1.
Introduction to *Historical Monetary and Financial Statistics for Sweden, Volume II: House Prices, Stock Returns, National Accounts, and the Riksbank Balance Sheet, 1620–2012*

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1.1. Background to the project

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

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

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

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

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

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

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

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

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

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

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

1.2. Contents of this volume

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

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

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

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

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

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

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

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

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

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

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

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

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

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

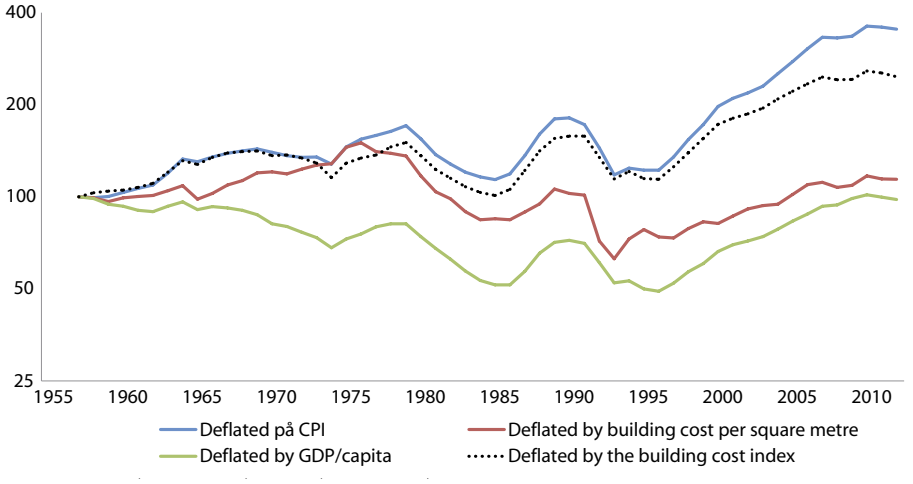
of producing new residential properties, should follow the Consumer Price Index. The price of housing deflated by the CPI does in fact roughly follow the price deflated by the cost-of-building index. It was quite stable from 1957 to the 1990s but the increase from the 1990s onwards has broken that pattern.

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

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

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

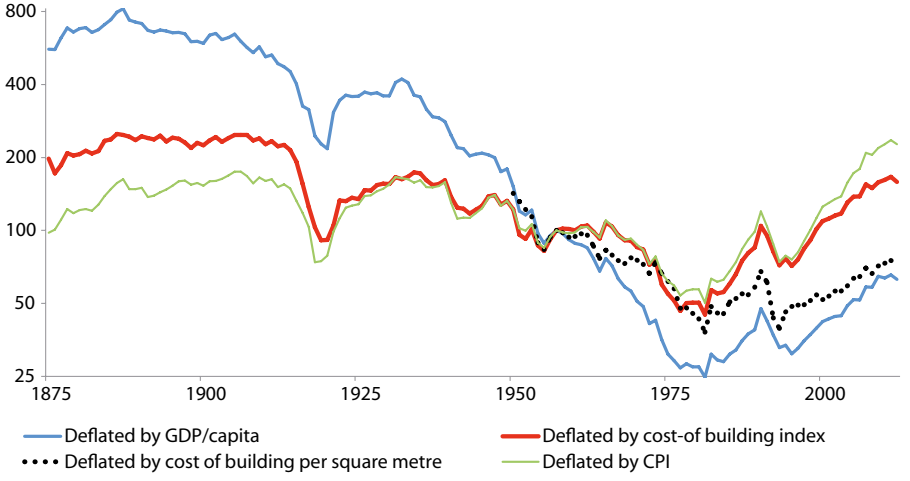
Figure 1.1: *The house price index, geometric average of Stockholm and Göteborg, deflated by four other indices, 1957–2012 (logarithmic scale).*



Sources: Chapters 2, 3 and 4 in this volume, Edvinsson and Söderberg (2010).

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

Figure 1.2: *The price index for apartment buildings, geometric average of Stockholm and Göteborg, deflated by four other indices, 1875–2012 (logarithmic scale).*



Sources: Chapters 2, 3 and 4 in this volume, Edvinsson and Söderberg (2010).

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

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

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

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

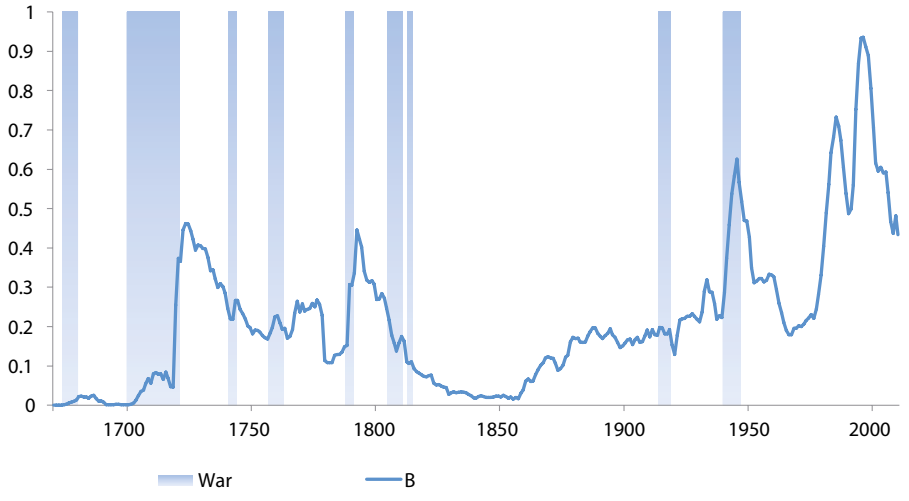
Peasant interior in the winter. Painting by Carl Larsson from 1890. Home industries stood for a large part of GDP in the 19th century. The exclusion of home industries from GDP gives a biased picture of the transformation from agrarian to industrial society, which is why the international guidelines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

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

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

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

Figure 1.3. *Government debt as a share of nominal GDP (B).*



Sources: Chapter 5 in this volume.

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

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

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

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

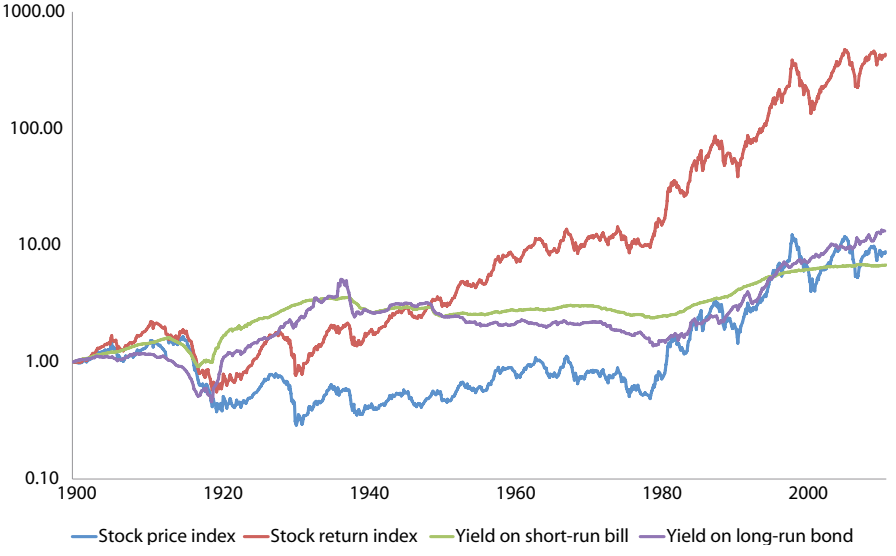
Figure 1.4 shows the basic series, which reveal a number of fascinating results. To understand the importance of the long-run returns, imagine a person in 1901 want-

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

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

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

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



1.7. Chapter 7: Swedish money supply, 1620–2012

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

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

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

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

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

The description of the balance sheet's evolution over the centuries is organized with reference to the explicit, or implicit, Riksbank goals, or guidelines – policy tar-

100 Swedish crowns issued as a paper note by the Riksbank. The note was convertible into gold coins weighing 40 gram.
Source: The Royal Coin Cabinet.

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

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

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

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

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

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

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

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

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

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

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

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

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

5 Morell (1986).

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

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

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

1.10. Acknowledgements

A number of people have contributed to the making of this book. In the research project's initial stages, Claes Berg and Lars Jonung made important contributions to its realization. We have from the very beginning received invaluable support and input from the Norwegian scholars working with their similar project at the Bank of Norway, in particular Ola Grytten and Jan-Tore Klovland at the Norwegian School of Economics and Business Administration in Bergen and Øivind Eitreheim at the Bank of Norway.

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