1923**	174	**1948**	255	**1973**	735	**1998**	3754
1899	80.85	**1924**	174	**1949**	256	**1974**	808	**1999**	3772
1900	83.05	**1925**	177	**1950**	260	**1975**	887	**2000**	3809
1901	82.58	**1926**	171	**1951**	304	**1976**	979	**2001**	3902
1902	82.94	**1927**	169	**1952**	326	**1977**	1090	**2002**	3986
1903	82.59	**1928**	170	**1953**	328	**1978**	1200	**2003**	4063
1904	82.62	**1929**	168	**1954**	331	**1979**	1286	**2004**	4078
1905	83.98	**1930**	162	**1955**	339	**1980**	1461	**2005**	4097
1906	86.91	**1931**	157	**1956**	356	**1981**	1638	**2006**	4153
1907	91.32	**1932**	155	**1957**	372	**1982**	1778	**2007**	4243
1908	93.15	**1933**	151	**1958**	388	**1983**	1937	**2008**	4390
1909	91.81	**1934**	152	**1959**	391	**1984**	2092	**2009**	(4378)

Sources: See the main text.

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