

The national wealth of Sweden, 1810–2014

Daniel Waldenström^{a,b,c,d}

^aDepartment of Economics, Uppsala University, Uppsala, Sweden; ^bCEPR, London, UK; ^cIZA, Bonn, Germany; ^dIFN, Stockholm, Sweden

ABSTRACT

This study presents a new database, the Swedish National Wealth Database, which contains annual data on private, public, and national wealth and sectoral saving rates in Sweden over the past two centuries. The paper reviews previous investigations of national wealth, compares their estimates with the ones presented here and discusses method approaches and measurement problems. The main results from data series are presented for assets and liabilities and their subcomponents, for the private and public domestic and foreign sectors. By complementing the past literature with its traditional focus on economic flow variables to understand long-run economic developments, this new database offers potentially new perspectives on a number of important issues in Sweden's economic history.

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1. Introduction

Questions about the development of the wealth of nations are among the most central in the study of economics. In this paper, I present new estimates of the national wealth of Sweden during 1810–2014, thus covering a period from the agrarian era and the different stages of industrialisation up to present day. There are no previous data available for most of this period and the major contribution of this work is thus the development of a consistent database, the Swedish National Wealth Database (SNWD).

The SNWD encompasses both private and public sectors in society, all major asset and liability categories, net foreign assets as well as a new set of sectoral (and national) gross and net saving rates. The series in the new database are constructed from a wide array of sources, primarily secondary materials in public and other statistical publications (e.g. tax assessments, private bank statistics) but also information in the large previous body of economic and historical research on Sweden. A central ambition has been to make the series consistent with each other as well as comparable across all historical eras, but this is not always easily done. For example, official bank lending statistics, used to estimate household borrowing, has undergone changes in reporting standards, definitions of lending units, or new financial instruments. Share ownership encompasses not only the household share of the readily observed stock exchange market capitalisation but also values of all non-listed incorporated company shares for which current market prices do not always exist. Government wealth consists of several non-standard, bulky assets whose market values can be quite uncertain. Despite these difficulties, however, the problems are often manageable and the final series appear to offer a robust picture of national wealth in Sweden. An extensive appendix, Waldenström (2015b), contains details and discussions of the database, methodological considerations, measurement problems, robustness checks and detailed comparisons with previous estimates.

This study also briefly presents some of the basic facts of Sweden's national wealth and its development throughout history. In a companion paper, Waldenström (2015a), a number of specific analyses of the Swedish wealth-income ratios are presented with specific aim at showing how and why they contrast with historical wealth-income ratios observed for other Western economies.

The SNWD adheres to a research literature dealing with the structure and development of aggregate household and national wealth, with prominent contributions being Goldsmith (1962, 1985), Goldsmith, Lipsey, and Mendelsen (1963), Atkinson and Harrison (1978), Wolff (1989), Soltow (1989), Davies, Lluberas, and Shorrocks (2011) and Piketty and Zucman (2014, 2015). Furthermore, the following section discusses the previous investigations of Swedish aggregate balance sheets and historical national accounts that have also been valuable in the construction of the SNWD.

It is worth stressing that the new database is fully available for download in its entirety.¹ The ambition is to make this database accessible and useful to everyone with an interest in the Swedish – and Scandinavian – economic history since the early nineteenth century. Distributing the data is, however, also a way to facilitate a continuing improvement and revision process of the database, not least in the light of the methodological problems at hand.

The rest of the paper continues as follows. Section 2 gives an overview of earlier studies of Swedish household wealth stocks. Section 3 presents the basic methodology and important measurement problems. In Section 4, the main results are presented while Section 5 compares the SNWD series with previous Swedish investigations and some international series. Section 6 offers some final concluding remarks.

2. Previous investigations of the national wealth of Sweden

There exist some previous investigations of Swedish aggregate balance sheets. These assessments cover shorter periods or, in some cases, single years, but they have nevertheless been crucial inputs in the construction of the long-run series of this study.

The earliest investigations known appeared in the first half of the nineteenth century. The first one was an unpublished summary of the wealth tax assessment in Sweden and Finland made the year 1800.² The exact source of this investigation is unknown, but a retrospective treatment by Fahlbeck (1890, p. 88) refers to a total taxable wealth in 1800 was about 800 million SEK in current prices (or 200 million *riksdaler specie*, the monetary unit used at the time). Adding non-taxable wealth such as inventories and livestock, but not debts the gross national wealth in 1800 was acclaimed to be well above one billion SEK.³ For the years around 1810, a second estimate was made by Hyckert (1815, pp. 28ff). This estimate was also a relatively rough and sketchy calculation, combining tax sources and capitalised flows. Its estimated gross national wealth was 2218.6 million SEK (or 1,479,117 *riksdaler banco*), but Fahlbeck (1890, p. 88) criticises this number for being both badly documented and for not sufficiently accounting for liabilities of the various sectors.

A second wave of national wealth assessments were made in the end of the nineteenth century. These estimates relied on more 'modern' templates for constructing wealth totals, using sectoral decompositions, more transparent methods (mainly capitalising observed yields) and a richer balance sheet structure. Karl Daniel Bollfras made two assessments, one for the year 1875 (Bollfras, 1878) and another one for 1880 (Bollfras, 1885). A third estimate was made for 1885 by Pontus Fahlbeck (Fahlbeck, 1890) and a fourth one, essentially updating his previous numbers, was made for 1898 by Fahlbeck (1901, pp. 453ff). These were all systematic and ambitious investigations of the total stock of wealth. Values for several asset classes were reported such as forestry, financial assets, inventories, infrastructure and communication equipment. Private and public – mainly foreign –

¹The current web address is www.ueeconomics.se/danielw/SNWD.htm (2015–2012).

²Soltow (1985) used material from this assessment to compute estimates of the distribution of personal wealth in Sweden in 1800.

³Soltow (1985) examines the 1800 wealth census in a study of personal wealth distribution, but only includes a sample of households and therefore lands at smaller aggregate values.

debt was also assessed for the first time. Unfortunately for our purposes, no decomposition was made between public and private sectors and, of course, not for households.

The arguably most comprehensive investigation of Sweden's national wealth before the 1980s is Flodström's (1912) monumental inquiry of the national wealth in year 1908. In this extensive and detailed work, Flodström collected information about the whole population of private firms, associations, and public bodies. The household wealth is mainly reaped in a smaller survey of estates, which was adjusted to reflect the wealth of the living using mortality multipliers. Despite this breadth of data, Flodström's investigation contains some beauty spots from a modern point of view. In particular, the sectoral decomposition is not identical with today's system. Households and firms are combined into one single category and in the estate-based estimations of household wealth only reports the final net marketable wealth and no split between assets and liabilities.

A follow-up on Flodström's investigation was made by Englund (1956) to capture national wealth in 1952. However, Englund's exercise was not very ambitious as it merely used Flodström's setup from 1908 and a set of back-of-the-envelope calculations using updated figures. In the 1970s, Spånt (1979) published an extensive study of the evolution of the Swedish household wealth distribution since 1920. The basis for Spånt's analysis was information about household assets and debts reported in Swedish Censuses of 1935, 1945, and 1951. Complementary data were collected from smaller surveys made in 1958 (a savings survey), 1966 (public estate and wealth tax return surveys), 1970 (a public household budget survey) and 1975 (a wealth tax return survey). Among Spånt's most important contributions is that he for each these data points provides detailed compositional evidence of the household wealth. Furthermore, he reports assets in both tax-assessed and (approximate) market values.

An important contribution is Lennart Berg's estimations of annual household balance sheets made for the period 1950 onwards (Berg, 1983, 1988, 2000 and later updates). The basis for Berg's pre-1970 series is Spånt's investigation, but he extends these data in a number of important ways not only by constructing annual estimates but also by adding estimates of the stock of consumer durables and pension assets. Berg's post-1970 data are based on the financial information in the Financial Accounts (of Statistics Sweden). Information on real assets is retrieved from other official data series at Statistics Sweden. The consumer durable series are constructed using annual consumption data and the perpetual inventory method (PIM). While these data are to a large extent the state of the art they suffer from the deficiencies of the material underlying Spånt's analysis.

In an attempt to reconcile the financial assets and liabilities of all sectors in society, Werin (1993) collected a unique database spanning the period 1945–1990. The series are basically an extended version of the financial accounts. While the project is impressive in its scope, there is no documentation for much of the pre-1970 part of the series, which make them problematic for subsequent use. Furthermore, the project disregarded – deliberately – the real assets on the balance sheet.

For the period 1980–1994 Statistics Sweden constructed an official series of national wealth for Sweden (Statistics Sweden, 1995; Tengblad, 1992, 1993). The ambition was to generate aggregate balance sheets for the entire economy that were incorporated with the flow accounts in the National and Financial Accounts. The generated series were carefully executed and many of them represent important benchmarks for the series reported in the current study.

The most recent contributions to the analysis of Swedish household assets and liabilities are the studies of Bergman, Djerf, and Lindström (2010) and Bergman (in press), Waldenström (2015a) which uses the SNWD, and also by Lindmark and Andersson (2014). In Bergman et al. (2010), a comprehensive examination of the evolution of household balance sheets between 1970 and 2008 is presented. Their point of departure is the Financial Accounts which covers balances and transactions of all financial assets and debts of all sectors, but the authors also compute estimates of non-financial assets by extrapolating the stocks of Statistics Sweden's national wealth project mentioned above by using for both earlier and subsequent years using housing price developments. Bergman (in press) extends these data and discusses the financial approach to national accounts, where the corporate sector is incorporated into the other sectors of society with no net worth of its own.

Lindmark and Andersson (2014) investigate series from tax assessments, fire insurance compilations, and some other sources to discuss a number of issues in measuring the size of the capital stock.

In addition to the studies of aggregate wealth, there are a number of previous investigations of Sweden's historical national accounts that have been pivotal inputs in the creation of the SNWD. One important project is the one started in the 1970s and 1980s by, among others, Lennart Schön and Olle Krantz. Their work has generated several versions of historical series on income and production, both for economy as a whole and for its sectors, and summaries are available in Krantz and Schön (2007) and Schön and Krantz (2012, 2015). Another important piece of work on the Swedish historical national accounts is also that of Edvinsson (2005, 2014). Edvinsson series comprise the primary source of the national income series used in the SNWD it contains historical series on GDP by expenditure, which is the main GDP concept used by Piketty and Zucman (2014) and today also by Statistics Sweden.⁴

3. Methodology and measurement problems

This section presents and discusses some of the main methodological principles and empirical problems of the construction of the SNWD. Given spatial constraints the discussion is kept at a minimum, but further information and details about sources, valuation, limitations, and various method choices can be found in the appendix Waldenström (2015b) and the separate data files included in the downloadable SNWD package.

The definition and estimation of the variables in the SNWD follows the current standard statistical principles laid out in the System of National Accounts of the United Nations, SNA 2008 (United Nations, 2009) and Eurostat's, ESA 2010 (Eurostat, 2013). The study also builds on the analysis of Piketty and Zucman (2014) in which another new historical national wealth database for other Western countries is presented.

The main variable of interest is *net wealth*, which is defined as the sum of non-financial assets and financial assets in current market values less liabilities. Non-financial assets are composed of produced assets, which are outputs from a production process (goods, constructions, dwellings, etc.), and non-produced assets, which appear naturally (farmland, forests, gardens, etc.). Financial assets and liabilities are claims, held and issued, that are payable in everything from the (sometimes very) short-run (currency, deposits) and longer-run (stocks, bonds). In the case of households, liabilities include mortgage debt, consumer debt and all other household debt. Note that the balance sheet is unconsolidated, which means that financial assets and matching liabilities are not netted out within sectors by, for example, cancelling out all informal lending of households to other households. Instead the assets held by one sector, for example, households, are matched by liabilities of other households as well as of other sectors (corporations, public agencies, or foreigners).

Sectoral wealth holdings are also reported. Private wealth is the sum of household and corporate net wealth. The estimation of private wealth is based on subtracting all household liabilities from all household assets, following an approach also used in Piketty and Zucman (2014). Corporate wealth held by the private sector is thereby included in the private wealth through the household stock ownership.⁵ Government wealth is the sum of central and local government wealth. National wealth, finally, is the sum of private and public wealth. Table 1 presents the balance sheet of the Swedish national wealth, with a detailed focus on the household balance sheet, by the end of 2014.

⁴Waldenström (2015b, section F) examines the Swedish wealth-income ratio changes if one switches national income series coming from the different sources. The results suggest overall small effects, but since the recent upgradings of both historical (e.g. adding home production) and current GDP have raised GDP, the main wealth-income ratio is somewhat lower than the ones where other national income series are used.

⁵This means that the SNWD does not report the corporate sector balance sheet separately. Note that there may be a deviation between the market value of corporations, shown in households' market-valued stocks, and the difference between corporate assets and liabilities, that is, when Tobin's *Q* differs from one. See Waldenström (2015b, section C3) for a calculation of Tobin's *Q* for Sweden since 1980.

Table 1. The national wealth of Sweden in 2014.

| | Billion SEK | Billion Euro | Share of net wealth (%) | Share of Y (%) |
|--|-------------|--------------|-------------------------|----------------|
| Private assets | 19,062 | 2028 | 107 | 573 |
| Non-financial assets | 9402 | 1000 | 53 | 282 |
| Produced assets | 5035 | 536 | 28 | 151 |
| Inventories | 44 | 5 | 0 | 1 |
| Non-produced assets | 4323 | 460 | 24 | 130 |
| Consumer durables | 1,029 | 109 | 6 | 31 |
| Financial assets | 9660 | 1028 | 54 | 290 |
| Bank deposits and currency | 1531 | 163 | 9 | 46 |
| Shares and mutual funds | 2992 | 318 | 17 | 90 |
| Bonds | 113 | 12 | 1 | 3 |
| Other claims | 12 | 1 | 0 | 0 |
| Private pension savings | 5012 | 533 | 28 | 151 |
| Private liabilities | 3764 | 400 | 21 | 113 |
| Financial sector | 3057 | 325 | 17 | 92 |
| Public sector | 302 | 32 | 2 | 9 |
| Agricultural loans to unincorporated farms | 380 | 40 | 2 | 11 |
| Other loans | 24 | 3 | 0 | 1 |
| Private wealth (<i>W</i>) | 15,298 | 1627 | 86 | 460 |
| Government assets | 5089 | 541 | 29 | 153 |
| Central government | 3696 | 393 | 21 | 111 |
| Local government | 1393 | 148 | 8 | 42 |
| Government liabilities | 2611 | 278 | 15 | 78 |
| Central government | 2023 | 215 | 11 | 61 |
| Local government | 588 | 63 | 3 | 18 |
| Government net wealth | 2478 | 264 | 14 | 74 |
| National wealth | 17,776 | 1891 | 100 | 534 |

Source: SNWD, v 1.2, Tables SE2.1 (national wealth), SE2.2 (private non-financial assets), SE2.3 (private financial assets), and SE2.5 (private liabilities). National income is from Edvinsson (2014).

Notes: National wealth is the sum of Private and Government net wealth. Condominiums are included in private produced non-financial assets. SEK/Euro exchange rate is 9.4.

Problems and challenges associated with constructing a national balance sheet that spans over long time periods have previously been pointed out by, for example, Goldsmith (1985) and Piketty and Zucman (2014). A central difficulty concerns the valuation of assets (and sometimes liabilities). The guidelines of the SNA 2008 and ESA 2010 stipulate that assets should always be market-valued, at current market price levels. Many of the non-financial assets in the SNWD are recorded in tax-assessed values, which typically – but not always – differ from market values (sometimes explicitly stipulated in tax legislation). Considerable effort is therefore spent on converting the tax values to market values and the main method to do so is to use market-to-tax value ratios based on local sales prices compiled by statistics authorities and related to tax values. Evidence on market prices comes from public statistical publications and previous investigations. The method performs overall quite well, but after particularly large tax reassessments its adjustment becomes coarse and causes too large jumps in asset values.

Sectoral decompositions in historical aggregate data series is another problem. Today's sectors (public, non-financial, and financial corporate, households, foreign) did not form the basis for how past statistical evidence was presented. Some sources, for example, banking statistics and property tax sources, often lump households and firms together into one joint category. Drawing on different objective and subjective pieces of evidence about the shares of household and firm assets or liabilities, a homogenous household sector has been created for all series.

Perhaps the single most difficult asset component to estimate, and yet one of the most important ones in the entire national balance sheet, is privately owned shares in corporations, mutual funds, and unincorporated firms. A basic distinction concerns whether the incorporated shares are listed (and traded) on organised secondary securities markets (stock exchanges) or if they are not. This difference has bearing on both valuation approaches and, in particular, the general availability of information on the size of these stocks. In the case of listed shares, information about the number

of listed shares and their market value was recently presented by Waldenström (2014). For non-listed shares, however, little is known about numbers or total values both today and for the historical period. Unincorporated businesses are even more problematic and in the absence of systematic public sources of information, their size has to be estimated from estimations of their total output and assumptions about capital-output ratios. Adding to this uncertainty does the almost complete lack of previous attempts to estimate their size or aggregate value of this arguably important class of private assets.

Separating between produced and non-produced non-financial assets, main categories in today's balance sheet definition, is another difficulty since this was typically not done in the historical materials. The central source, tax assessments, presents in most historical periods aggregate property values without reference to the relative values of produced (dwellings, other buildings, livestock), and non-produced (land, farmland, forestry) assets. Using scattered evidence in the previous national wealth investigations and from the 1920s onward series on buildings, land, forestry, etc., relative shares of produced assets are estimated.

Public sector assets are more difficult to value than private assets since many public entities are not for sale and therefore lack a market price. This is especially true for the many public utilities (water power, railways, etc.). In these cases, rough capitalisation approaches have been used, using reported annual earnings and assumptions of rates of return (usually three per cent real rate). Since the 1990s, most public were transformed into public corporations and valuation is more straightforward.

Altogether, while the SNWD offers the first comprehensive historical national wealth database it is obviously not perfect and will likely be revised in various respects over the coming years. As a means to facilitating this process, the database is made fully downloadable in its entirety, including sub-files showing detailed computations and a lengthy abstract describing data, methodological approaches and problems. Hopefully, this will facilitate not only the comprehension and use of the actual series but also to suggest improvements and additions of the database.

4. The basic facts: Swedish national wealth over two centuries

This section reports some basic results of the new national wealth series. Some specific areas are discussed: the composition of deposits across bank categories, the historical trends in household indebtedness, the role of listed and unlisted corporate shares, the importance of pension entitlements and also the stock of consumer durables, the estimation of government wealth. The section ends by depicting the long-run trends in Sweden's national wealth. Note that most figures report wealth (or its composition) as share of national income.⁶ This is done to make the stocks more easily interpretable in real terms and relative to an intuitive – and consistently measured over time – economic concept: the total amount of income earned by the Swedes during one calendar year.

4.1. Private wealth

Figure 1 shows the private wealth-income ratio for Sweden over the last two centuries. Several interesting patterns stand out. To begin with, the level of the wealth-income ratio hovers between three and five, meaning that the private sector net assets have represented between three and five year's income through the past two centuries. The series yet exhibit some apparent secular trends that are informative for the economic historiography of Sweden. During the pre-industrial era, which ended around 1870, the wealth-income ratio was stable at a relatively low level, roughly 300%. The industrial take-off (approximately 1870–1910) brought with it an increase in the ratio, to 400–450%. Although Swedish households experienced a sharp wealth shock, largely inflation-driven,

⁶National income equals the gross domestic product minus net foreign factor income (i.e. incomes to and from foreigners in and outside of Sweden) and capital depreciation. Data come from Edvinsson (2005, 2014).

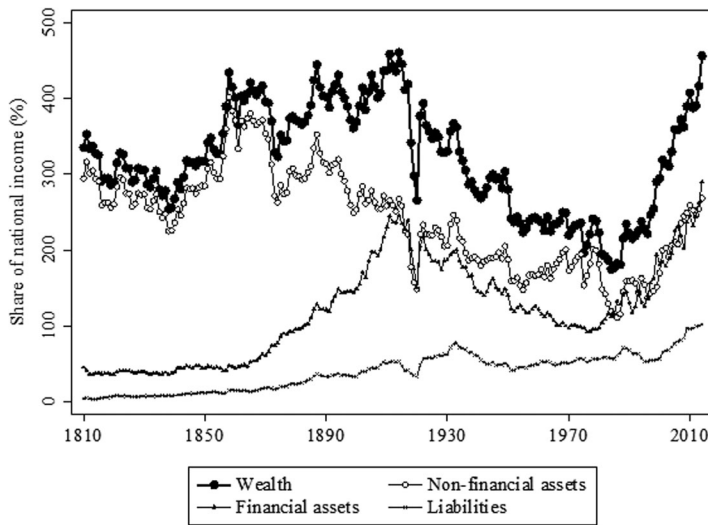


Figure 1. Private wealth-income ratio in Sweden, 1810–2014. Source: SNWD, v 1.2, Table SE2.1.

around the time of the First World War, it was restored at pre-war levels already by the early 1920s. During the rest of the twentieth century, the private wealth-income ratio fell steadily, despite a continuing industrialisation, up the 1980s down when it fell to even below pre-industrial levels. From around 1990, by contrast, there is a sharp and rapid increase and today it has reached a level not seen since a century ago.

Looking at the composition of private wealth, non-financial assets represent the most important component over the entire period. During the nineteenth century, it completely dominated the asset side. This was before the emergence of an organised corporate legislation, free enterprise, and formal credit markets. Transactions were largely based on barter or in-kind based exchanges. Industrialisation and economic modernisation began in the 1870s, monetising the economy and this spurred a rise in the share of financial assets in household portfolios which caught up with non-financial assets by the time of the outbreak of the First World War. Liabilities were relatively unimportant in the agrarian era, even when including estimates of the sizeable informal credit market (see further below). Over time their share rose steadily, however, and in recent decades the share has reached historic levels.

One can also relate the stock of private wealth to household disposable income, which is also available in SNWD over the whole period. Figure 2 shows this ratio alongside the private wealth-national income ratio and. The two series are bound to differ and this is most clearly visible in the postwar era. This reflect naturally reflects the increasing share of welfare services shifting from private to public provision, financed largely via the tax bill. While it is a matter of perspective which one of these series one prefers to use, the arguably most homogenous one over time is the ratio based on national income as this is not sensitive to the column shift from private to public welfare spending.

A final note on the household portfolio is shown in Figure 3, which gives a picture of the long-run trend in aggregate household indebtedness when related to income and total assets. This offers historical perspective to the current discussion about the solidity of households. The figure shows a clear rise in both ratios over time up until the middle of the twentieth century, after which the series behave differently from each other. The debt-to-income ratio fluctuates more, perhaps not too unexpectedly, and the rise in the two last decades has taken the ratio to currently historic proportions with the sum of debt reflecting about one full year's national income (and almost two years of household disposable income). Looking at the debt-to-asset ratio, however, there is a different story of a much

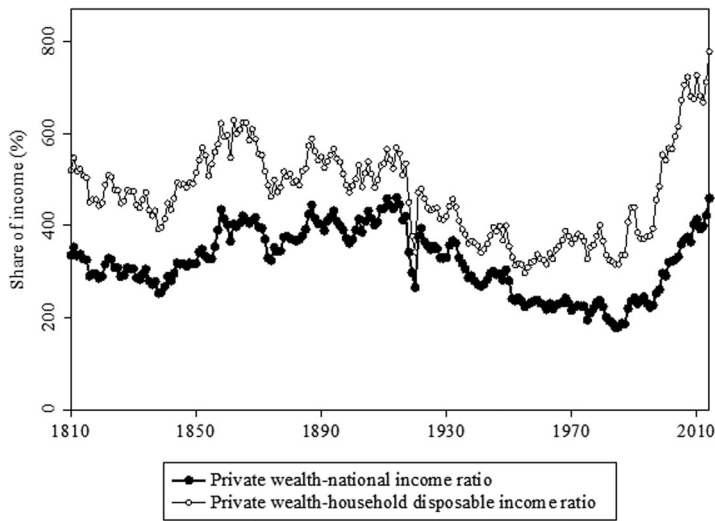


Figure 2. Private wealth to household disposable income and national income, 1810–2014. Source: SNWD, v 1.2, Tables SE2.1, SE4.1.

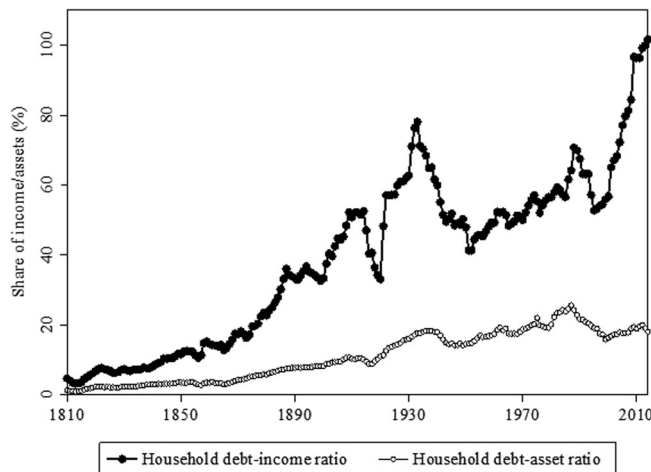


Figure 3. Household debt over national incomes and total assets, 1810–2014. Source: SNWD, v 1.2, Tables SE2.5, SE4.1.

less dramatic development of household debt. In fact, in recent years the rising debts are matched by rising asset levels, which adds interesting perspective when deeming the graveness of indebtedness.

How are household assets and liabilities structured? Figure 4 shows a detailed decomposition and its evolution over the long run. The left panel shows that agricultural assets, including farmland, forests, and buildings (including livestock), comprised four fifths of non-financial assets in the agrarian era while housing stood for the remaining fifth. Industrialisation brought about a reduction in the share of agriculture, caused by the gradual rise of the value of personal homes that become more important to people as their incomes rose. The process was slow and it was not until the 1930s as housing overtook the role of being the major share of non-financial household assets.

The middle panel shows financial asset composition. Until the 1970s bank about two thirds of them were made up of deposits and currency together with business equity (incorporated and unincorporated). Informal claims, that is, loans given informally to others as trade credit or other type of

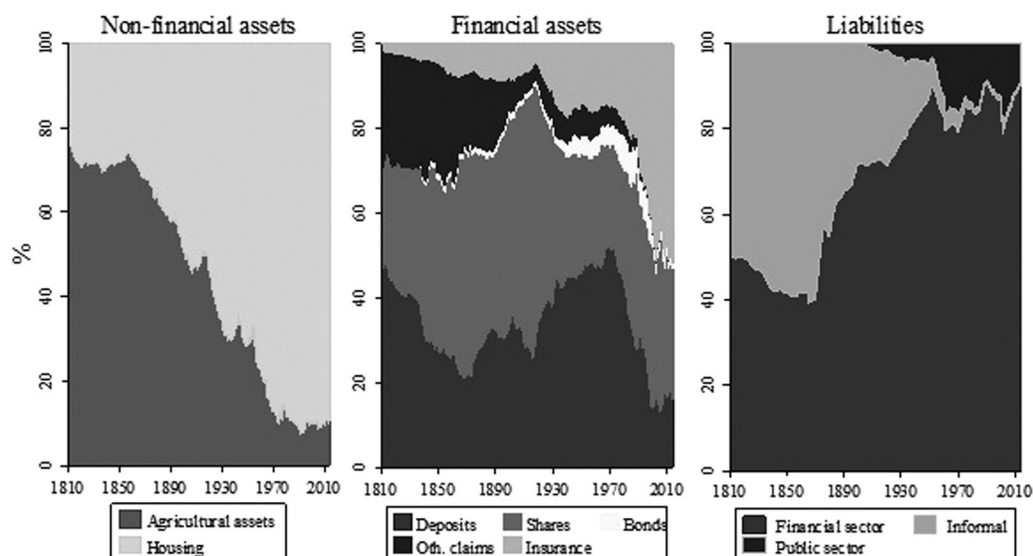


Figure 4. Composition of Swedish household assets and liabilities, 1810–2014. Source: SNWD, v 1.2, Tables SE2.2, SE2.3, SE2.5.

loans, were important in the nineteenth century, representing about one fifth of financial assets. The large share of business equity is interesting and it reflects that when making a serious attempt to value the stock of businesses, unincorporated and later incorporated, it turns out that their total value was sizeable. In the late postwar era, insurance savings – mainly funded occupational pension savings – grew rapidly expanded in household portfolios and they today represent half all household financial assets.

The right panel shows the composition of household debts. As already been mentioned, Sweden had no really well-functioning household credit market before the twentieth century. The few banks and financial intermediaries that existed were mainly focusing on lending to agriculture (saving banks, mortgage associations) or private industry (commercial banks) and attracting deposits (savings banks). As a consequence, the majority of pre-1900 household loans were informal.⁷ Along with financial institutional development and the rise of a middle class, the Swedish banks overtook the role as main household creditor in the twentieth century. Today, financial intermediaries stand for about 90% of all household borrowing whereas the rest comes from state lending to mainly students in post-secondary education.

The new SNWD database also offers new perspective to some specific parts of the modern economic history of Sweden. Figure 5 shows a disaggregate view of liquid financial assets held as cash and bank deposits between 1810 and 1970. Early on, notes and coins represented about four fifths of people's financial assets with the rest being deposits in the Riksbank and Discount banks. Saving banks started emerging in the 1820s and soon become relatively important and even though the first commercial banks came in the 1830s, they were not oriented towards household services until the 1870s when joint-stock banking became widespread. By the turn of the century 1900, commercial and saving bank deposits were the vastly dominating form of household savings, mirroring the remarkable financial development that Sweden underwent during this era.

⁷Quantifying the spread and size of these informal claims is, of course, difficult since they do not appear in the official statistical sources or banking statistics. However, they do show up in people's probate records that are compiled at the time of death, and this source of the sum of informal credits has formed the basis for their estimation (see further Waldenström, 2015b). The structure informal and formal credit markets in nineteenth-century Sweden has been studied by, for example, Lindgren (2002), Lilja (2004) and Perlinge (2005).

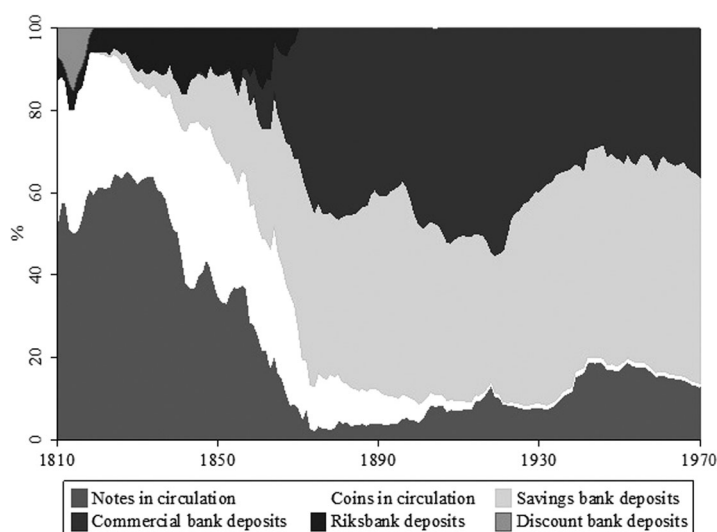


Figure 5. Household bank deposits and currency, 1810–2014. Source: SNWD, v 1.2, Table SE2.3.

Table 2. The role of pension wealth in Swedish household portfolios in 2014.

| | Billion SEK | Billion EUR | Share of W (%) | Share of AW (%) | Share of Y (%) |
|--|-------------|-------------|-------------------|--------------------|-------------------|
| Assets | 19,062 | 2028 | 125 | 81 | 573 |
| Non-financial assets | 9402 | 1000 | 61 | 40 | 282 |
| Financial assets | 9660 | 1028 | 63 | 41 | 290 |
| Liabilities | 3764 | 400 | 25 | 16 | 113 |
| Private wealth (W) | 15,298 | 1627 | 100 | 65 | 460 |
| Pension wealth in public system | 8699 | 925 | 57 | 37 | 261 |
| Unfunded | 8053 | 857 | 53 | 34 | 242 |
| Funded | 646 | 69 | 4 | 3 | 19 |
| Pension wealth in private system | 1156 | 123 | 8 | 5 | 35 |
| Unfunded | 261 | 28 | 2 | 1 | 8 |
| Funded | 895 | 95 | 6 | 4 | 27 |
| Total unfunded pension wealth (PW) | 8314 | 884 | 54 | 35 | 250 |
| Total pension wealth | 9855 | 1048 | 64 | 42 | 296 |
| Augmented private wealth (AW = W + PW) | 23,612 | 2512 | 154 | 100 | 709 |

Source: SNWD, v 1.2, Tables SE2.1, SE2.3 (pension wealth). National income from Edvinsson (2014). SNWD based on SNWD, v 1.2, Table SE2.1.

Notes: Note that $AW = W + PW$. See text and Waldenström (2015b) for a description.

Pension wealth is specific and partly excluded from the analysis. Funded pensions savings, private and public, are included in the private financial assets, but unfunded (defined benefit) pension entitlements in private and public pension schemes are not. The reason for excluding the latter is that they lack a well-defined counterparty (there is no balancing pension debt in the state balance sheet) and they are therefore placed in a memorandum category in the SNA, outside the main wealth concept. However, people may still consider expected future pension incomes when making decisions about how much wealth to accumulate during their working life, and therefore, it may be interesting to estimate these unfunded pension claims when examining total private wealth.⁸ The SNWD contains such estimates and Table 2 shows their relative importance today in the Swedish household portfolio.⁹

⁸Indeed, Feldstein (1974), Berg (1983) and Gale (1998) present evidence on a negative relationship between public pension assets and private financial wealth.

⁹Waldenström (2015a) analyses the historical evolution of these pension assets back to the nineteenth century.

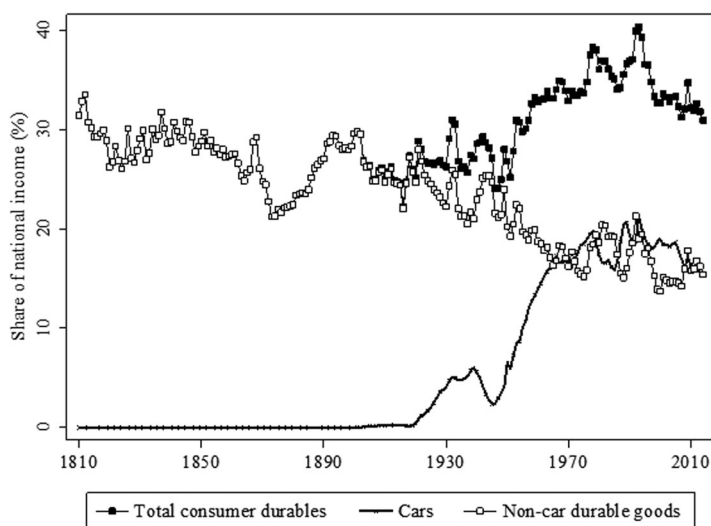


Figure 6. Consumer durables: cars and other durable goods, 1810–2014. Notes: The stock of consumer durable goods based on accumulating annual consumption flows and subtracting an assumed depreciation of 15%. See text and Waldenström (2015b) for a description. Source: SNWD, v 1.2, Table SE2.2.

Consumer durable goods (cars, boats, furniture, etc.) are another special kind of household asset that is not included in SNA's core wealth definition. The reason is that all consumption goods are assumed be consumed away within one year and can therefore not contribute to any fixed asset formation. Nevertheless, many durables last arguably for more than one year, for example, cars, boats, or electronic equipment, which is why some countries (e.g. the US) do in fact include them in household balance sheets. In the SNWD, durable consumer goods are not included in the main wealth concept but there is an estimated series based on consumption flow data and the PIM, assuming an annual depreciation rate of 15%.¹⁰ Figure 6 shows consumer durables amounted to about 30% of national income throughout the last two centuries, a level which corresponds to about a tenth of non-financial assets in the nineteenth century and then about 15–20% in the postwar era mainly due to the expansion of personal car ownership.

4.2. Government wealth

Public sector assets and liabilities form an important part of national balance sheets. Herein are the basic structures of public infrastructure, utilities, and much of the potential to offer welfare services that many scholars have stressed as being key to long-run economic development. The SNWD covers the public sector balance sheet each year since 1870, the first year when the full government data are available. In the database, the public sector is divided between *central government* and *local government*, which basically follows the way government has been institutionally organised in Sweden since centuries. Central government is effectively the state but includes since the 1950s also the social insurance system (*socialförsäkringssystemet*). Local government consists of two administrative levels: counties (*landsting*), running health care and public transport, and municipalities (*kommuner*), responsible for among other things childcare, education, and elderly care.¹¹

Figure 7 shows the evolution of assets, liabilities, and net wealth as share of national income of Swedish central and local governments. It should be noted that local government balances are smaller and less volatile, a fact partly due to balanced budget requirements that have been in place over most of

¹⁰See further Waldenström (2015b, section B3).

¹¹The formalisation of the modern municipalities and counties was done in the early 1860s.

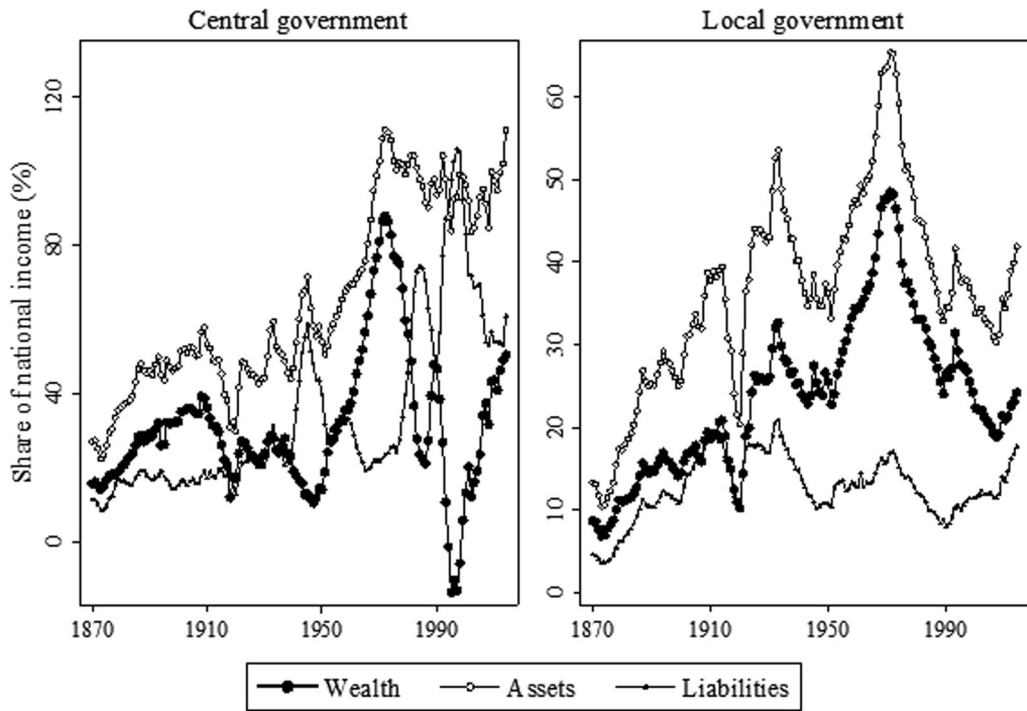


Figure 7. Public wealth: central and local governments, 1870–2014. Note: ‘Wealth’ refers to net wealth. Source: SNWD, v 1.2, Table SE3.1.

the period. The central government wealth, by contrast, exhibits a more volatile pattern. Particularly interesting episodes are the accumulation of state pension funds in the 1960s and government borrowing during the 1980s and 1990s, both of which were of historic proportions as shown by the database.

4.3. National wealth

The evolution of national wealth in Sweden as share of national income during 1870–2014 is shown in Figure 8. The dominance of private wealth over public wealth is obvious, and only in a couple of decades in the postwar period did the Swedish government, following a rapid accumulation of buffer funds to back up the public pension system, reach a sizeable share of total national wealth.

Net foreign assets are the difference between claims on foreigners held by Swedes and the claims on Swedes held by foreigners. These are included in the country’s national wealth besides the domestic capital stock. There is a long-standing debate in Swedish economic history research about the role of foreign capital in the initial industrial era, some parties arguing that it mattered little as most of observed firm credits came from domestic banks while others arguing that these banks indeed capitalised themselves using these foreign funds (see e.g. Gårdlund, 1942; Schön, 1989, 2012). Calculating the foreign position of Swedes in past times is, however, not trivial. Past research suggest two main methods. The *indirect method* accumulates the capital account,¹² while the *direct method* sums the value of Swedish bond (and bank) loans floated abroad, both of which are fairly well documented

¹²Schön (1989) estimates a series of Swedish net capital imports from the 1820s, using a method based on comparing the net export and changes in the foreign exchange reserves at the Swedish Riksbank. Schön adds the costs of the imported capital, using the interest on government bonds as a proxy for the cost of capital. The foreign debt stock is the equal to the accumulated capital imports. See further Waldenström (2015b, section C7).

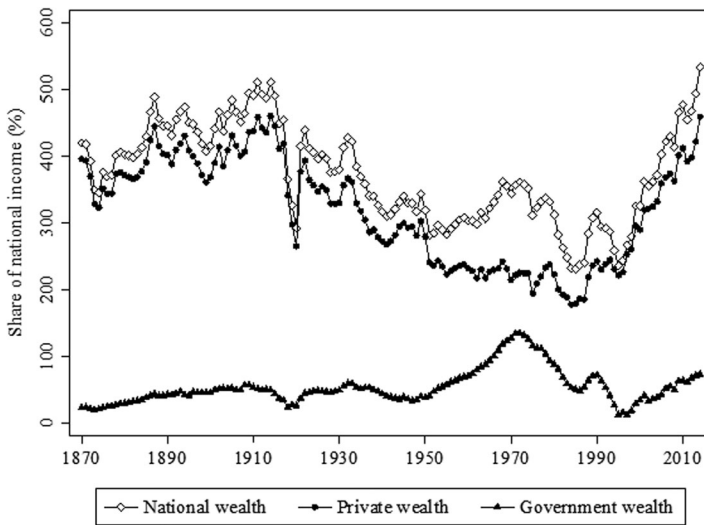


Figure 8. National wealth of Sweden, 1810–2014. Note: ‘Wealth’ refers to net wealth. Source: SNWD, v 1.2, Table SE1.2.

historically, and subtract the Swedish possessions of foreign bonds and bank debt, which less well observed.

Figure 9 plots two series of net foreign assets as share of national income resulting from the two distinct methods. As can be seen, they comfortably enough match each other fairly well in levels as well as in time trends. Their message, moreover, is fascinating: they show that Sweden was importing capital from the middle of the nineteenth century and that this import peaked around the turn of the century. Later, when Sweden had become industrialised and also gained from staying outside the First World War, the country was rich enough to start repurchase its external debt and Sweden turned from net debtor to net creditor in less than a decade. Although this episode is well known to economists and historians, less known is the relative importance of the stock of Swedish capital imports in terms of the country’s available domestic and national endowment. At their peak, the capital imports reached about one half year’s national income or one tenth of national wealth.

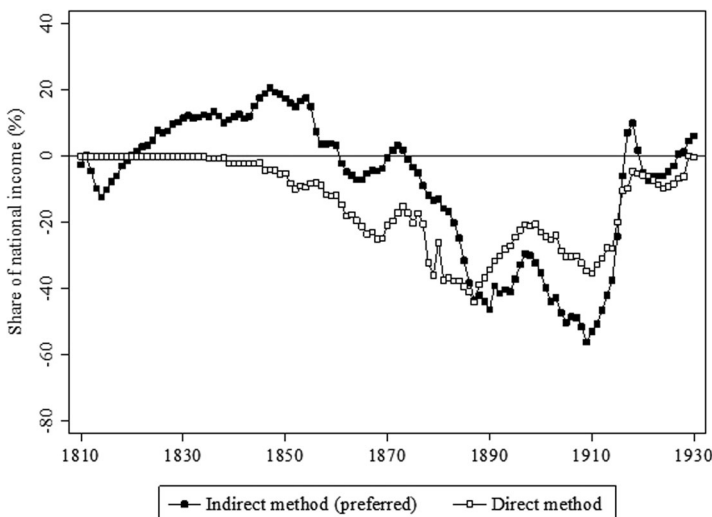


Figure 9. Foreign wealth, 1810–1930: direct and indirect estimation approaches. Note: ‘Wealth’ refers to net wealth. See text for a description.

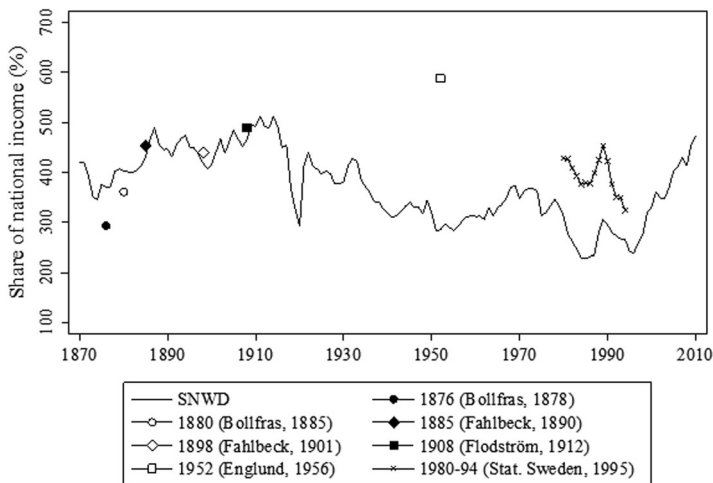


Figure 10. Swedish national wealth in the SNWD and previous investigations. Notes: ‘Wealth’ refers to net wealth in all cases. See text and Waldenström (2015b) for a description. Source: SNWD based on SNWD, v 1.2, Table SE2.1.

While this is indeed economically significant, and at par with the total outstanding lending by commercial banks, it represented only about one fourth of the country’s total corporate (and incorporated) business equity, about a third of household deposits in banks, or the same level as either total private agricultural land or total privately owned timber tracts. In other words, while these new wealth data may not settle the long-standing debate about the role of foreign capital in Swedish industrialisation, it does indeed provide perspective and contribute in tempering some of the arguments raised.

5. Comparisons with previous estimates for Sweden and other countries

It is informative to contrast the series in the SNWD against other series offered by earlier investigations for single years or periods. Figure 10 shows the ratio of national wealth to national income in Sweden between 1870 and 2010 for the SNWD series, which is available annually over the full period, and the previous estimates available offered for single years and periods. It should be stressed that this is not an out-of-sample check on the SNWD since many of its series actually depend on the previously constructed estimates.

The early estimates by Bollfräs (1878, 1885) are 10–20% smaller than the SNWD numbers whereas the estimates by Fahlbeck (1890, 1901) and Flodström (1912) actually exceeds the SNWD figures by a few percentages. The estimate by Englund (1956) is twice as high as the SNWD estimate, and this is caused by Englund’s use of fire insurance values to estimate the stock of non-financial assets instead of using the tax assessments (or perpetual inventory-based net present values of accumulated investments). There are at least two reasons why Englund’s estimate should be interpreted with specific caution. First, Swedish fire insurance values have exhibited a very volatile development over time with little relationship to fundamental changes in asset prices: they amounted to less than a third of total non-financial assets and the stock of consumer durables in the 1860 and 1870s, reached the same level in the 1900s and 1910s and then rose to more than twice the value from the 1930s onwards.¹³ Second, the postwar wealth-income ratio according to Englund vastly exceeded all wealth-income ratios seen in any Western country at this time of depressed postwar capital values.

¹³See Waldenström (2015b, Section B3) for a closer comparison.

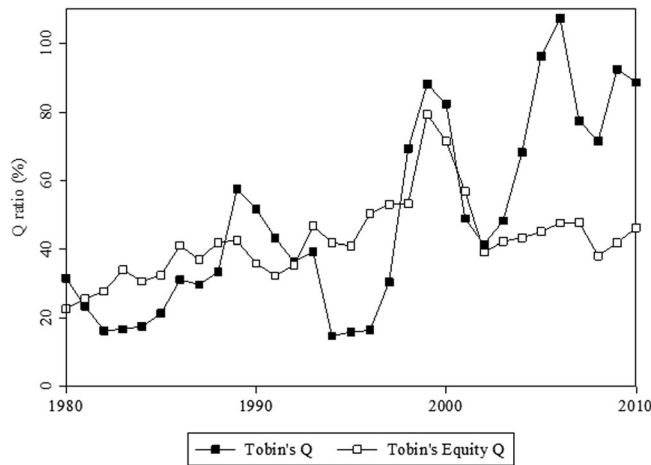


Figure 11. Tobin's Q in Sweden, 1980–2010. Notes: Tobin's Q is the ratio between corporate capital in the SNWD (national wealth – net foreign assets – household non-financial assets – government non-financial assets) and corporate capital according to accumulated investments minus depreciation computed by Statistics Sweden. Tobin's equity Q is the ratio between all corporate equity (in market values) in Sweden and the sum of corporate assets less non-equity liabilities in the national accounts of Statistics Sweden. See text for further description and sources.

The period 1980–1994 bears the most recent effort by Statistics Sweden (Statistics Sweden, 1995; Tengblad, 1992, 1993) to estimate the national wealth shows stocks and these are between one fifth to two thirds higher than the levels in the SNWD. There are several potential explanations to this deviation, but the most important one lies in the way how corporate assets are valued: using current market values of stocks or accumulated investments through the PIM. While it is difficult to fully evaluate this claim, it is possible to calculate a ratio between estimates of these two entities, that is, Tobin's Q. Corporate capital can be calculated residually from the national wealth in SNWD by removing net foreign assets and non-financial assets of households and the governments.¹⁴ The replacement value of corporate capital is offered by Statistics Sweden (1995) and later versions based on the PIM.¹⁵ Tobin's Q is the ratio between the corporate capital in the SNWD and Statistics Sweden's PIM-totals. An alternative expression of the relationship between market-valued and book-valued corporate equity is Tobin's equity Q, which is the ratio of the market value of corporate equity to total corporate assets less non-equity liabilities, reported in the SNWD and by Statistics Sweden (same source as above), respectively.¹⁶ Figure 11 shows these two ratios since 1980. The main message is that both ratios are well below 100%, suggesting that market values were systematically low over this period. The variability in the ratio reflects swings in the stock market.

Finally, how does the historical development of the Swedish wealth compare with other Western countries? Figure 12 shows per adult private wealth in constant prices for France, Germany, Sweden, the United Kingdom and the United States since 1870. Some interesting patterns stand out. Perhaps the most striking finding is that Swedes are the poorest in this group of countries throughout the period with exception for two eras: the decades immediately after the Second World War and the 2000s. Differences are the largest before the First World War when the relatively late

¹⁴To see this, note that national wealth is composed by domestic capital and net foreign assets and that domestic capital is composed by private (i.e. household + corporate) and government capital.

¹⁵Statistics Sweden (1995, table 3:7) lists the stock of produce and non-produced non-financial assets of both non-financial and financial corporations for the end of years during the period 1980–1994 (or actually 1 January in 1981–1995). Since 1995, Statistics Sweden reports the produced stocks in the quarterly and annual national accounts. I estimate the stock of non-produced non-financial assets (i.e. land and timber tracts) assuming the average relation as in 1980–1994.

¹⁶Total corporate equity includes the total value of market capitalisation of the Stockholm Stock Exchange and not only the share of listed stocks held by households, the reason being that it is not possible to single out household-owned corporate assets from the national accounts.

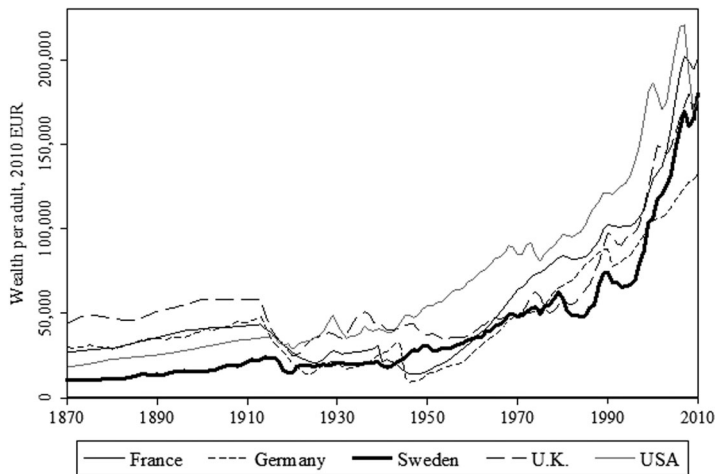


Figure 12. Per adult wealth in five countries, 2010 EUR. Notes: 'Wealth' refers to net wealth in all cases. Exchange rates as of 2010-12-31 were used (EUR/SEK = 0.11; EUR/GBP = 0.86; EUR/USD = 1.34). Source: Sweden: SNWD, v 1.2, Table SE1.1. Other countries: Piketty and Zucman (2014).

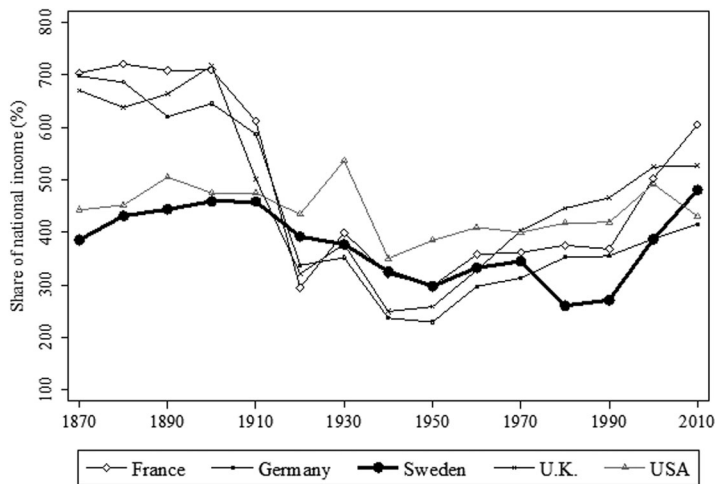


Figure 13. International comparison of wealth-income ratios, 1810–2010. Note: 'Wealth' refers to net wealth. Source: Sweden: SNWD, v 1.2, Table SE2.1. Other countries: Piketty and Zucman (2014).

industrialisation of Sweden is reflected by the fact that Swedish average wealth per adult was only between one fifth and one half of the wealth of people in the other countries. The turmoil associated with the world wars had dramatic consequences for the rich continental European countries, but also the post-1980 consists of historically large wealth changes.

Figure 13 presents national wealth-income ratios in these countries over the same period. The pattern is similar, with Sweden having a pre-First World War ratio of about half of that of France, Germany, and Britain. However, it is almost at the same level as that in the United States and Waldenström (2015a) attributes this difference to relatively low saving rates in the backward Sweden which prevented the country for accumulating a domestic capital stock of its own. During the twentieth century, however, the geopolitical and economic turmoil associated with the two world wars and interwar economic crises had huge implications for wealth on the European continent, but

almost none in Sweden. That this divergence in outcomes is closely related to the wars seems quite plausible, although the effect may have primarily worked via the political channels rather than military. In their account of the dramatic swings in household wealth during the twentieth century, Piketty and Zucman (2014) suggest that wartime capital destruction represented only a small part of absolute and relative wealth compression. Instead the main mechanisms seem to have been government regulation and, in particular, increased taxation of wealth, property, and high incomes. Sweden was neutral in both wars, and although the country did indeed raise taxation of the rich and increased the regulatory pressure on the private sector, this does not seem to have been pursued at the same order of magnitude as in the belligerent countries.¹⁷ After the Second World War, the Swedish national wealth-income ratio is almost at par with those of the other countries.

6. Concluding remarks

In this paper, I have presented a new historical database on national wealth in Sweden. It offers the first opportunity to study the evolution of aggregate balance sheets in Sweden over the past two centuries. The results show several fascinating patterns. Swedes were relatively poor in the agrarian era; incomes were so low that there was no room for people, or the country as a whole, to save and accumulate new wealth. This changed during the industrialisation, and this period saw assets growing faster than incomes. Over most of the twentieth century, the situation was the opposite: income growth surpassed the rate of wealth accumulation, a process fuelled by the expansion of educational attainment and also increased redistribution in the emerging welfare state. After the 1980s, wealth has once again outgrown income and this seems largely attributable to large capital gains in housing and financial markets.

Having a new historical wealth database opens up possibilities to address new and old research questions on the economic history of Sweden. For example, we can now get a new take on understanding the role of private and public assets and liabilities in the Swedish industrialisation process, which has so far been mainly based on analyses of flow data (income, agricultural vs. industrial output, sectoral wage differentials, etc.). Similarly, the financial development in Sweden can now be analysed with greater accuracy using the series over bank deposits, bank lending, and share ownership. Related to this is the question of household indebtedness which has increased over the past two centuries and now it is possible to put the current levels in a long-run historical perspective. In addition, the SNWD offers a new view of all Swedish economic and financial crises since the beginning of the nineteenth century: Were the crises preceded by unusually high levels of private or public indebtedness? Did they induce reshuffling of household portfolios from risky to less risky assets? How do the patterns in the wealth data square with previously observed patterns in income or output data? These and numerous other questions can hopefully be studied more deeply using data on wealth.

Finally, a central aspect of wealth accumulation that this paper has not addressed is how this evolution of aggregate wealth may influence the *distribution* of wealth, and possibly also the distribution of income, among households. Previous work on long-run trends in income and wealth inequality suggests that there may be linkages.¹⁸ For example, in their study of the Swedish wealth concentration since the late nineteenth century, Roine and Waldenström (2009) find that the rise in 'popular wealth' (especially owner-occupied housing) explains much of the postwar wealth equalisation. The recent increase in top income shares, which is largely caused by rising top capital incomes, also fits well with the observed increase in the relative value of corporate shares in household portfolios, an asset well known for being unequally held in the population (Roine & Waldenström, 2008). Combining these macro- and micro-level developments into one unitary framework is beyond the scope

¹⁷That wars matter for taxation of the rich has also been found by Scheve and Stasavage (2016), who have linked the degree of tax progressivity and the level of inheritance taxation to mass mobilisation of countries actively participating in wars. Their suggested mechanism is that the increased taxation was the 'price' that the wealthy had to pay for having the rest of the population putting their lives at stake in the actual fighting.

¹⁸For overviews and further discussion of these questions, see Roine and Waldenström (2015) and Piketty and Zucman (2015).

of the present study, but with the new evidence presented here such undertakings will hopefully become more likely in future investigations.

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