

The Long-Run Evolution of Household Wealth: Sweden, 1810–2010^{*}

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[PRELIMINARY AND INCOMPLETE]

Abstract

This study presents new evidence on the structure and development of Swedish household portfolios over the past two centuries. Using a wide array of primary and secondary sources, an annual database consistent with contemporary standards is constructed covering real and financial assets and liabilities, as well as their subcomponents. Non-standard assets such as consumer durables, public and occupational pension wealth and informal loan contracts are also included. One main finding concerns the broad trend in the household wealth-income ratio: it doubled during 19th century industrialization, decreased over the 20th century but started increasing again after 1980 and is today almost back at its 1910 all-time high. Household indebtedness has increased constantly, and is today at an all-time high regardless of relating debts to incomes or total assets. Pension wealth changes the picture dramatically, being today as large as households' net marketable wealth and when included in the wealth concept the wealth-income ratio exhibits a secular increase over the postwar period.

JEL: E21, H31, N33, N34

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1. Introduction

Analyses of the structure and development of household portfolios bear important insights about the macroeconomy. For example, household indebtedness and the role of bubbles in housing or financial markets for household assets are factors with a strong influence on the stability of countries' financial systems (e.g., Acharya and Richardson, 2009). Consumer spending and savings behavior can only be fully understood by studying the structure of household assets and liabilities (Poterba 2000; Guiso, Haliassos and Jappelli, 2002; Campbell and Cocco, 2007). The question about whether household wealth spring primarily out of life cycle savings or inheritance flows has been debated for a long time, and it requires good information about wealth stocks in order to be properly addressed (Kessler and Masson, 1989; Gale and Scholz, 1994; Piketty, 2011).

The main contribution of this paper is to provide new series of annual household balance sheets in Sweden for the period 1810–2010. The series are constructed using for the most part primary sources coming from official statistical publications, and only in a few cases secondary sources or self-reported evidence has been used. This offers a consistency and comparability across historical era. For example, household borrowing data are not based on personal tax returns but on official bank lending statistics, which is available annually and for the whole economy back to the early 19th century (personal tax returns became comprehensive for the full population only in the postwar era). Stock ownership data come from (adjustments of) national totals of incorporated company stock and stock exchange-based market capitalization. Farm assets are calculated from central tax assessments of agricultural land and counts of livestock combined with time series of market prices or insurance values.

The paper adheres to a rich literature on the structure and development of aggregate household wealth (see, e.g., Goldsmith, 1962; Goldsmith, Lipsey and Mendelsen, 1963; Goldsmith, 1986; Wolff, 1989; Davies, Lluberas and Shorrocks, 2011). The long time span and annual frequency of the Swedish dataset appears to be a contribution to this literature. There are studies covering longer time spans for single countries, but only for single years (e.g., Goldsmith, 1986). In the case of Sweden, there are studies covering the most of recent decades, but none that offer comparable, annual estimates predating the Second World War.¹ A long-run perspective is useful when studying the role of household portfolios to economic development

¹ The next section discusses the previous work on household balance sheets in Sweden.

and the long-run welfare of citizens. Institutions that shape—and are shaped by—household wealth evolve only slowly, such as the transition from the agrarian to the industrial economy, the emergence of a sophisticated financial system or the rise of the modern welfare state. Investigating very long time periods extends the sample of business cycles, financial crises and geopolitical regimes available for further inquiries. In the case of Sweden, ten of the twelve depressions and 21 of 26 business cycles since 1850 occurred before 1950 (Edvinsson, 2005).

The paper also makes specific contributions with respect to three relatively non-standard items in household portfolios. *Consumer durables* are traditionally not included in household balance sheets since they are assumed to be consumed away immediately and therefore not contribute to the stock of assets. In reality, however, many consumer goods last for a long time, such as cars, electronic equipment or furniture, and since their importance may have changed over the passage of time they are included in this paper's analysis.² *Pension wealth*, or the net present value of individuals' entitlements to future private and public pension payments, is also excluded from traditional balance sheet analysis, the main reason being that they are not readily available to households as other pieces of private property. Yet pension wealth has been found to influence the accumulation of other household assets (e.g., Feldstein, 1974; Berg, 1983; Gale, 1998), and therefore it makes sense to account for future pensions, at least as an extension, when studying the evolution of household wealth. This paper presents a comprehensive series of pension assets from all parts of the system in Sweden, which means that it includes all different kinds of public pensions (basic guarantee pensions, income-based pensions, premium pensions) and private pensions (occupational pensions and individual pension and life insurance savings schemes) over the past two centuries. *Informal assets and debts*, finally, are today insignificant in household balance sheets and therefore appearing only as obscure residual estimates, if at all. Historically, however, their importance cannot be underrated and in 19th century Sweden they actually represented the vast majority of household liabilities (see, e.g., Lindgren, 2002).

Several findings come out from the study. One main result concerns the broad trend in wealth relative to national income. The wealth-income was low during the agrarian era, but started increasing after the industrial take-off in the 1870s and peaked just before World War I. During most of the 20th century, the wealth-income ratio decreased steadily up until the 1980s

² The most recent version of the System of National Accounts from 2008 actually recommends including consumer durables in household balance sheets if possible (United Nations, 2008, p. 269).

when it turned up and rose to reach in 2010 almost the same high level as it had in 1910. Although this paper does not focus on finding explanations to the observed patterns, secular changes in the composition of household portfolios are correlated with many of them. For example, household farms represented roughly four fifths of all wealth in the pre-industrial era, but after industrialization, financial modernization and eventually the rise of the welfare state households start holding new asset categories, such as corporate stock and owner-occupied housing. Consumer durables play a modest role up until the postwar period when especially cars became an important household asset.

Household indebtedness has increased steadily over the past two centuries. The rate of this increase, however, depends somewhat on measurement. The ratio between household debt and national income shows a twelvefold rise between 1810 and 2010, and the period after 1990 exhibits the most rapid household credit expansion of all time. When instead relating household debt to total assets, there is still an increase but at a smaller scale (a fivefold increase over the full period) and the credit boom since the 1990s is not as articulated, dampened by the simultaneous rise in housing values. Pension wealth, finally, changes the picture quite markedly. Adding all public and private pension assets to the real and financial net assets almost doubles the size of household wealth in 2010. More interestingly, the trend in household wealth over income changes; adding pension wealth changes the postwar decline into a marked increase.

The rest of the paper continues as follows. Section 2 contains an overview of earlier studies of Swedish household wealth stocks. Section 3 presents the basic methodology and some important measurement problems. Section 4 presents the main results. Section 5 makes international comparisons and section 6 concludes. In a set of appendices details on data and estimations are presented for all the included series as well as the series themselves.

2. Previous investigations

There have been a number of previous efforts to characterize the size and structure of Swedish household wealth. While none of these come near to cover the same time span as I do, their assessments of shorter periods and even single years still are crucial inputs in the long-run picture.

During the first half of the 19th century, there were two separate national wealth assessments made for Sweden. The first, and earliest known, one was that in 1800 which was based on data from a comprehensive wealth tax assessment in Sweden and Finland. According to a retrospective treatment of these in Fahlbeck (1890, p. 88), the 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, the Swedish national wealth in 1800 was acclaimed to be one billion SEK.³ In 1815, there was a second estimate done by Hyckert (1815). This was yet another relatively rough and sketchy calculation, combining tax sources and subjective assessments. Its estimated gross national wealth was 2,218.6 million SEK, but Fahlbeck (1890, p. 88) criticizes it for being badly documented and also for not sufficiently accounting for liabilities.

A second wave of national wealth assessments appeared in the end of the 19th century, this time relying on more “modern” templates as regards sectoral decompositions and asset structure. Bollfras made two assessments, one for 1875 (Bollfras 1878) and another one for 1880 (Svensk Trävarutidning 1885). A third estimate was made for 1885 (Fahlbeck 1890). These were all systematic and ambitious investigations of the total stock of wealth. Several asset classes were included, e.g., forestry, financial assets, inventories, infrastructure and communication equipment. Private and public—mainly foreign—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 to date is Isidor Flodström’s large-scale inquiry of the national wealth in year 1908 (Flodström 1912). 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 suffers from a few beauty spots from our point of view. In particular, the sectoral decomposition is not identical with today’s system; most importantly, Flodström reported households and firms in one and the same category. Another problem is that no detailed balance sheets are reported for households, but instead that their wealth is reported only as the net marketable wealth (at death).

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

In the 1970s, Roland Spånt published an ambitious study focusing on the evolution of household wealth in the 20th century (Spånt 1979). The basis of the analysis was formed from information about household assets and debts from the Swedish Censuses of 1935, 1945 and 1951. Complementary data was 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 extension of the earlier series is Lennart Berg's estimations of annual household balance sheets from 1950 onwards (Berg 1983, 1988, 2000 and later updates). The basis for Berg's pre-1970 series is Spånt's investigation. Berg, however, extends these data by not only constructing annual estimates from the handful of years reported by Spånt but also by adding new wealth items such as consumer durables and pension wealth. Berg's post-1970 data draws, just like the present study, the financial information from the Financial Accounts at 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. 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.

In the late 1980s and early 1990s, Statistics Sweden constructed an official series for the national wealth (*nationalförmögenhet*) in Sweden (Tengblad 1992; Statistics Sweden 1995). The ambition was to generate a set of stocks for the entire economy, and the result was annual estimates over the period 1980–1994. These stocks represent invaluable benchmarks for the series reported in the current study.

The most recent contribution to the analysis of Swedish household assets and debts is the study of Bergman, Djerf and Lindström (2010). They present a comprehensive examination of the household wealth at an annual basis between 1970 and 2008. The point of departure is the Financial Accounts, which covers financial assets and debts, and then they add data on real assets drawing on the national wealth project and extensions thereof for both earlier and subsequent years. Overall, the result is a set of detailed series of high quality that are used almost without adjustments in this study.

3. Methodology

The definition of the household balance sheet follows the standard methodologies used by today's statistical agencies. Details on the construction of the series are offered in the Appendices. The basis has been the principles laid out by United Nation's *System of National Accounts*, SNA, from 1993 (United Nations, 2003) and 2008 (United Nations, 2009), as well as the European System of Accounts, ESA. Households are defined as those that are primarily consumers, and only producers within the home (including farming). Paying specific attention to the Swedish context, a natural point of departure has also been the long-standing efforts of Statistics Sweden to construct homogenous national accounts for Sweden, including a short period in the 1990s with national balance sheets (see Nordin, Olsson and Wickman-Parak, 1992; Tengblad 1992; Statistics Sweden 1995). Furthermore, as regards the historical dimension for Sweden I rely on the works by economic historians who have generated long-run national accounts series for Sweden (Edvinsson, 2005; Krantz and Schön, 2007).

The balance sheet consists of two sides, one showing assets and the other showing liabilities and net worth. The asset side consists of two main categories: *non-financial assets* (or real assets) and *financial assets*. The non-financial assets, in turn, are generally divided into produced assets, which are outputs from a production process (mainly buildings), and non-produced assets that appear naturally (mainly gardens, farmland and forestry). In this historical investigation, it is not possible to retain the division between produced and non-produced assets throughout the studied time period. The prime reason is that the central item, agricultural real estate, has generally contained both produced (buildings, livestock) and non-produced (farmland, forestry) assets. The same holds for the non-agricultural real estate. For this reason, I will separate non-financial assets into agricultural and non-agricultural assets, both containing produced and non-produced assets. Because of this structural adjustment, the

stock of consumer durables are placed in a separate, third category instead of belonging to the produced assets as stipulated by SNA. Traditionally consumer durables are excluded from household balance sheets, based on the assumption that they are consumed away within a one-year period, which has been a working threshold for longevity when differentiating between consumption and investment. In reality, however, many of the consumption goods purchased by households persist for longer periods than that: historically mainly items like china, furniture, clothing, and today items like cars, boats or electronic equipment. I use flow data on consumption and the perpetual inventory method, assuming an annual depreciation rate of 15 percent, to calculate annual stocks (see further the discussion on the construction of the stock of consumer durables in Appendix A). Furthermore, condominiums are moved from the financial asset side to the housing stock on the non-financial asset side. The motivation is that condominiums are essentially housing assets, even if they legally are (financial) ownership shares in the condominium association (see further the discussion in Appendix A).

Financial assets and liabilities are claims, held and issued, that are payable in everything from the (sometimes very) short-run (e.g., currency, deposits) and longer-run (stocks, bonds). Liabilities include mortgage debt, consumer debt and all other household debt. Detailed descriptions of how these items are calculated are provided below. Note that the balance sheet is unconsolidated, which means that financial assets and matching liabilities are not netted out within sectors by, e.g., cancelling out all informal lending of households to other households. Instead the assets held by households are matched by liabilities of other households as well as of other sectors (corporations, public agencies or foreigners). Table 1 presents the balance sheet of Swedish households in the end of 2010.

[Table 1 about here]

There are problems associated with constructing homogenous household balance sheets over long periods of time. One of the biggest difficulties concerns valuation of assets (and sometimes liabilities). Throughout I follow the guidelines of SNA, which stipulate that stocks should always be market-valued, at current market price levels. Since many of the non-financial assets are available in tax-assessed values, which typically – but not always – differ from market values by construction, large efforts are spent on generating market-to-tax price coefficients. Another recurrent challenge concerns the sectoral decomposition. In short, some statistical sources (in particular, banking statistics) have not separated between households

and firms but lumped them together into one joint, private sector category. Drawing on a collection of objective and subjective assessments of the respective shares of household and firm assets or liabilities, a homogenous household sector has been created for all series. These and several other problems are discussed and adjustments proposed for each asset class and time period in the Appendices.

A specific issue that is unaddressed in this investigation is the off-shore assets held by Swedes in other jurisdictions, mainly for tax purposes. The importance of tax havens for personal wealth management in traditionally high-tax countries such as Sweden is a debated topic, and the nature of these flows make it difficult to properly assess the scope of off-shore assets. In their analysis of trends in Swedish wealth inequality, Roine and Waldenström (2009) made some calculations of foreign wealth of Swedish (wealthy) households based on annual flow residuals in the Balance of Payments and Financial Accounts statistics.⁴ They found that for the years around the mid-2000s, Swedish households may have possessed fortunes outside of Sweden at a value of between 200 and 700 billion SEK depending on assumptions about rates of return. Taken at face value, this would imply that between three and seven percent of Swedish gross household wealth is placed abroad and thus not accounted for this study. But again, these estimates emanate from highly uncertain calculations and we will probably never arrive at a precise number.

4. The basic facts: Swedish households balance sheets over two centuries

This section reports the main findings of the study. The data underlying the results are described in detail in the Appendices. Several of the figures report assets and liabilities divided by income. As income denominator, I use *national income*, which is defined as the Gross Domestic Product less net foreign factor income, i.e., the incomes to and from foreigners in and outside of Sweden, and less capital depreciation. The national income variable is unfortunately only calculated in the official National Accounts of Statistics Sweden over the latest couple of decades. For the period before that I therefore estimate a new series of the national income of Sweden, using different sources.⁵

⁴ Another approach, suggested by Zucman (2011), is to estimate missing household wealth is to rely on unbalanced stocks of off-shore portfolio investments across countries.

⁵ Gross Domestic Product comes from Edvinsson (2011). Net foreign factor income, i.e., the sum of incomes to Swedish residents from abroad and payments from Sweden to foreign residents, comes from the National Accounts back to 1964 (from the Statistical Yearbook of Statistics Sweden) and before that year there exist no data and I therefore assume that it has the same level of GDP as it had during 1964–1970 (0.2 percent). Data on capi-

4.1 Gross and net wealth of Swedish households

Figure 1 shows the evolution of per capita income and net marketable wealth of Swedish households in both nominal and real terms during the full study period, 1810–2010. As expected, per capita wealth is notably larger than per capita income. With respect to long-run trends, both series have increased in nominal and real terms, clearly reflecting overall economic development and an improved welfare over the period. Inflation plays a specific role. Looking at the nominal series (panel a), rising prices clearly explain much of the increases in income and wealth over time. Considering the short-run spikes in inflation, however, a more nuanced picture emerges. For example, during the trade crisis of 1857 or World War I, the high inflation experiences did not influence real per capita income which followed suit, whereas real wealth dropped significantly (panel b). When inflation jumps up, real income is largely unaffected whereas real wealth drops.

[Figure 1 about here]

The next step is to calculate the wealth-income ratio, i.e., dividing the aggregate net wealth by the aggregate national income. Figure 2 shows this ratio, and several interesting patterns stand out. To begin with, the level of the wealth-income ratio appears to be in the realm of what is expected of the capital-income ratio (about three) in a standard steady state growth model. Furthermore, the broad trends 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 two. The industrial take off (1870–1910) brought with it an increase in the ratio, which nearly doubled. During the 20th century, by contrast, the ratio fell steadily up until 1980 almost back to its pre-industrial level. This decrease reflects a number of things, in particular the higher rates of human capital-led income growth. Around 1980, the decrease in the ratio does not only halt but starts increasing rapidly, almost doubling between 1980 and 2010 (going from 2.3 to 3.6).

The variation of the wealth-income ratio is quite marked both across years and over the business cycle. Yet there is no apparent trend in variability over the two centuries. Some shocks stand out, such as the extreme levels of inflation and deflation during the aftermath of World

tal depreciation, or consumption of fixed assets, come from Edvinsson (2005, appendix table B) for 1810–1992 and the National Accounts thereafter. The formula is then: National income = GDP – Net foreign factor income – Capital depreciation.

War I, which devalued wealth by an order of magnitude while salary incomes were largely inflation-indexed (Roine and Waldenström, 2006). Other volatile periods were the periods leading up to the financial crises of the 1870s and 1990s, when asset price bubbles in the bond and housing markets, respectively, generated peaks in the recorded wealth-income ratio.

[Figure 2 about here]

4.2 Asset composition

The relative importance of non-financial and financial assets and its evolution over time are central issues in the analysis of the Swedish household portfolios. Not only do we care about the relative shares across the broader asset classes, but also about the composition within these groups: how important are agrarian assets in relation to non-agrarian real estate? How important were consumer durables in household portfolios in the agrarian era, and has this importance changed along with the income growth of the 20th century? Within financial assets, how important are risky assets to households? What effect on portfolios had the fact that formal credit markets did not emerge until the end of the 19th century? The section begins with describing the shares of the two broad asset classes and thereafter continues by presenting the main sub-assets within each of them.

Figure 3 shows that non-financial assets dominate household portfolios have done so for a long time. In the pre-industrial era, they represented about 85 percent, or five sixths, of total assets and financial assets consequently the remaining sixth. This was before the emergence of organized corporate legislation, free enterprise and formal credit markets. The economy was still not monetized, and transactions were accordingly often based on barter or other in-kind based contract exchanges. When industrialization and economic modernization began in the 1870s, however, the share of non-financial assets decreased sharply over a few decades down to about 60 percent of all assets and has remained on this share over the entire 20th century up to present day.

[Figure 3 about here]

A further look at the composition of household assets is shown by Figure 4, but this time in terms of shares of national income. Non-financial assets relative dominance is confirmed, but the changes over time for both assets appear more clearly. For example, the profound impact

of industrialization and financial modernization in the late 19th century is seen in the relative size of aggregate financial assets: it jumps from around one half of national income in 1870 to four times national income in 1910, a fourfold increase in about one generation. Another striking result is how historically large the recent boost in non-financial (read: housing) asset values during the 1990s and 2000s is. Since the mid-1990s, its share of national income has increased by two thirds, which is unprecedented accounting for short-term swings.⁶

[Figure 4 about here]

Now consider the composition within non-financial assets, depicted in Figure 5. Three categories can be consistently followed through the two hundred year-long period: *agricultural assets*, *non-agricultural assets* and *consumer durables*. As shown by panel a, agricultural assets represented 85 percent of all non-financial assets up until the 1870s and urban real estate most of the remainder. Beginning with the industrial take-off in the 1870s, however, non-agricultural real estate started increasing both in terms of share of total non-financial assets (panel a) and as a share of national income (panel b). The increase has continued almost without interruption to present day, reflecting the increased role of housing wealth in household portfolios. Note specifically how the recent boost in asset values is entirely driven by housing assets. Finally, consumer durables remained an insignificant share of households' assets through the 19th century but started increasing thereafter. By 1910 it represented a tenth of non-financial assets and after World War II it has oscillated around a level of 15-20 percent. As shown in Appendix A, the major change in the 20th century was the entry of cars in household portfolios, representing roughly half of all durables from the 1970s onwards.

[Figure 5 about here]

Turning to the composition of financial assets, this is depicted in the two panels of Figure 6. Five components are followed over time: *deposits and currency*, *shares*, *bonds*, *informal claims* and *individual pension savings*. As can be seen from Figure 6, there have been drastic compositional changes over the study period. In the pre-industrial era, households basically held two sorts of financial assets: money and informal claims. Economic historians (e.g.,

⁶ Using a simple Hodrick-Prescott-filter (with smoothing parameter 6.25) the increase in the ratio of non-financial assets to national income was 59 percent during 1996–2010. The next three episodes with extraordinarily high ratio increases were 1919–1932 (+ 51 percent), 1873–1887 (+46 percent) and 1855–1864 (+42 percent).

Lindgren, 2002) have shown that Sweden's credit markets were underdeveloped over most of the 19th century and that people instead lent and borrowed money from each other. Quantifying 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 Appendix B).

Shares in listed and closely held corporations became important in household portfolios during the 1870s. This was shortly after the introduction of Sweden's first joint-stock law (1848), the breaking up of guilds and liberalization of enterprise (1862) and the emergence of a secondary securities market (1863). During the 20th century, two main changes took place. First, informal claims evaporated in portfolios as the formal credit market grew strong. Second, private savings in life insurances and pension savings schemes gradually grew in importance. At mid-century they represented about a tenth of all financial assets, and since 1990 they started growing rapidly and today represent one third of household financial assets.

[Figure 6 about here]

4.3 Liabilities

The question of household indebtedness and its role for financial stability has become a widely debated topic, much due to the recent experiences from the subprime crisis in the U.S. and housing bubbles in Southern Europe. Sweden has also a history of financial turbulences and crises, but the role of household borrowing has not been studied extensively in these cases.

Figures 7 and 8 show two aspects of the size and significance of household borrowing. The debt-income ratio in Figure 7 depicts the burden of debt in relation to the household's ability to honor their debt repayment obligations, which is a kind of liquidity-based measure. The debt-asset ratio in Figure 8, on the other hand, reflects the debt burden against the total value of the tangible collateral, which is a kind of solvency-base measure. Both pictures indicate a secular increase in household indebtedness over the past two centuries, but the increase is much larger in terms of debt-income ratio (a twelvefold increase) than in terms of the debt-asset ratio (a fivefold increase). The short-run volatility is quite similar in both series (the Pearson correlation is 0.96). There is, in fact, only one major point of divergence over the entire period, and this is the post-1990 experience. Whereas the debt-income ratio experiences

its most rapid increase during the entire two centuries, landing at an all-time high in 2010, the rise in the debt-asset ratio is dampened by the concomitant rise in housing prices (see the previous section) although it too lands at an all-time high level in 2010. In other words, the interpretation of the recent boom in household credit is largely depending on how one views the relative importance of liquidity and solvency.

[Figure 7 about here]

[Figure 8 about here]

The composition of household liabilities by counterpart is particularly relevant to study in a historical perspective. As has already been mentioned, Sweden had no well-functioning market for household credit before the 20th century. The few banks and financial intermediaries that existed were either mainly focusing on attracting deposits (savings banks) or lending to agriculture (mortgage associations) or private industry (commercial banks). Consequently, up until the 1900s the majority of household borrowing came from informal lenders, mainly other households (neighbors, merchants).⁷ Figure 9 shows a sectoral decomposition of the lenders to households throughout the period.⁸ Informal borrowing was dominant during the 19th century, but its role decreased rapidly in the early 20th century along with the institutional development of the Swedish economy and society in general. The financial sector became the main household creditor thereafter, a position that it has retained ever since. Today financial intermediaries, broadly defined, represent roughly 90 percent of all household borrowing. In the postwar era state lending to households was expanded, initially centered around direct or indirect housing credit but since the 1970s increasingly in the form of subsidized student loans which today represent 90 percent.

[Figure 9 about here]

A long-run view of the composition of Swedish households' portfolios is offered in Table 2. All main asset and liability categories are expressed as share of total household assets, and they confirm the broad compositional trends already sketched.

⁷ The rise of the organized credit market in Sweden has been studied by, e.g., Lindgren (2002), Lilja (2004) and Perlina (2006). See further Appendix C.

⁸ Appendix C contains a lengthy discussion about the construction of these sector-based amounts, and the short story is that there are a number of problems associated with estimating household credits in some of the banking statistics.

[Table 2 about here]

4.4 The role of pension wealth

The definition of private wealth derives from a property rights-based perception of ownership. This means that a natural starting point for defining which items to include in household wealth should be those over which the holder has the full property rights, i.e., the right to use (*usus*), enjoy the returns from (*fructus*) and even dispose of (*abusus*). Marketable assets such as owner-occupied housing or corporate stock are straightforward components according to such a wealth concept. However, along with the emergence of welfare states and the provision of public services, social insurance, and comprehensive pension systems, problems arise for the standard personal wealth concept. For example, individuals in countries with tax-funded public pensions have relatively weak incentives to save privately for retirement over and above the tax and fee payments already made. These individuals will, all else equal, thus have smaller financial wealth than individuals in countries where pensions are entirely private (see, e.g., Gale 1998 for evidence on such crowding out effects). Consequently, even though public pension entitlements are indeed not fully equivalent to private wealth (one cannot withdraw ones future public pension rights to buy a car today), disregarding these rights gives a false impression of the individuals being relatively poor. But how important are these pension assets in relation to the marketable wealth? Has the importance of pension wealth changed over the passage of time?

In this section, I present a first set of calculations of the net present value of total pension assets of Swedish households since the early 19th century up to present day. These estimations are undisputedly problematic (see Appendix D for details on data sources and measurement). For example, early pensions were primarily employment-related schemes, organized as pension thrifts (“pensionskassor”) by either employers or employees. These were typically defined contribution schemes, where the pension wealth is readily observed in the total pension funds, which make them in principle fairly easy to measure. However, acquiring comprehensive information about these funds for historical eras is difficult, and they sometimes also included in-kind components that are omitted in the calculations. Public pensions in today’s sense did not exist before 1910s, when Sweden introduced the world’s first universal pension

insurance system.⁹ Due to a series of reforms over the 20th century, however, the public pensions grew in scale and scope. As shown in Appendix D, occupation pensions made up all of the pension system until 1913, about half of it until the 1950s and between 10–20 percent thereafter.

The pension wealth series presented here includes all parts of the public and private pension systems.¹⁰ Several researchers (e.g., Feldstein, 1974; Feldstein, 1976; Wolff, 2007; Wolff, 2011) have combined estimates of pension wealth and the net marketable wealth, and introduced a new wealth concept: *augmented wealth*, which sums marketable wealth and net-of-tax public and private pension wealth.¹¹ Table 3 shows an extended household balance sheet for 2010, now including pension wealth and augmented wealth. Pension assets are indeed huge; the households' wealth in public pensions is as large as their wealth in either non-financial or financial assets. Private pension wealth is smaller, about a fifth of public pension wealth. Augmented wealth, moreover, is almost twice as large as net worth. This means that, if anything, accounting for pension wealth makes sense from a pure order of magnitude argument.

[Table 3 about here]

The trend in pension wealth and its importance to household balance sheets is shown in Figure 10. Two wealth-income ratios are presented, one using net wealth as numerator and the other using augmented wealth as numerator. The figure makes clear that pensions have not always mattered to households. The early occupational pensions were quantitatively unimportant, which squares with the numbers suggesting that they covered only a small part of the labor force. It was not until the important 1948 reform of the guarantee pensions (“folkpensioner”), with its substantial raise of the pension level, that the public engagement into people's pensions started to matter. In this year, aggregate pension wealth increased by an order of five. A second important reform came in 1958, the income pension (“allmän tilläggspen-

⁹ Conceptually one may discuss whether the early public poor relief policies should be incorporated into the pension system. In effect, publicly financed social assistance to the poor was by and large transfers to the elderly, and when the public pension system grew from the 1930s through the 1950s the transfers to the elderly poor were reduced in the same pace (Elmér, 1960; Edebalk, 1996).

¹⁰ Note, however, that households also privately save for their pensions in certain (sometimes subsidized) pension or life insurance schemes. Since these individual pension savings can be withdrawn upon demand they are defined as a financial asset.

¹¹ In some cases, the U.S. series also include social security wealth, which includes the net present value of drawing rights on the entire social insurance system. Such estimates are unfortunately not available for Sweden.

sion, ATP”). When it took effect in 1960, total pension wealth increased by 50 percent. Overall, there is a positive secular trend in the augmented wealth-income ratio over the postwar period, reflecting a steadily increased role of pension wealth to household portfolios. As already suggested in Table 2, today pension wealth is almost as large as private net worth and even though pensions are not fully equivalent to private fortunes disregarding them implies that one misses out on an important part of household assets.

[Figure 10 about here]

5. International comparison

How has Swedish household wealth developed over time in relation to other Western countries? Figure 11 presents the evolution of the wealth-income ratio since 1900 for France and Sweden, two countries for which we have roughly comparable long-run data.¹² Looking at the picture, three broad results can be drawn from the series. First, the geopolitical and economic turmoil associated with the two world wars had huge implications for household wealth in France, but almost none in Sweden. Although Swedish households experienced a sharp wealth shock, largely inflation-driven, around the time of World War I, it was restored at pre-war levels already by the early 1920s. 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 his account of the dramatic swings in household wealth during the 20th century, Piketty (2011) suggests 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

¹² Data for France come from the Piketty (2011, Appendix Table A1). His wealth series is a compilation of different sources, but represents the most recent and longest homogenous time series available. There are some discrepancies with the Swedish wealth series. For example, unlike the Swedish series the French series does not include the stock of consumer durables (Piketty, 2010, Appendix A4). Neither does the French series seem to include informal assets or liabilities, which are included in the Swedish series. This potentially creates comparison problems during the 19th century, but is uncertain how large these are. (Davies, Lluberas and Shorrocks (2011) also reports long-run series for the United Kingdom and the United States, but these are based on other income denominators (disposable income) and therefore not fully comparable with the Swedish series.

countries.¹³

The level of Swedish household wealth is markedly lower than in France for most of the period. The difference was the largest in the years leading up to World War I, when French households were twice as rich as Swedish households in terms of income multiples. The two wartime shocks brought French wealth levels down to the Swedish ones, but from the 1960s onwards the French series again started to depart from the Swedish. In the 2000s, a surge in French housing prices created a rapid increase in the wealth-income ratio (Piketty, 2011) while the Swedish ratio remained relatively stable for reasons discussed above.

[Figure 11 about here]

The impact of adding pension wealth to Swedish net marketable wealth is large, also in an international perspective. The augmented wealth-income ratio increases throughout the post-war period at an even higher pace than the French net wealth series. By 2010, the two countries actually arrive at the same level of the wealth-income ratio when also accounting for Swedish pension assets. Of course, the comparison is imperfect since the French series does not include French pension wealth.

Wolff (1989) presents a long-run account of household pension wealth in the U.S. but only when also including social security wealth, i.e., adding the net present value of drawing rights on the entire social insurance system, the trends look similar to Sweden. When only accounting for pension wealth, the U.S. evidence shows little difference across augmented and net marketable wealth.

6. Conclusions

This paper presents a new database with consistent balance sheets of Swedish households spanning the past two centuries. The composition of the portfolios is analyzed, not only through the separation between real and financial assets and debts, but also by studying subclasses within these broader categories. Furthermore, a specific contribution lies in the inves-

¹³ That wars matter for taxation of the rich has also been found by Ken Scheve and David Stasavage, who have linked the degree of tax progressivity (Scheve and Stasavage, 2010) and the level of inheritance taxation (Scheve and Stasavage, 2011) to mass mobilization 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.

tigation of the historical evolution of traditionally “difficult” assets such as consumer durables, pension wealth and informal loan contracts.

Looking at the overall trends, the wealth of Swedish households has fluctuated quite notably over the past two centuries. Many of these fluctuations are consistent with what we know about Swedish historiography. Wealth in the agrarian era was relatively small, but the onset of industrialization made it accumulate faster than incomes grew. In most of the 20th century, the situation was the opposite: income growth surpassed the rate of wealth accumulation, a process where the spread of human capital and the rise of a redistributive welfare state was surely important. Since the 1980s, wealth has once again outgrown income. Exactly what explains these patterns will require the use of other data series, and hopefully such analyses can build on the evidence presented here.

Finally, a central aspect of wealth accumulation that this paper has not addressed is how the *distribution* of assets and liabilities, as well as of personal incomes, depend on the structure and development of household portfolios. Previous work on long-run trends in Swedish income and wealth inequality suggests that there may be linkages. For example, in their study of the Swedish wealth concentration since the late 19th century, Roine and Waldenström (2009) find that the rise in “popular wealth” (especially owner-occupied housing) explains much of the 20th century wealth equalization.¹⁴ The recent increase in top income shares, which is largely caused by rising top capital incomes, 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 and Waldenström, 2008). But, again, combining the evidence on the broad picture offered in this paper with more detailed investigations of distributional and other patterns will hopefully

[Figure 12 about here]

¹⁴ Similar findings were done much earlier by Atkinson and Harrison (1978) for the case of the United Kingdom.

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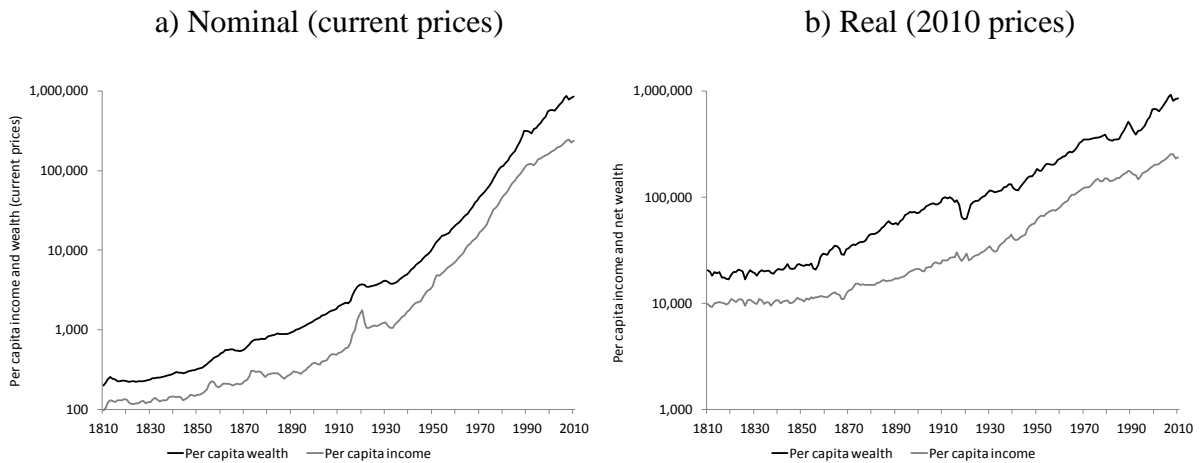
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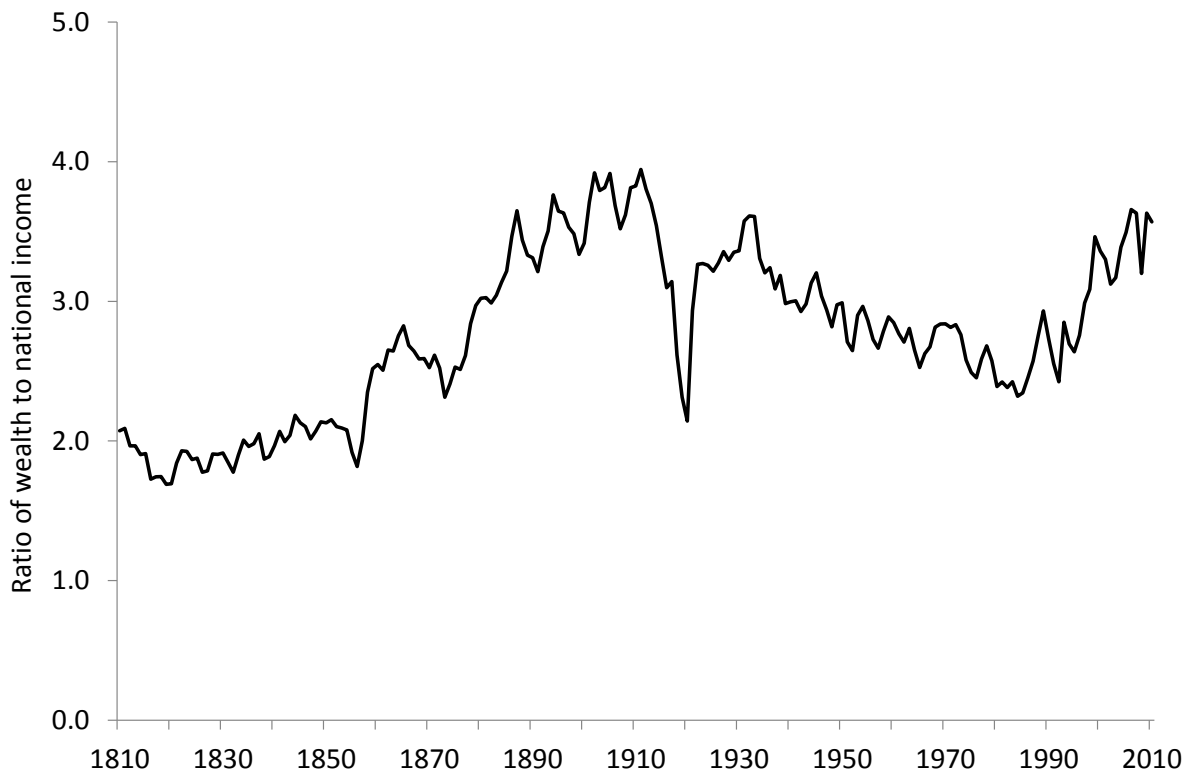
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Figure 1: Income and net wealth of Swedish households, per capita, 1810–2010.



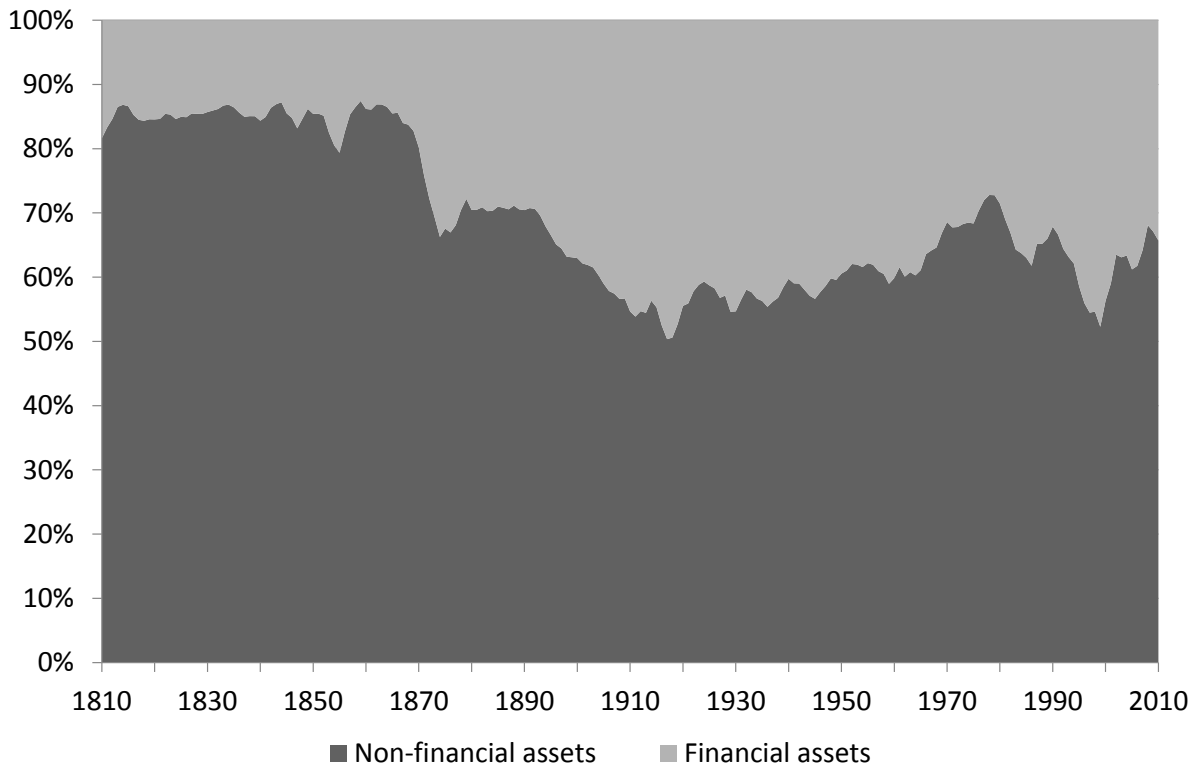
Source: Appendix E.

Figure 2: Wealth-income ratio of Swedish households, 1810–2010.



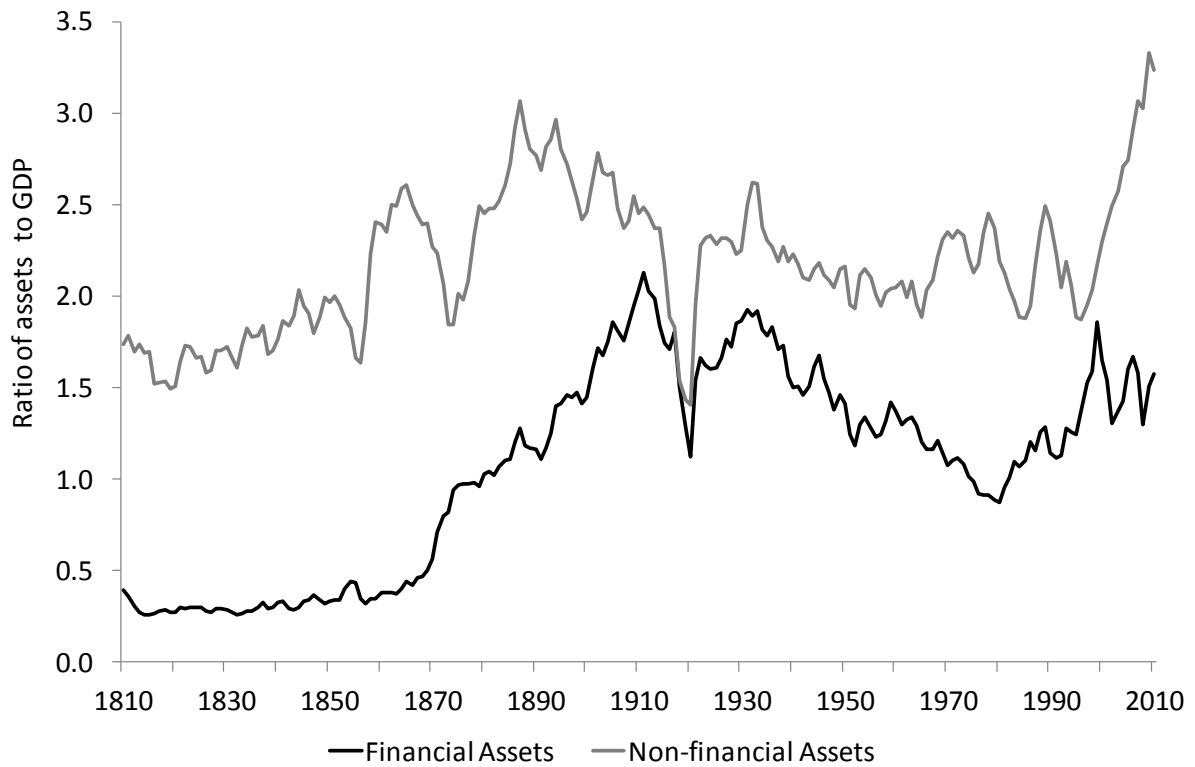
Note: Wealth is the net marketable wealth (sum of non-financial and financial assets less debts). Income is national income (GNP less capital depreciation). Source: Appendix E.

Figure 3: Asset composition of Swedish household portfolios, 1810–2010.



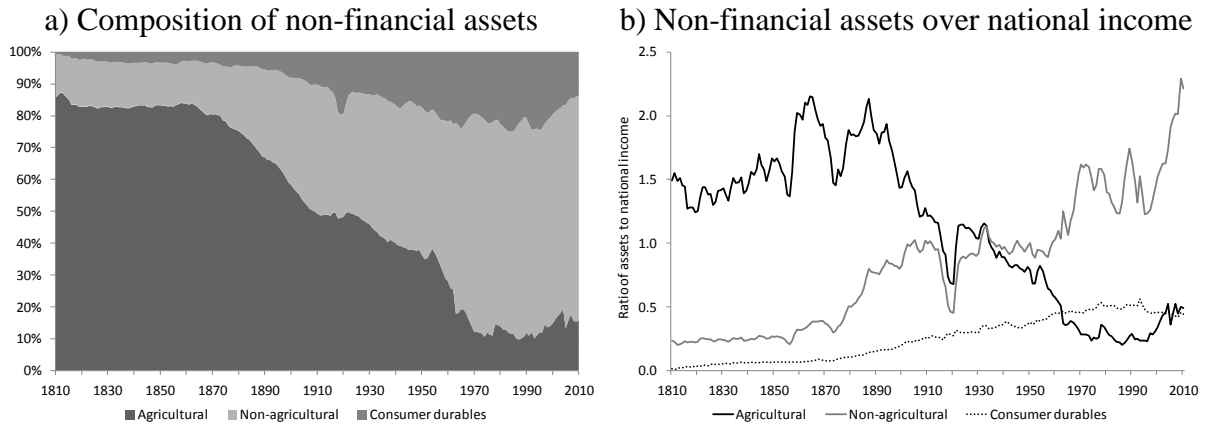
Source: Appendix E.

Figure 4: Asset-income ratio of Swedish households, 1810–2010.



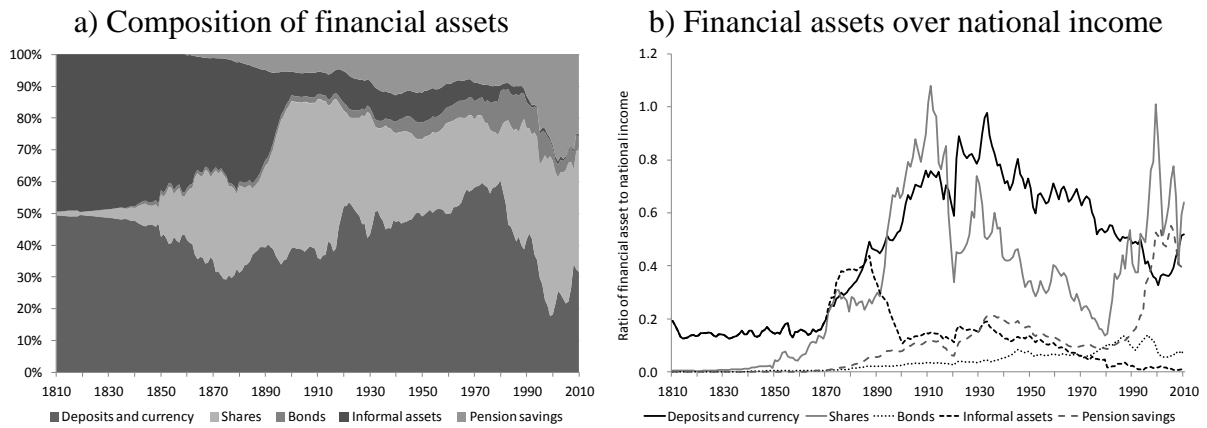
Source: Appendix E.

Figure 5: Composition of non-financial assets of Swedish households, 1810–2010.



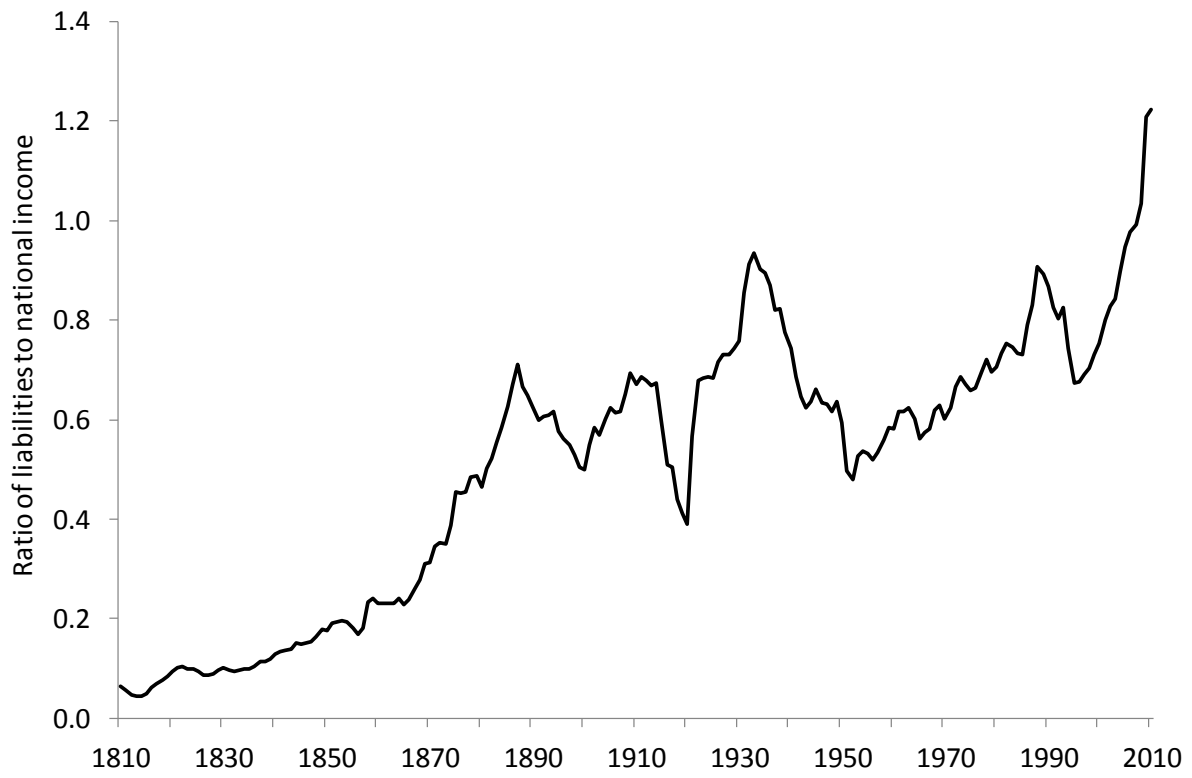
Source: Appendix E.

Figure 6: Composition of financial assets of Swedish households, 1810–2010.



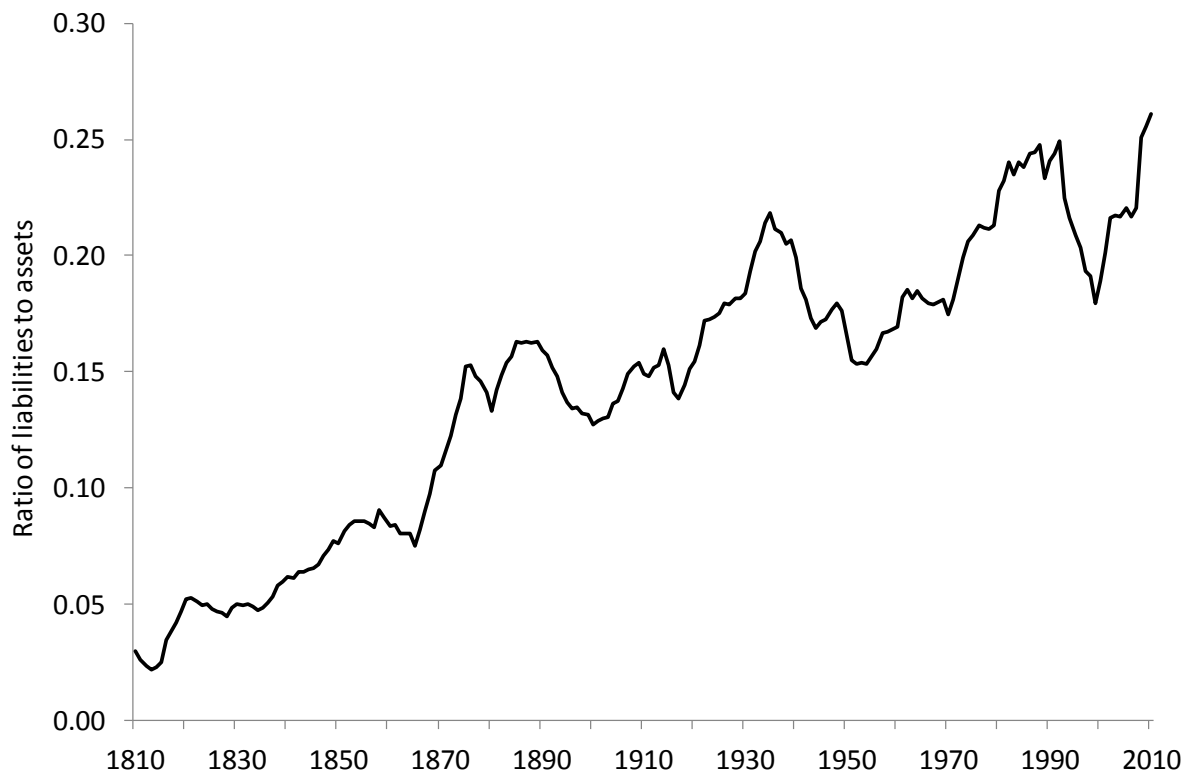
Source: Appendix E.

Figure 7: Debt-to-income ratio of Swedish households, 1810–2010.



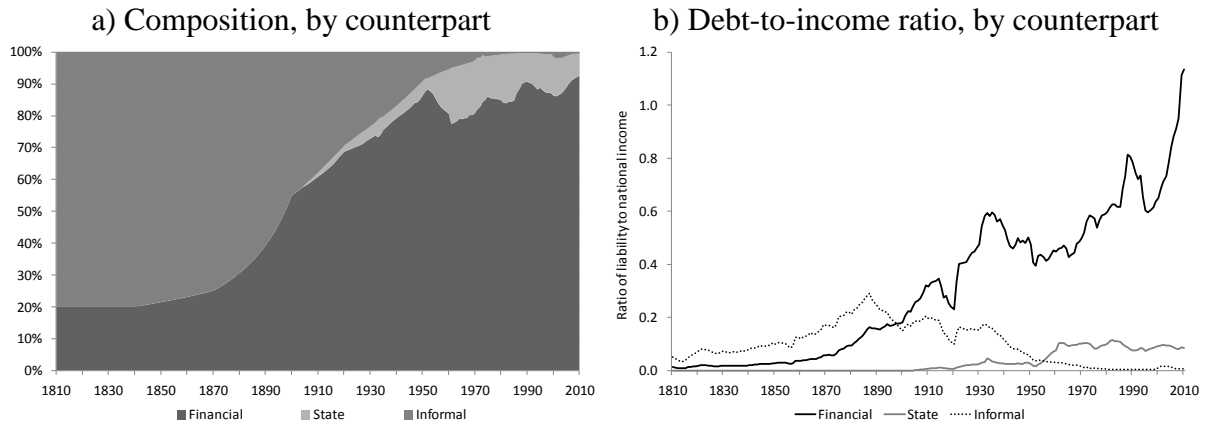
Source: Appendix E.

Figure 8: Debt-asset ratio of Swedish households, 1810–2010.



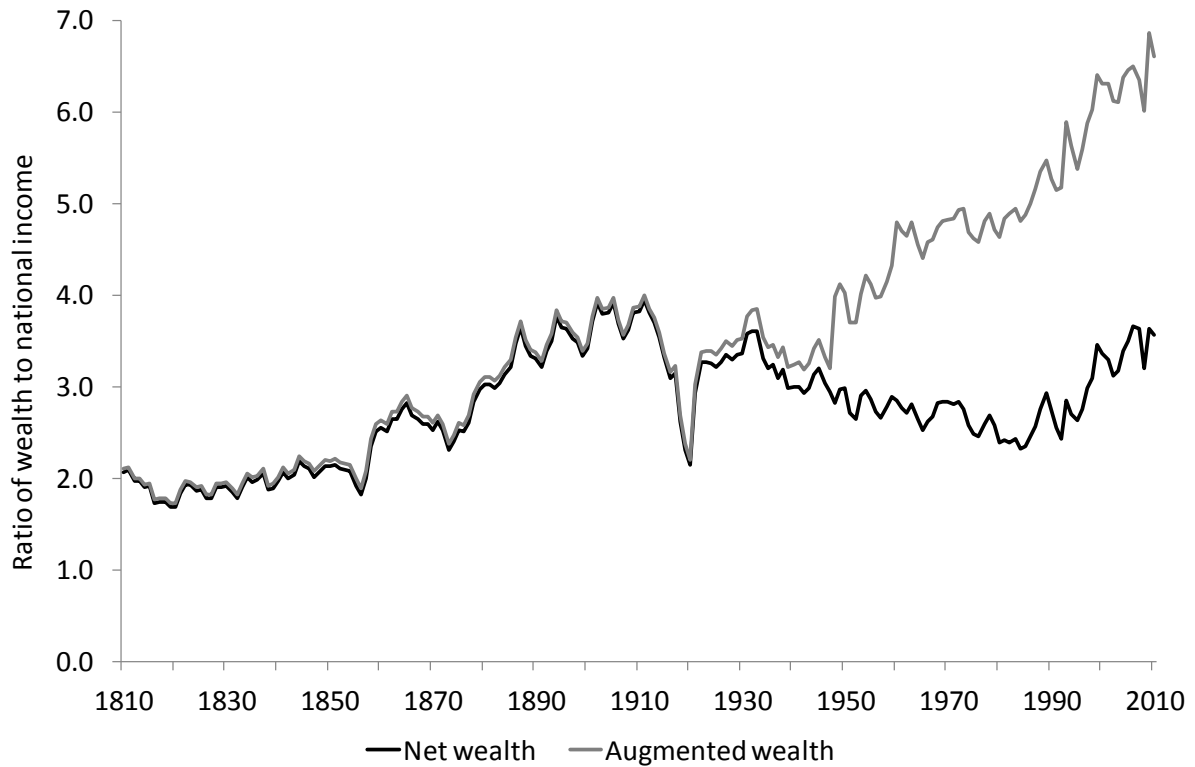
Source: Appendix E.

Figure 9: Composition of liabilities of Swedish households, 1810–2010.



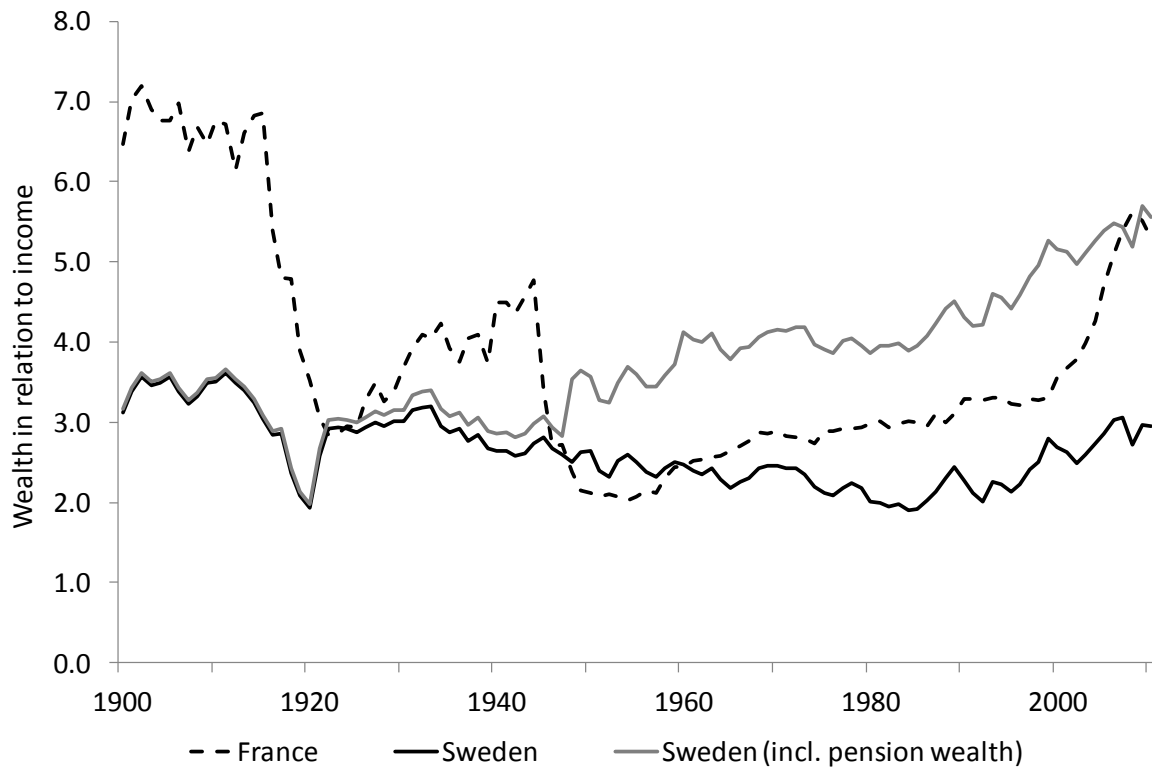
Source: Appendix E.

Figure 10: Ratio of net wealth and augmented wealth to national income, 1810–2010.



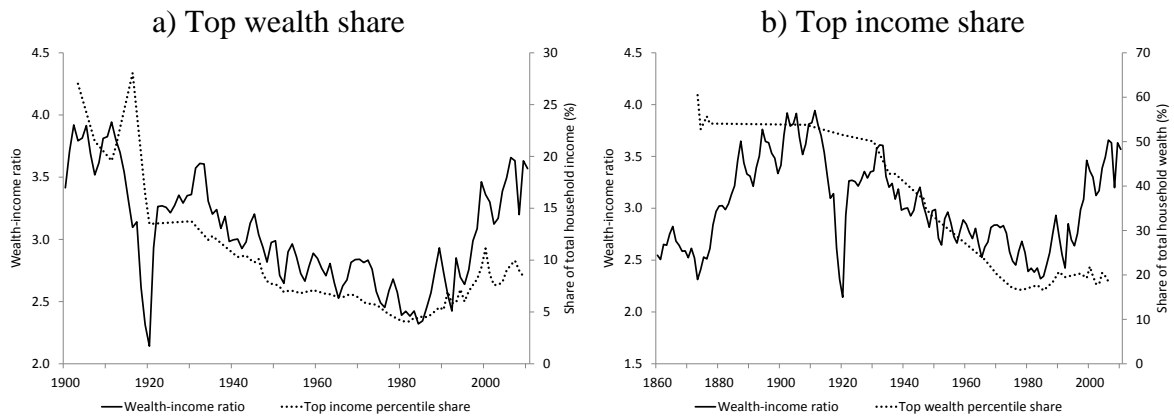
Note: Net wealth includes marketable non-financial and financial assets less debts. Augmented wealth includes net wealth and net-of-tax public and private pension wealth. Source: Appendix E.

Figure 11: Household wealth-income ratio in France and Sweden, 1900–2010.



Note: In both countries, the income denominator is national income (GNP less capital depreciation).
 Source: Piketty (2011) and Appendix E (Sweden).

Figure 12: Wealth-income ratio versus top wealth and income shares, 1860–2010.



Source: Top wealth percentile: Roine and Waldenström (2009); Top income percentile: Roine and Waldenström (2008); Wealth-income ratio: Appendix E.

Table 1: Balance sheet of Swedish households, 2010 (billion SEK)

	Billion SEK	(%)	Billion Euro
1. Assets (1a + 1b)	11,414	100.0	1,268
a. Non-financial assets	5,921	51.9	658
Produced assets	3,792	33.2	421
Non-produced assets	1,148	10.1	128
Consumer durables	982	8.6	109
b. Financial assets	5,492	48.1	610
Bank deposits and currency	1,157	10.1	129
Shares and mutual funds	1,427	12.5	159
Bonds	138	1.2	15
Other claims	19	0.2	2
Private pension savings	2,751	24.1	306
2. Liabilities (2a + 2b + 2c)	2,865	100.0	318
a. Financial sector	2,528	88.2	281
b. Public sector	322	11.2	36
of which student loans	183	6.4	20
c. Other loans	15	0.5	2
3. Net wealth (1 – 2)	8,549		950

Note: Condominiums are included in produced non-financial assets. SEK/Euro exchange rate is 9 (2010-12-31).

Source: Appendix E.

Table 2: Evolution of Swedish household asset composition (shares of total assets).

	1810	1861	1910	1960	2010
Non-financial assets	81.6	86.1	54.7	59.9	67.2
Agricultural assets	70.0	71.9	27.0	16.7	10.5
Real estate (non-agricultural)	11.0	11.7	22.1	30.0	47.3
Consumer durables	0.7	2.5	5.6	13.1	9.4
Financial assets	18.4	13.9	45.3	40.1	32.8
Deposits and currency	9.1	5.7	16.3	20.0	11.1
Shares and mutual funds	0.2	2.4	22.6	11.6	13.7
Bonds	0.0	0.2	0.7	1.9	1.3
Other claims	9.1	5.7	3.2	2.9	0.2
Private pension savings	0.0	0.0	2.5	3.7	6.5
Liabilities	3.0	8.4	14.9	16.9	26.2
Financial sector	0.6	2.0	9.1	13.8	24.2
State	0.0	0.0	0.1	2.2	1.8
Other debt	2.4	6.5	5.7	0.9	0.1

Note: See Table 1 for details about net worth. Source: Appendix E.

Table 3: Pension-adjusted balance sheet of Swedish households, 2010 (billion SEK)

	Billion SEK	Share of Net wealth (%)	Share of Augmented wealth (%)	Billion Euro
1. Assets (1a + 1b)	11,414	134	74	1,268
a. Non-financial assets	5,921	69	39	658
b. Financial assets	5,492	64	36	610
2. Liabilities	2,865	34	19	318
3. Net wealth (1 – 2)	8,549	100	56	950
4. Pension wealth (4a + 4b)	6,778		44	753
a. Public pension wealth	5,525		36	614
b. Private pension wealth	1,253		8	139
5. Augmented wealth (3 + 4)	15,327		100	1,703

Note: See Table 1 for details about net worth and exchange rate. *Source:* Appendix E.

Appendix A Non-financial assets

Non-financial assets constitute a core component in the household balance sheet. There they are divided into three classes: *Agricultural assets*, *Non-agricultural assets* and *Durable consumption goods*. In the system of national accounts, these components are, in turn, generally divided into produced assets, which are outputs from a production process (buildings), and non-produced assets that appear naturally (mainly gardens, farmland and forestry).

In this historical investigation, it is not possible to retain the division between produced and non-produced assets throughout the studied time period. The prime reason is that the sources reporting the central item in historical eras, agricultural real estate, has generally appeared in categories that contain both produced assets (buildings, livestock) and non-produced assets (farmland, forestry). The same holds for the non-agricultural real estate. For this reason, I make a main division of non-financial assets into two categories, agricultural and non-agricultural assets, both containing produced and non-produced assets. Because of this structural adjustment, the stock of consumer durables are placed in a separate, third category instead of belonging to the produced assets as stipulated by SNA.

A1. Agricultural assets (produced and non-produced)

Agricultural assets are historically the largest asset class in Swedish household portfolios. Like most other countries, Swedish farms are traditionally run as unincorporated family businesses. Following SNA93, this means that that they as a whole should be included in the household sector.¹⁵

The main components of agricultural assets are farmland, forestry, buildings and livestock. The empirical basis for computing the values of these assets is the annual tax assessments that have been reported annually by tax authorities since 1813. For year 1810, tax-assessed land values in eighteen South and Middle-Swedish counties, which together represented about four fifths of total national land value, are used (Åkerman, 1967, bilaga 1). From 1813, numbers for the whole country exist and between 1813 and 1862, national tax tables published annually by the tax collecting agency Statskontoret are used.¹⁶

Data from these earlier years are quite uncertain for several reasons. Information was collected by local authorities and there are reports of variations in both valuation of assets and the routines for collection and reporting.

The biggest obstacle is, however, to compute plausible market values for the observed stocks of tax-assessed values. Throughout the period there have been a number of tax reassessments.¹⁷ In between these events, moreover, the ambitions to match tax values to market values have varied; Fahlbeck (1890) reports that the assessments in the 1810s aimed at valuing

¹⁵ Counting the farms as incorporations, thus belonging to the corporate sector, would imply that only the running business equity (assets less debts) should be added to household portfolios. In practice, however, the share of incorporated family farms in Sweden has been basically zero up until the 1990s when it started increasing slowly, reaching a level of about five percent in 2010 (Swedish Board of Agriculture, 2011, pp. 10ff).

¹⁶ To link the estimates for 1810 and 1813, I use information on values for the counties reported in 1810 that are also available for subsequent years. Between 1810 and 1813 the average value increase was 43 percent, and this number together with the total for 1813 is used to compute the total value of 1810. There are gaps in the archives and for the years where no information was found, 1811–1812, 1814–1815 and 1817–1818, values are linearly interpolated.

¹⁷ Major reassessments of agricultural real estate were made in 1862, 1879, 1903, 1908, 1913, 1918, 1952, 1957, 1965, 1970, 1975, 1981, 1992, 1997, 2005, and 2008.

assets at their going market rate whereas this ambition was gradually removed from the 1820s onwards.¹⁸ A major turning point was the tax ordinance of 1861 ("1861 års bevillningsförordning", SFS 1861:34) which set new principles for the valuation and collection of land and real estate values. From this point on, tax values should closely follow market values and between 1861 and 1862 agricultural land values by 280 percent, reflecting the long lag in updating tax values to market values.¹⁹

Some adjustments of the reported agricultural tax values are needed. First, I recalculate the currency to the modern currency unit *krona* (was made official currency in 1873) since tax assessments up to 1858 were denominated in *riksdaler banco* (a local currency that stood at 2/3:s of the subsequently used currency *riksdaler riksgälds*, that later was transformed at a rate 1:1 to the *krona*).

Second, I update values to market level drawing on both contemporary estimates and subsequent research efforts. For the 19th century series, there are contemporary writings (Seth and Berg, 1863) claiming that the tax values were close to or at market values in the 1810s and (roughly) from 1862 when the new form of tax assessments had been introduced. Since tax values for non-agricultural real estate appear to have been much more in line with market values than agricultural real estate throughout the period (there was no break at all in 1862), I interpolate new agricultural values between the 1820s and 1862 based on the value increases realized for non-agricultural real estate and the annual timeline. For the 20th century, I use several secondary sources to adjust tax values to market values. Flodström (1912) reports ratios of market-to-tax value ratios for 1903 and 1908, being 1.20 and 1.11, respectively. Spånt (1979) reports the same ratios for 1935 (1.11) and 1945 (1.43). From 1950 onwards, purchasing price coefficients are reported (annually since 1957) by Statistics Sweden.²⁰

Third, farms and forests owned by non-households (corporations and the public sector) need to be removed from the totals reported in the statistical sources. This is difficult since the tax assessments include little or no indications about their relative shares. Nevertheless, it is possible to compute rough estimates of the shares of household-owned farm estates using different estimates by previous scholars. For example, Flodström (1912) finds that in 1908, non-government entities held about 15 percent of total private agricultural assets.²¹ Spånt (1979) reports that households held basically all of the tax-assessed farms in 1935 and 1945. I follow these investigations and assume a household share equal to the Flodström for all years up to 1908, to the Spånt estimate for all years after 1945, and I linearly interpolate for the years in between the two.

Fourth, and finally, after 1970 the series of Bergman et al. (2010) and Statistics Sweden

¹⁸ According to Fahlbeck (1890, p. 7), this changed ambition to report market values appeared in the tax assessment regulations ("Bevillningsförordningar") in 1823, 1830 and 1841. Nilsson (2008, p. 207) also cites contemporary sources stating that farmland tax values were (erroneously) constant during 1840s and 1850s.

¹⁹ That this increase reflects a valuation update is confirmed by the summary of the quinquennial county reports (Statistics Sweden, 1868, p. 119). But according to Fahlbeck (1890, p. 104), the tax values of 1862 were still most likely too low. This opinion is shared by Seth and Berg (1863).

²⁰ Flodström, 1912, Bil. A. Taxeringsvärden och köpeskillningar å fastigheter, pp. 299–303; Spånt (1979), Appendix B. Statistical Yearbook, Statistical Messages (series J) and *Yearbook of Housing and Building Statistics* ("Bostads- and byggnadsstatistisk årsbok"). The market-to-tax value ratios in the years between were linearly interpolated.

²¹ In 1908, total private (taxable) farm land value was 3,022 million SEK. That year, 454 million SEK (15 percent) was held by non-households (see list of actors in a previous footnote), (Flodström, 1908, pp. 681, 697, 727, 743).

(1995) put agricultural buildings together with other buildings, whereas I need to retain it with the agricultural sector in order to get a homogenous long-run series for produced agricultural assets. Information about the share of fixed assets of total agricultural assets is available for the period 1980–1994 (Statistics Sweden 1995) and the three years 1998, 2005 and 2008 (Statistics Sweden, Statistikdatabasen). For the 1970s I use the average level during 1980–1994 whereas the gaps in the period after 1994 are linearly interpolated.

Livestock should also be included in the produced agricultural assets according to SNA93. I construct market-valued totals for livestock and add them to the other agricultural assets. While livestock are at times neglected in modern estimations, they are absolutely crucial from an historical point of view; livestock represented between 10 and 15 percent of all real assets up to World War I and about five percent up until World War II. During the long 19th century, horses were the most important livestock, representing between 30 and 40 percent of the total value of livestock followed by cows whose share increased from one fifth to one third. By contrast, in the 20th century cows overtook the role as most important livestock measured in terms of aggregate market value.

The approach to estimate of the current market value of all livestock is straightforward: it is the product of the total number of each type of animal multiplied by an assessed average market price at each point in time. Luckily there exists relatively detailed information about both of these items. Throughout the period, the number of animals at Swedish farms have been carefully counted and reported by Statistics Sweden.²² For the period up to 1914, market prices of most livestock types are collected from Jörberg (1972). Furthermore, Fahlbeck (1890, pp. 41–42) and Flodström (1912, pp. 143, 148) report detailed estimations of the value of livestock for the years 1885 and 1908, respectively. These values are used to complement and amend the values retrieved from the other sources in the early period. From 1914 up to 1982, data come from historical tables published in Statistics Sweden (1960, p. 111), up to 1950, and after that annually in Statistical Yearbook, where average market values are drawn from livestock insurance sources. After that, information is less accessible and instead the livestock value is assumed to be ten percent of the total value of other agricultural assets, a share around which it oscillates throughout the postwar era. Figure A1 shows the development of the aggregate value of the stocks of agricultural assets and livestock relative to national income during the full study period.

[Figure A1 about here]

A2. Non-agricultural real estate

Non-agricultural real estate (on Swedish tax returns called “*annan fastighet*”) is a summary concept consisting of several items such as owner-occupied housing, vacation housing, rental apartments, condominiums, inventories and plains.²³ The basis for constructing real estate

²² Up to 1950, Statistics Sweden (1959), pp. 61–64 showing the number of different kinds of livestock (e.g., horses, cows, oxen, young cattle, pigs, sheep) are used. For the period from 1950 onwards, I use livestock insurance data, published annually since the 1920s in Statistics Sweden (1960, p. 111) and thereafter in Statistical Yearbook. These insurance data report both the number of livestock and their (insurance) values though only for cows and horses. From the 1980s onwards, there is no information on annual average prices or livestock insurance. Instead I assume the value of livestock to be of equal share of agricultural property as it was in the late 1970s (about five percent).

²³ Note that condominiums are often included in financial assets in the Financial Accounts. Formally, the apartment is owned by a non-financial corporation (the condominium association) and the household owns only (fi-

totals is the same as for agricultural household assets, i.e., the annual tax assessments since 1810.²⁴ From 1970 onwards, the series of Statistics Sweden (1995) and Bergman, Djerf and Lindström (2010) are used.

As in the case of agricultural real estate, all amounts in the tax assessments are in tax-assessed values and therefore need to be adjusted to market values. In the 1950s, Statistics Sweden started publishing annual “purchasing price”-to-“tax value” coefficients (“köpeskillingskoefficienter”). These coefficients provide relatively robust estimates of the difference between market and tax values. They are reported since 1951, and annually in Statistical Yearbook since 1957. Specifically, it draws on sales prices compiled for small regional areas and adjusted for house-specific information about size, building year and assumed quality depreciation. Prior to the 1950s, there is no simple and unproblematic way to make the same adjustment. In relation to the tax reassessments of 1858 and 1862, there were contemporary discussions about deviations between the tax values and “true” values (Seth and Berg, 1863). In the case of non-agricultural real estate, these deviations were found to be in general quite small. For the years 1903 and 1908, Flodström (1912) present estimates of tax and market values (based on large samples of sales prices) allowing for a calculation of purchasing price-coefficients. The coefficients, or market-to-tax ratios, were 1.11 in 1903 and 1.00 in 1908. Similar evidence of market values is available for the years 1935 and 1945 in Spånt (1979), with ratios 1.11 and 1.43, respectively.²⁵

A second adjustment made is, similar to the case of agricultural assets, removing all non-household-owned real estate from the data. This is important as there are potentially sizeable amounts of taxed dwellings that are not owned by households. In much of the period, the tax authorities distinguished between taxable real estate, which was held by the private sector, and non-taxable estate, which was held by the public sector. All public real estate is of course removed from the series. But the next step, to distinguish between households and other private actors (firms) owning real estate, is more difficult. The historical statistics unfortunately say almost nothing about these shares. For the year 1908, however, Flodström (1912) reports the sum of real estate holdings in the balance sheets of the corporate and financial sectors. By summing the values of all this real estate, I find that they owned dwellings to a value of 1,177 million SEK. The taxable total real estate this year was 3,843 million SEK, yielding a ratio of 31 percent. In other words, households held 69 percent of all private non-agricultural real estate in 1908.²⁶ I use this share for all years up to 1908. For the years 1935 and 1945, Spånt (1979) uses Census data to estimate totals for the households, and I again relate these amounts to the tax assessment totals, yielding shares of approximately 50 percent in both years. To get annual data, I interpolate household shares of total private real estate linearly between 1908 and these years.

nancial) shares in this condominium. If one considers that all households need somewhere to live, and that a condominium apartment is just one of several housing alternatives, I think it is relatively uncontroversial to treat condominiums as real (housing) assets.

²⁴ For 1810, the same principle as for agricultural assets is used, i.e., assuming a 43 percent value increase up to 1813. Values for the period 1813–1861 is collected in the main source, values for “Hus, Tomter, Stadsjord m.m.” in “Sammandrag öfver Taxeringslängderne N:o 1 för 18..” has been used. From 1862 onwards, the values for “Bevillningsskyldig Annan Fastighet” is used.

²⁵ Flodström, 1912, Bil. A. ”Taxeringsvärden och köpeskillingar å fastigheter, som gått i köp under tiden mellan 1903 och 1908 års taxeringar”, pp. 299–303; Spånt (1979), Appendix B.

²⁶ The private non-household sectors reported are: local commons (“häradssällmänningar”), foundations (“allmänna stiftelser”), joint-stock companies (“aktiebolag och bankaktiebolag”), limited banking companies (“enskilda banker”) and other non-financial limited partnerships (“handelsbolag etc”). For further details, see Flodström, 1908, pp. 681, 697, 727, 743.

A3. Consumer durables

Consumer durables are typically not included in household balance sheets. The main reason is that all household consumer goods are assumed evaporate within one year which classifies them as running expenses rather than capital investments. Accordingly, there exists no official series at Statistics Sweden over the stock of consumer durables. There are some previous estimates made, mainly concerning the annual flows of consumer purchases across categories of goods, but also some calculations of the stock.²⁷

In this study, the stock of consumer durables will be included alongside of other real assets. There are several motivations for this. First, many consumer goods actually last considerably longer than only one year such as cars, boats, electronic equipment and furniture.²⁸ Often these durables were purchased using borrowed money, and as the debts are almost always recorded one needs to account for the assets when analyzing net worth. A final reason to analyze consumer durables is that they reflect long-run changes in household welfare, as household tend to consume more as they get richer. For these reasons,

Measuring the stock of consumer durables is difficult. The standard procedure used by statistical agencies is the *perpetual inventory method*, which defines the stock of consumer durables CD_t as the accumulated annual consumption flows I_t (in real terms) accounting for annual depreciation δ :

$$(1) \quad CD_t = I_t + (1 - \delta)CD_{t-1}.$$

The basis for computing (1) is to get acceptable estimates for annual household consumption of consumer durables. From 1950 onwards, the official series from the Swedish national accounts is used (Berg, 1983). During 1931 and 1950 I use the series of inventories, motor vehicles and bicycles from Bentzel et al. (1957, tables A:IV and A:VI, pp. 407–409) and between 1861 and 1930, data from Lindahl, Dahlgren and Kock (1937) is used. For the earliest period, 1810–1860, there exist no detailed series for private durable consumption. There is, however, evidence available on private total final consumption reported in Edvinsson (2005, Table F), which dates back to year 1800. When relating the observed durable consumption during the 1860s to Edvinsson’s total final consumption that same decade, one finds that the share of durable consumption over total private consumption lied quite stable around three percent of private final consumption during the 1860s (after which it started to increase). For this reason, I assume that this was also the share that was true all the way back to 1810.²⁹

The most important durable consumer good in the second half of the 20th century is undisputedly cars. From 1930 onwards, I am able to compute stocks separately for motor vehicles (cars and motorcycles) and other durable goods as there are data on consumption flows for these two broad items from this year. In order to land on sensible relative sizes of stocks and

²⁷ The only real series of a consumer durable stock is computed by Berg (1983, 2000) for the period since 1950. In Bollfras (1878), Fahlbeck (1890) and Flodström (1912), residual values from fire insurance values are used to address the amount of other household assets. Other than that, most attention has been put on constructing annual flows (e.g., Lindahl, Dahlgren and Kock, 1937; Bentzel et al., 1957; Dahlman and Klevmarken, 1971) or to study these items within small subsets of the population (Kuuse, 1969; Lilja, 2004).

²⁸ Naturally, even if the goods are utilized in homes their market values typically decrease rapidly and it is actually this market value reduction that is reflected in the depreciation term δ (which statistical agencies assume to be 100 percent).

²⁹ All stock calculations are made for volumes, i.e., using deflated data. The only CPI series that reaches back to 1810 is the new one of Edvinsson and Söderberg (2010), which I therefore use.

also a balanced depreciation rate (see below) one must determine some yardstick stock values for motor vehicles at different points in time. I have done this for 1930, 1951 and the 2010 using information on the number of cars and motorcycles in Sweden from the official registries (deducting 20 percent to account for vehicles owned by firms and the public sector) and assessed average market values for cars³⁰ and motorcycle³¹ prices. The car stock in 1951 comes from the very careful investigation of travel habits by Endrédi (1969, table 5, p. 113). Figure A2 shows the development of the aggregate value of the stocks of consumer durables and cars relative to national income during the full study period.

[Figure A2 about here]

An important parameter in the perpetual inventory method is the depreciation rate δ . Determining the depreciation is difficult as it is not directly observed, and the choice always introduces some arbitrariness. Moreover, the depreciation rate should probably vary over time, but in what way and due to what factors is not clear and therefore a constant rate will be used. Importantly, I use the yardstick estimates of the separately estimated motor vehicle stock to tune in a sensible depreciation rate, and have landed at 0.15. This means that 15 percent of the value of purchased goods “rusts away” each year and that half of the market value of the goods is gone after four years. Finally, all calculations are made in volumes, using deflated values, and the only CPI series that reaches back to 1810 is the recent series of Edvinsson and Söderberg (2010), which is therefore used.

How do the new series match previous estimates of the stock of consumer durables made in the late 19th and early 20th centuries? Bollfras (1878) found that they amounted to roughly 450 million SEK in 1880. Fahlbeck (1890, p. 55) 650 mkr in 1885 and Flodström (1912, p. 215) 940 million SEK in 1908. These amounts are larger than the ones I present, and the difference is notable (from a third to four times as large). The exact reasons for these deviations are unclear, but the fact that the previous estimates also include clothing can be one important explanation.

³⁰ The average value of a car was 3,000 SEK in 1930 and 75,000 SEK in 2010. According to car historical expert Jan Ströman (former lecturer at the Royal Institute of Technology) there was a great variation in car prices after the First World War. The most commonly owned car in the 1920s, the T-Ford (representing about half of all registered cars in Sweden), was sold at prices around 2,000 SEK in current prices. Around 1930, European car manufacturers such as Opel and Renault had started to gain market shares with their more robust, and inexpensive, smaller cars costing about 3,000 SEK whereas the more expensive American-made Chevrolet, costing about 5,000 SEK, had also gained in popularity. For 2010, average market prices come from one of the largest Swedish internet market for new and used cars, www.webcar2000.com (2011-06-02).

³¹ The average value of a motorcycle was 1,500 SEK in 1930, 1,085 SEK in 1951 and 52,000 SEK in 2010. Historical values are collected from a survey of historical motorcycle models and their prices made by the Swedish Technological Museum (REF). It states that standard models of both the Swedish *Husqvarna* manufacturer and *Harley & Davidson* was worth 1,500 SEK in 1928. In 1950, the popular Swedish motorcycles by *Husqvarna* and *Nymans* cost about 1,100 SEK. In 2010, finally, the average motorcycle market value was 52,000 SEK according to www.webcar2000.com (2011-06-02).

Appendix B Financial assets

Financial assets represent the second major component of household assets alongside real assets. Following the system of national accounts structure, the items within this asset class are: *Deposits and currency*, *Shares and mutual funds*, *Bonds*, *Other claims* and *Individual pension and insurance savings*.

The main source material for the financial asset statistics is historical financial sector publications, as reported either by the banks themselves or by the Riksbank or Statistics Sweden. Historically, there have been many different kinds of banks that have all catered different parts of the Swedish economy. When it comes to household assets, the most important part concerns household deposits in the savings and commercial banks.

Because of the relatively ambitious regulations that have always surrounded banks, there exist annual statistical records on balance sheet statements for nearly all banking types since their appearance. As some economic historians have noted, one should be vary about the slight variations in quality of these statistics over certain time periods due to deficient reporting requirements as well as a general lack of supervision. Still, these variations should be well within the acceptable error margins for our purposes (Ögren, 2011).

Distinguishing between households and firms is difficult in the published banking statistics. While these are today regarded as separate sectors in the national accounts, in the past banks typically bunched them together into one category, called “the public”. Below I describe how the relative shares of these two groups are estimated over time across asset classes.

B1. Deposits and currency

One of the most important components of household financial assets in past times is currency and bank deposits. The main source for these data is the official banking statistics, published annually over the entire period.

Data on bank notes and coins in circulation are taken from the official Riksbank monetary statistics. The data come from the balance sheets of the Riksbank and, between 1834 and 1903, also from the private note-issuing commercial banks.³² It is widely recognized that practically all of this is in the hands of households.³³ Figure B1 reports the relative shares of currency and deposits in household portfolios as well as their aggregate amounts in relation to national income.

[Figure B1]

Deposit holdings at banks are estimated as follows. During the first half of the 19th century, there were very few banks or financial institutes active in Sweden. In the 1810s there were only a handful of so-called discount banks (“diskonterna”) acting as commercial banks in the major Swedish regions, but they all vanished in 1818.³⁴ The Parliament-owned Riksbank act-

³² Up until 1870, the source is Sveriges Riksbank (1931). From 1870 onwards the series of Edvinsson (forthcoming) is used.

³³ This has been argued by, e.g., Thunholm (1969).

³⁴ Annual balance sheets of the third biggest Discount bank, *Malmö Diskont*, are reported for some years in Kärrlander (2008). See also Kärrlander (2011). Nygren (1985, p. 29–32) reports that this bank was equally large to the one in Gothenburg, but that the largest was Göta Kanal Diskont, with about seven times larger amount of deposits. I assume that half of these were held by households.

ed as a commercial bank in this period and is also included in our series. The actual commercial banks did not appear until 1834. Although commercial banks were traditionally regarded as banks mainly focused on servicing the corporate sector, they had household customers from the beginning. Today households hold most of their deposits with commercial banks. In order to separate out the share of deposits held by households, I sum deposits in savings accounts (“sparkasseräkning”), most of the long-term deposit accounts (“depositions- och kapitalräkning”) and a small share of checking accounts. Household shares of the account types were retrieved from several studies of Swedish banks. That savings accounts were largely held by households is reported by Kock (1932, p. 74) and Thunholm (1969, pp. 67f). Kock (1958, p. 23) reports that households held about four fifths of the long-term deposits, and I therefore take 80 percent of the deposits reported in Statistics Sweden’s Statistical Yearbook on the “Depositions- och kapitalräkning” (before 1956) and the sum of “Depositions- och kapitalräkning” and “Kapitalsamlingsräkning” (from 1956s onwards). Finally, as for checking accounts, Thunholm (1969, pp. 63ff) states that this was historically the running expense-account for private business but as wages and salaries started being paid through banks in the late 1950s the number of households with such an account increased rapidly. I assume that households held ten percent of the value of checking account deposits up until the mid-1950s after which its share increased up to 100 percent by 1970. By this time, firms had started to use other account types (primarily the giro capital account).

Savings banks emerged in Sweden in the 1810s, and their main purpose was to offer savings accounts to individuals or households. I include all of the savings bank deposits in the household portfolios, and I also include all deposits held at the state-owned Post Savings Office (Postbanken). See also the discussion in Thunholm (1969, pp. 109–111). Data are mostly collected from Statistics Sweden (1960, pp. 99, 103) and they are annual from 1860 onwards. Before this date, total deposits are reported only for single years and not farther back than 1834 (despite the fact that the first Swedish savings bank appeared in 1813). I linearly interpolate the years in between the points of observations. For the period before 1834, I estimate the deposits as follows. I have annually number of banks to get a full series from Statistics Sweden (1960). I then assume that the average amount of deposits per bank was the same back to 1813 (the founding year of the first savings bank) as it was in 1834, a year for which such data exist. It is reasonable that a savings bank attracted roughly the same amount of savings as these were made on a quite standard deposit scheme. Having said this, the total amounts deposited at savings bank in 1834 was still quite small in relative terms—only about five percent of all notes and coins in circulation—why this has little impact on the total household portfolio.

Figure B2 shows the structure and development of household bank assets across financial institution and the amounts of the respective components in relation to national income.

[Figure B2 about here]

From 1970 onwards, I use the Financial Accounts for total household deposits, supplemented by the Riksbank series over notes and coins in circulation.

B2. Shares and mutual funds

An important and partially difficult component in households’ financial portfolios is shares in business equity and mutual funds. A basic distinction concerns whether the shares are *listed* (and traded) on organized secondary securities markets (stock exchanges) or if they are not. This difference has bearing on both valuation approaches and, in particular, the general avail-

ability of information on the size of these stocks.

In the case of market-listed shares, the quality of information about the number of listed shares and their market value has recently become improved thanks to research efforts (e.g., Gernandt, Palm and Waldenström, 2012; Waldenström, 2012). Market capitalization, i.e., the current market value of all listed shares, of the Stockholm Stock Exchange is known for the 20th century and there are also estimates available for the 19th century. For non-listed shares, however, the opposite is unfortunately true. Little is known about the number of total value of these shares, this is true today and even more so for historical periods.

To settle on a proper valuation is crucial. For non-listed shares this is often difficult since they are not associated with any easily observable market prices. To the extent that these shares are reported or estimated, they typically appear in their book or tax-assessed value. Shares in closely held firms are mostly family firms, and these have for most of the studied time period not even been recorded in the official economic statistical sources of Sweden.

Adding to this difficulty is the fact that there are almost no previous attempts to estimate the size or aggregate value of this non-listed, closely held business equity. This is unfortunate since there is reason to believe that the stock of closely held firms is of an order of magnitude. In the present analysis I make a rough estimation of the total value of shares, listed and non-listed, held by Swedish households for the entire period. Figure B3 reports their composition and also their values relative to national income.

[Figure B3 about here]

B2.1 Listed shares

The history of joint-stock companies in Sweden is not that long. Even though Sweden may even have had the first joint-stock company in the world, there existed only a dozen or so companies in Sweden when the first joint-stock law was enacted in 1848.³⁵ Indebetou (1925) lists the number of newly started corporations in each year during 1848–1925, and in the first decade after the new law less than a hundred of new companies had been launched. The expansion of incorporation came instead during the first decades of the 20th century, when several hundreds of new companies came into business annually. The stock of companies is not readily available in these early years, but assuming reasonable firm destruction rates the total number of joint-stock companies around 1900 was about 2,000 (Broberg, 2006). Secondary stock trading took place both on the country's prime market, the Stockholm Stock Exchange, an over the counter in banks or private brokerage firms.

The value of household-owned stocks and mutual funds are computed using a wide array of secondary sources. From 1970 onwards, the official, and highly reliable, series of the Financial Accounts is used. Before that year, I construct the series using data on the market capitalization of the Stockholm Stock Exchange, Sweden's prime market place ever since its start in 1863.³⁶ As for the household share of the listed stocks, I use information on this for a few points in time during the study period. Before 1911, the households are assumed to hold 80 percent of the value of all listed shares.³⁷ In 1911, a new law authorized banks the right to

³⁵ Stora Kopparberg's Mining Company, issued its first shares in 1347 (Broberg 2006, p. 61).

³⁶ Market capitalization of the Stockholm Stock Exchange is reported in Waldenström (2012).

³⁷ There is not data supporting the calculation of an exact share. From various historical sources, it appears that private individuals were the prime investors on the early Swedish stock market. From the firm-level microdata of

hold shares in their balance sheets, and it is therefore reasonable that the household share of stock ownership declined gradually after that (Fritz, 1990). According McLure and Norrman (1997) households held about 75 percent of all listed shares in 1950. In 1970, finally, the value of households' listed shares according to the Financial Accounts (14 billion SEK) represents about 57 percent of the stock exchange capitalization. As the exact progression of the household shares is unknown, I assume it to decline linearly in between these years. The final household stock of share ownership is fairly well in line with some previous estimates. It is lower than the handful of years presented by Spånt (1979), but then Spånt does not account for the fact that others than households held listed share (his amounts are basically equal to the total stock market capitalization).

B2.2 Non-listed shares

Counting and valuing shares in closely held corporations, e.g., partnerships or small family firms, is quite tricky. Not even today there exist comprehensive estimates of their total number or current market value. For this reason, this asset class is often excluded (not explicitly, but effectively) from the compilation of most countries' balance sheet statistics.

In this study, I present a tentative calculation of the value of the non-listed shares owned by Swedish households over the full study period. This series relies on a few point estimates made for single years, and then combines annual variations in firm creation, bankruptcy frequencies, and estimations of average market values of other small businesses. The final series is plausible, but far from certainly the correct one. Hopefully there will be better data available in the future to improve upon this initial attempt to construct a homogenous series.

For the period between 1810 and 1850, it is clear that the number of incorporated companies in Sweden was small. Broberg (2006, p. 63) states that only 13 companies received official charter for issuing shares with limited liability between 1793 and 1842. However, in addition to those there were "several tens of companies" with some sort of limited liability, although not officially granted. I assume that there were ten joint-stock companies in 1810 and that the number increased to 48 in 1848. The average size of the equity capital of these companies is assumed to be equal to the average size of the equity capital of commercial banks, which started emerging in the 1830s (the number is linearly extrapolated for earlier years) and whose balance sheets are available in Riksbanken (1931). From 1849 up to 1910, Indebetou (1925) reports the annual chartering of new joint-stock firms, and I add these to the stock, subtracting an assumed bankruptcy rate of 10 percent of existing firms.³⁸ The sum is then multiplied by a five-year moving average of the annual average capital size of newly founded companies, adjusted upwards for real growth (accounting for the accumulation of values of the stock of firms), all reported in Broberg (2006, p. 100). I assume that two thirds of these closely held firms were owned by households and that the remaining third was owned by other sectors (firms, the public sector and foreigners).

Between 1920 and 1980, I assume that the market value of non-listed shares equals a five-

all listed firms in 1901–1919 used by Waldenström, Gernandt and Palm (forthcoming), it is however clear that also non-financial firms held other firms' shares in their balance sheets, representing about 10 percent of own equity. Since the majority of firms were not listed the true share of non-household stock holding must have been larger, and a fifth appears to be a reasonable estimate.

³⁸ The exact bankruptcy rate is unknown, but there is some historical evidence on reported bankruptcies between 1866 and 1950 reported in Statistics Sweden (1960, Table 169, p. 170). The annual number lies on a fairly constant level up to the 1920s, and Gratzner (2002, Figure 1) reports a series since 1830 finding a relatively stable incidence of bankruptcies up until the 1970s.

year moving average of the market value of listed shares. Equating listed and unlisted shares is an admittedly strong assumption, but it actually fits reasonably well with the few point estimates that are available for reference. For 1908, Flodström (1912) collected evidence on all Swedish companies (joint-stock and partnerships) active in 1908. His finding was that the total equity capital (including disposable retained earnings) was almost 2,700 million SEK. My estimate is 2,900 million SEK. For the year 1985, Statistics Sweden made a special investigation into the size of non-listed household equity capital. It was estimated at being about 104,000 million SEK (Rylander and Bergman 1988, pp. 87 ff), which was about three times larger than the market-valued equity stock in 1980.

For the period 1981–2010, finally, I combine information from two sources. First, the above mentioned estimate for 1985 by Statistics Sweden is used. Second, data exist for years 2004–2007 on the capital stock of all small- and middle-sized joint-stock companies in Sweden with an annual turnover less than one billion kronors (Adeqvät, 2009). The latter investigation captures the status of some 60,000 companies using official records of the Swedish firm register. In 2007, their total equity value was about 380,000 million SEK, which was about a third of the Stockholm Stock Exchange’s market capitalization. For the years in between 1980, 1985 and 2004 I linearly interpolate the values, and for the final three years the stock is adjusted according to the market value of the listed companies.

B2.3 Foreign ownership

Foreign direct investments in Sweden were relatively limited over most of the period. During most of the 19th and 20th centuries, foreign ownership has been harshly regulated and documented. Still detailed information about foreign ownership is scarce.³⁹ Up until the 1870s there seem have been quite limited foreign purchases of Swedish assets. As regards property ownership, an investigation made in 1874 showed that there were 304 foreign property owners, of which 274 resided in Sweden. Their real estate properties amounted to 23 million SEK, or about one percent of all real assets (Gårdlund 1942, p. 188). In the national wealth investigation of 1908, the total foreign ownership of Swedish industry was estimated to be about 80 million SEK, which was about 3.5 percent of the equity capital in joint-stock companies. Foreign ownership was restricted in the 1910s due to the political tensions in Europe and the need for a stricter Swedish neutrality policy (Samuelsson, 1977, pp. 21f). Cross-border portfolio and direct investments were thereafter scarce. In an investigation of the foreign ownership in Sweden during the postwar period, Samuelsson (1977) finds that about three percent of Swedish industrial companies were foreign subsidiaries, and the share of foreign-owned capital of the total Swedish incorporated business equity should therefore have been much smaller.

In this study, no adjustment is made for foreign ownership of Swedish business firms for the period up to 1970. Sweden opened up its capital account in 1989 and thereafter foreign capital has flown into Sweden on a large scale, and this transition is fully accounted for by the fact that I use data from the Financial Accounts where the household portfolios are observed directly.

B3. Bonds

The estimation of the value of fixed-interest securities in the household balance sheet is based

³⁹ In some cases the distinction between financial and real asset ownership is difficult to make. The foreign purchase of the Klotenverken company in 1872 included “a complex of forests, mines, blast furnaces and iron ores” (Gårdlund 1942, p. 188).

on different sources. A basic assertion is that fixed-interest securities, i.e., bonds issued by local mortgage institutions, corporations (mainly during the 19th century) or the government, are held in the same proportion as long-term bank deposits. In Spånt (1979), data on household amounts of bonds are presented in a handful of years. The bonds' share of bank deposits and bank notes was about five percent in 1935, a share that I assume was true back to 1880. Back to 1835 I assume that bonds were held at a share of three percent of bank deposits. Before 1835, the share is zero since there bonds were not issued to Swedish households at this early era; mortgage institutions and corporations hardly existed, and the Swedish government only issued loans to foreign markets (Nygren 1985, pp. 44f). In 1945, the share according to Spånt (1979) was as high as ten percent, but this was an outlier due to the large expansion of war-related government loans, especially lottery bonds ("premieobligationer") and tax-exempt savings bonds ("sparobligationer"). Using the Spånt shares of bank holdings, in 1951 the share of bonds was again down to about five percent, but this yields a markedly lower amount of bond holding than is implied by the actual outstanding lottery and savings bonds that year (whose share of bank holdings was eight percent). Moreover, even these eight percent is too low as we know households held other types of bonds (in 1970, lottery and savings loans only represented two thirds of households' bonds). Therefore, I assume that the household bond-bank deposits ratio in 1970 also held true during the period 1950–1969. In practice, this means that the large floatings of government bonds during the Second World War also remained in household portfolios. For this reason, the bond amounts in this study are markedly higher than those in Spånt (1979) but still at about the same level as in Berg (1983, 2000), whose approach is similar to mine. From 1970 onwards, data on fixed-interest securities are compiled by and collected from the Financial Accounts.

B4. Other claims

Informal credit markets dominated Swedish household finance during most of the 19th century. When needing money, households mainly lent money from each other, and therefore household financial assets contained a large share of informal claims in addition to bank holdings and financial securities. These claims were bills of exchange ("växlar"), promissory notes ("reverser") and other kinds of financial claims on others. Prior to Sweden's credit market deregulation of the mid-1980s, the formal channels for bank lending were highly rigid. Thus alternative channels for credit were relatively popular in being more flexible. For example, whenever there were time gaps between delivery and payment, e.g., when purchasing a house, people wrote promissory notes. Among small business, contained within the household, trade credit is another form of such claim.

Several economic historians have tried to estimate the size of the informal credit market in 19th century Sweden in comparison to the formal market. Lindgren (2002) investigates probate records in the town of Kalmar, finding that the share of interpersonal unpaid loans among the deceased was 80 percent around 1845, 75 percent around 1875 and 45 percent around 1905. Lilja (2004, pp. 82f) studies another small town, finding equally high shares of interpersonal debt up the 1870s, but thereafter a more rapid decline to about ten percent in 1900.⁴⁰ Translating these estimates to the national level poses some challenges, as it is likely that the shares of the informal credits were higher in agricultural regions and lower in large cities. On balance, I have landed at assuming the informal financial assets to be four times the size of bank deposits and currency in 1820 and 1840, 2.3 times in 1860, 1.5 times in 1880 and 0.22 times in 1900.

⁴⁰ Perlinge (2005) estimates informal and formal claims in a small agricultural society between 1840 and 1900, finding somewhat higher shares of informal claims than Lindgren (2002) and Lilja (2004).

For the 20th century, Spånt (1979) has estimated the informal debt claims in household assets for the period 1935–1970 to. In 1935 he finds them to be as large as 25 percent of bank holdings, and I assume that this was the case also for earlier years. Possibly this underestimates the share for the 19th century since the formal financial system was heavily underdeveloped at this time (Lindgren, 2002). Spånt’s data suggest 14 percent in 1966.

For the period 1980–1994, there is information from Statistics Sweden’s National Wealth investigation (Statistics Sweden, 1995), which represents my most reliable piece of evidence. During this period, the ratio of miscellaneous claims to bank deposits was 9–10 percent in the beginning and 3–5 percent in the end. I linearly estimate the shares between 1966 and 1980.

Finally, from 1995 onwards, I assume a ratio of three percent. This ratio is decided using the level of the National Wealth data in the early 1990s and also what Berg (2000) finds using partly different data.

B5. Individual pension and insurance savings

In this category a number of *individual* pension and life insurance entitlements as well as pre-payments of premiums and reserves against outstanding claims are included. Claims on the public pension system or collective employment-related schemes are not included (see Appendix D below).

Data on these savings actually exist back to 1860. Prior to 1860, I assume the amounts to be zero (which they also were virtually in 1860). For the period 1860–1950, data were reported by private insurance companies and trade unions and published in Statistics Sweden (1960).⁴¹ For the period since 1950, data come from official statistical sources of Statistics Sweden. Specifically, for the 1950s and 1960s SOS Försäkringarna reports individual savings schemes, and from 1970 onwards I use the official series in the Financial Accounts.⁴²

There is a notable break in the series in 1996, when an additional insurance category – object insurances – was included in the ESA95 official definition of individual insurance savings (or “technical insurance reserves”). These object insurances represent roughly a quarter of all individual insurance savings, with life insurances and other private pension savings representing the other three fourths.

Another concern with the official series is that it may be on the low side. Ståhlberg (1995, p. 44) estimates the total value of private insurance savings in the 1980s and early 1990s, finding 50–90 percent larger amounts than the Financial Accounts. It is not clear, however, how this discrepancy can be explained, and for consistency reasons I use the official series of the Financial Accounts.

⁴¹ See Statistics Sweden (1960), tab. 87. ”Svenska bolags livförsäkringsverksamhet 1860–1950”, p. 106.

⁴² The Financial Accounts do not report stocks prior to 1980, but they do report annual transactions from 1970 and I use these to calculate the stocks. The same method was used by Berg (2000).

Appendix C Liabilities

In this section, I describe the reconstruction of the liabilities of Swedish households over the past two centuries. Estimating these liabilities has been associated with a number of challenges and difficulties. Most importantly, much of the historical statistical sources on bank lending are not based on the same sectoral decomposition of liabilities as is used today. In particular, households are not treated as a separate sector. Before the 1960s banks reported the amount of credits extended to “the public”, which included both households and (most) private business.

Another problem concerning sectoral definitions in the historical credit market statistics is the so-called “housing sector”, which was a separate sector reported in both bank and official public statistical records. A closer look at this sector shows, however, that this sector includes not only construction firms and home-owning households, but also public entities such as municipalities and counties. During the postwar period up until the 1980s, the Swedish credit market was heavily regulated and building and construction of housing represented a large and growing debtor during this period (Jonung, 1993). Some of these housing credits went to public and private construction companies, often called “construction credits” (“bygg-nadskreditiv”). Other credits went to the construction or purchase of commercial real estate. I exclude all such debts as detailed below. The majority of housing credits, however, ended up with households and must therefore be included.

The main approach has been to calculate household liabilities from the lender side, i.e., using banking statistics on lending. The advantage is that this information is available annually over the whole period. The alternative source, to use tax-returns based reports on household borrowing is not readily available for most of the period.

In addition to the formal borrowing, this study also presents estimates of informal liabilities of households. Just in the case of informal assets (discussed above), these liabilities are bills or promissory notes marking typically short-term loans granted from other households or companies. Today, these loans make up little more than a percent or so of total borrowing. Two hundred years ago, however, there existed almost no formal creditors in society why basically all borrowing had to be in the form of informal contracts. Therefore, for a long run historical perspective one cannot escape paying explicit account to the informal sector when assessing the size of aggregate liabilities.

Concerning the formal sector, households have borrowed from both the financial (corporate) and public sectors, and within these sectors there are different organizational types that have borrowed funds. The section is structured around these different borrower types.

Previously, Hagström (1968) has studied carefully the Swedish credit market and its sectoral composition for both borrowers and lenders during 1919–1964. Werin (1993) reports annual estimates from the period 1945–1990, mainly based on the Financial Accounts and an early reassessment of for years before 1970 by Olsson (1993). While being roughly plausible, the early numbers are estimates and extrapolations and therefore not directly linked to credit market statistics. Spånt (1979) reports debts for a handful of years before 1970, drawing largely on tax assessment surveys and, thus, including debts as they were reported on personal tax returns. The estimated amounts are, however, quite uncertain especially for early years when they are considerably larger than all other estimates encountered.⁴³ Berg (1983) reports annual

⁴³ For example, Spånt reports an aggregate debt of households in 1935 of 7,600 million SEK, about 88 percent of GDP. In that same years, I find the ratio to be 56 percent. For 1945, Spånt reports a total debt of 13,100 million

debt data from 1950 onwards, but draws entirely on Spånt (1979) for years before 1970. For the period 1970 onwards, I use the household lending series reported in the Financial Accounts and discussed by Bergman, Djerf and Lindström (2010).⁴⁴

C1. Financial sector debt

The financial sector actors lending funds to households in Sweden have traditionally been *savings banks*, *commercial banks* and some other, less significant, institutional lenders including credit associations and insurance companies. Figure C1 shows the composition of total financial lending to households across lender types as well as the size of these loans as share of national income.

[Figure C1 about here]

C1.1 Commercial bank debt

The first Swedish commercial banks were the handful of Discount Banks. They were active in the beginning of the 19th century but all disappeared due to a political crisis in 1818. They lent money to the households, but on a quite limited scale (Kärrlander, 2011). The first modern commercial bank appeared in 1834. Until the 1860s, all commercial banks were note-issuing, unlimited partnerships and not focused on deposit banking or extending credits to ordinary households. From 1860s, a new banking legislation allowed commercial banks to be joint-stock companies, and the number of banks and especially branch offices increased steadily. Still, it was not until the 20th century postwar period that Swedish commercial banks started to be oriented towards household customers.

I construct a series of commercial bank lending to households using yearly publications of national totals of commercial bank statistics.⁴⁵ The majority of lending was in the form of loans against fixed collateral, while the rest was mainly discounted bills of exchange and some lending in checking accounts. For 1908, additional information is available about the household share of commercial bank lending. Flodström (1912) reports that the commercial banks expanded credit to the public (firms and households) of an amount of 2,198 million SEK while the firms (limited and unlimited companies) owed 2,010 million SEK to these banks. The difference, 187 million SEK (2,198 minus 2,010) must be credits granted to private individuals, which represents about 8.7 percent of total credits.⁴⁶ I use this share for all years up to 1929.

From 1929 to 1955, Hagström (1968) reports detailed estimates of household lending in commercial banks. Based on contemporary reports and assessments by bankers, he concludes

SEK (78 percent). For that year, Werin (1993, Fig. 4.1, p. 55) finds a level of about 35 percent while our estimate lands on 43 percent.

⁴⁴ Olsson (1993) reports a household-specific debt during 1962–1969 is reported.

⁴⁵ See Sveriges Riksbank (1931), pp. 172ff (balance sheets of the commercial banks) and, e.g., Statistical Yearbook (1917), Table 158 “Bankernas [Riksbanken inräknad] viktigaste inländska ut- och inlåningsräkningar vid slutet av åren 1875–1916”, p. 190. Note that also the Riksbank, i.e., the central bank, lending is included in the lending series up until 1930. Since the Riksbank was initially a hybrid between a commercial and central bank, owned by Parliament but at the same time competing with the commercial banks, it is correct to include the private lending by this bank in our series.

⁴⁶ See Flodström (1912), pp. 726–727 for data on the debt of commercial banks (“Kredit- och fondhandelsbolag samt solidariska bankbolag”) to the public and pp. 740–741, 744–745 for data on debts of joint-stock companies (“Samtliga aktiebolag och soldariska bankbolag”) and limited partnerships (“Vissa enkla bolag (handelsbolag) och föreningar”), respectively.

that the household share of total credit was ten percent during the 1920s and 1930s, i.e., about the same as I find for 1908.⁴⁷ For the more recent years, he uses different pieces of evidence to compile his series but the share varies around ten percent throughout.⁴⁸

C1.2 Savings bank debt

Savings banks started appearing in Sweden in the 1810s, and their number grew quickly. The main objective of savings banks was initially to offer deposit accounts to households and thereby stimulate saving and a prudential lifestyle. Direct credits to households were limited, and instead savings banks mainly lent money through purchases of bonds issued by domestic mortgage associations, which in practice meant agrarian finance. Since the loan amounts were fairly small, and the fact that family farms are included in the household sector, I regard savings bank lending as having gone to households ultimately.⁴⁹

Data on savings bank credits come from various sources. They include different loan types and both the large community of geographically dispersed savings banks and the larger, state-owned Postal Bank (“Postbanken”). Direct data on lending do not exist before 1835. For the period between 1813 (when the first savings bank, Bromö glasarbetares sparbank, was founded) and 1834, I instead use the product between the total number of active savings banks (BISOS, 1893, p. IV) and the average lending amount in 1835. For 1835–1875, I use data on savings bank lending in Nygren (1985, p. 140), corroborated with more detailed information for 1860 reported in *Finanskommittén* (1863, p. CIV-CV). For the period 1880–1935, savings bank credits are reported in *Statistical Yearbook, Statistics Sweden* for loans across different collateral types: tangible (“fast egendom” and “annat hypotek”) and personal guarantees (“borgen”).⁵⁰ For the period 1935–1970, data also come from the Riksbank’s *Statistical Yearbook*. Over the entire period 1919–1955, I compare the series with numbers presented by Hagström (1968) and the differences are small.

C1.3 Other credit institute debt

In addition to loans at commercial and savings banks, households borrowed from other credit market institutes throughout the study period. These institutes were: Mortgage associations, credit associations, and insurance companies.

Mortgage associations started appearing in Sweden in the 1830s, created to cater the financial needs of factories and large farms. The business centered around issuing bond loans to predominately foreign investors and channeling the funds to the members of the associations (Nygren 1985, pp. 44f). I have not regarded any of these credits as going to households. By contrast, in the 1870s urban mortgage companies (“stadshypoteksföreningar”) emerged and they were more focused on lending to borrowing households. I include all lending to city mortgage associations that were given out by the State Mortgage Association (“Konungariket

⁴⁷ See Hagström (1968, pp. 345–348).

⁴⁸ Note that Hagström only provide numbers every five years during the period 1929–1949 and every two-three years thereafter, why I linearly interpolate in order to get annual estimates.

⁴⁹ The question is still open concerning how much of savings bank lending that went to households. Flodström (1912) reports that in 1908 savings banks lent 641 million SEK (pp. 690–691) to “the public”, i.e., private firms and households, and 164 million SEK to insurance companies (pp. 726–727). At the same time, the firm sector, i.e., joint-stock companies (pp. 740–741) and limited partnerships (pp. 744–745), had borrowed 685 million SEK and 5 million SEK, respectively, from the joint group of savings banks and insurance companies. The difference, 115 million SEK, or 18.8 percent in 1908, is accordingly borrowed by households. I assume this to be the share of households of total savings bank lending.

⁵⁰ See, e.g., for 1880–1915 *Statistical Yearbook* 1917, p. 193.

Sveriges stadshypotekskassa”), which is reported in Statistics Sweden (1960) during 1875–1950 and in the Statistical Yearbook of the Riksbank between 1950 and 1970.⁵¹ From 1970 onward, the lending is included in the Financial Accounts.

Insurance companies were another major lender to households. Early in the 20th century they offered their customers special loans against their life insurances (“lån och förskott mot livförsäkringsbrev”). I collect data on these in 1908 from Flodström (1912), various years during 1919–1962 from Hagström (1968, p. 361), and Statistical Yearbook of Statistics Sweden up until 1970.⁵²

C2. Public sector loans

C2.1 State housing credit

The housing sector attracted enormous attention among Swedish politicians from the 1930s onward. The ambitious postwar credit market regulations were largely motivated by the need to channel funds to the construction of housing. In this way, a complex and extensive system for private and public housing credits was built up.⁵³

Another credit form was the state-run Owner-occupied housing credit fund (“Statens egnahemslånefond”), created in 1904 with the ambition to extend housing credit to low-income working class households, initially on the country-side but soon also in urban areas. The loans were intermediated by certain local housing associations (“hushållningssällskap”) and all credits were applied for at the Ministry of Agriculture.⁵⁴ I include the accumulated debt to the fund between its start in 1904 to its end in 1948.

In the 1930s, additional funds were installed by the state authorities aimed at specific areas in the housing sector. In 1932 came the State Fund for Housing (“Statens Bolånefond”), in 1936 the State Fund for Low-Income Families with Many Children (“Statens lånefond för mindre bemedlade, barnrika familjer”) and in 1938 the State Fund for Inventory Purchases (“Statens bosättningslånefond”). Annual data on outstanding loans at these funds during the 1930s and 1940s are reported in the Statistical Yearbooks of Statistics Sweden and the Riksbank.⁵⁵

From the 1950s, data on these and similar loans to household housing come directly from the archival sources of the forerunners to the present public agency, Swedish National Board of Housing, Building and Planning.⁵⁶ Specifically, data on loans to housing for households come from Bostadsstyrelsen’s archive. Their annual reports (“petitor”) to the central government declare both stocks and flows of these different loans. As supplementary source I have used the annual reports (“huvudböcker”) published since 1951. In these documents, there are primarily two types of loans that are included. First, direct loans to multi-family houses (“Teriär- och bostadslån till flerfamiljshus (inkl. räntebärande tvätterilån”), of which I assume that half went to households and half to construction firms. Second, direct loans to one- and two-

⁵¹ See Statistics Sweden (1960, Tab. 82 Hypoteksinrättningar 1870-1950, s 101).

⁵² See Statistics Sweden, Statistical Yearbook, ”Svenska försäkringsbolag, Livförsäkringslån” (1970 p. 204; 1978 p. 222).

⁵³ For further details on the Swedish postwar housing credit market, see, e.g., SOU 1978:11, ch. 6, Andersson (1979), Nygren (1985) or Bladh (2002).

⁵⁴ See *Lantmannens uppslagsbok* (1923), ”Egnahem” (at <http://runeberg.org/lantuppsl/> 2010-12-30).

⁵⁵ Statistics Sweden tables ”Statens egnahemslånerörelse, 1906-“, and Riksbank tables ”Utestående egnahems- m fl lån vid årets slut”.

⁵⁶ I am grateful to archivist Maria Nilsson for helping me to acquire these sources.

family houses (“Egnahemslån, bostadslån och förbättringslån till en- och tvåfamiljshus, räntebärande”), of which I assume that the full amount went to households.

From 1970 onwards, the series on state loans to households in the Financial Accounts has been used. There is a break in the series in 2001, when the Financial Accounts starts including additional debts to the state, mainly unpaid taxes. This component is roughly of equal size as the other state loans, but since it is not available for earlier years I exclude it from the series for consistency reasons.

C2.2 Student loans

The system of state-funded higher education in Sweden has largely been organized by way of subsidized student loans. These loans were introduced in the 1960s and are still used on a large scale, but in a slightly altered form.⁵⁷ To date there has not existed a homogenous series on the aggregate amount of student loans from its beginning to present day, but this has now been possible thanks to efforts at the agency for student aid, CSN.⁵⁸ Specifically, before 1970 when the Financial Accounts include all public loans to households one needs to supplement the housing loans (see previous section) with the student loans.

C3. Interpersonal (informal) debt

Informal borrowing has played an important role in household portfolios. During most of the 19th century, this form of indebtedness represented roughly three fourths of all liabilities and even in 1930 it amounted to as much as a fifth of all debt. These loans were typically written promissory notes or bills of exchange issued by either other households or corporate lenders in relation to a transaction of, e.g., a house or a car. In these cases, a financial claim would also arise on the asset side of household (see our discussion about this kind of financial asset above).

Although we know little about its precise extent, estimates by economic historians suggest that the informal credit market was decisively larger than the formal, bank-based market up until the end of the 19th century. Lindgren (2002) used probate records showing peoples' debts at death in the city of Kalmar over the period 1830–1900. He found that informal credits in 1830 were about five to six times the debts in the organized credit market (primarily bank loans) while they were about equally large in 1900. Other studies finding similar levels for different Swedish regions are Hellgren (2002), Lilja (2004) and Perlinge (2005).

⁵⁷ Over the years, the degree of subsidization has decreased, making the loans more market-oriented.

⁵⁸ I am grateful to Lars Hillerström at CSN for assembling data on the stock of outstanding student loans.

Appendix D Pension entitlements in public and employment-related schemes

Pension entitlements are part of the conventional assets in household balance sheets. However, in the latest version of the System of National Accounts there is an outspoken ambition that all kinds of pension entitlements should be assessed (United Nations, 2008, chapter 17). This means that not only should individual private pensions savings (previously part of the category technical insurance reserves) be counted, but also less tangible entitlements of the public and employment-related pension schemes. Despite this ambition, there is a clear ambiguity concerning how to treat pension wealth in relation to marketable wealth. On one hand, it makes sense to include pension assets from the viewpoint that it is well-known that pension savings tend to crowd out private financial savings and thus the structure of tangible household assets (Feldstein, 1974; Berg, 1983; Gale, 1998). On the other hand, these claims do not meet the standard requirements on an asset for being defined as “personal wealth”. The property rights of pension assets are restricted, and individuals are not allowed to readily use them at will.

Another, more practical, reason for why pension assets should be treated separately, and cautiously, is that they are not easily defined or valued. There are two different types of pension systems. In “defined benefit” schemes the individual’s future pensions derive from a mixture of fees paid in by the working population and capital returns from securities funds. In “defined contribution” schemes, the individual’s future pension is drawn from a fund in which money come from past contributions from the individual or her employer. Calculating the net present value of pensions in defined contribution schemes is relatively simple: it is simply the current value of the individual’s pension fund. In the case of pensions in defined benefit schemes, however, the net present pension wealth is calculated using more or less complex formulas based on assumptions about individuals’ expected remaining lifetime, size of future payments, discount rates and assumed capital returns from pension funds.

In Sweden, there are many variants of pension schemes, including defined benefit and defined contribution, publicly and privately (occupational) run. Within schemes there have typically also been different components that need to be taken into account. For example, public pensions were early on intertwined with poverty alleviation, but have gradually turned into a combination of an income guarantee for all old-aged or invalidated citizens and a function of the size of earned incomes during the working life, and in the last decade also with a defined contribution component.

When estimating the historical evolution of pension wealth there are several challenges, especially regarding the 19th century and first half of the 20th century. First and foremost, there exist no statistical sources in Sweden carrying comprehensive information about coverage in the population, pension amounts or the full array of different pension schemes available. Having said this, there are bits and pieces of information that still allow for quantitative assessments, though with larger error bands. Second, in this early era the boundary between old-age pensions and social assistance to the poor and elderly were not clear cut. Before the substantial increases in public pension amounts in 1948, old-age pensioners could not live out of their public pension. Edebalk (2003) describes how old people were instead forced to make a living based on help from their children, prepare for a life at a local “poor house” (financed by local charities) or simply continue working. Local poverty alleviation money topped up the low public pensions, suggesting a relationship between public pensions and social assistance (Elmér, 1960). However, in the calculations of the value of pension assets I exclude all non-pension social transfers. Third, some employment-related pension schemes included in-kind parts that are difficult to assess quantitatively together with the cash pensions (Harrysson,

2000, p. 56). I disregard such in kind pensions throughout.

D1. Public pensions

The national Swedish old-age pension scheme has historically consisted of three parts: income pension (“inkomstpension”, previously “allmän tilläggspension, ATP”), guarantee pension (“garantipension”, previously “folkpension”) and premium pension (“premiepension, PPM”). The Swedish public pension system has to the large part been a defined benefit system, giving people a specified pension financed by a combination of pension fees paid by the working population, capital returns from pension funds and taxes.

Over the past century, the public pension system has undergone several reforms changing both its structure and composition.⁵⁹ The first important reform was the introduction of the guarantee pension system in 1913. This was actually the world’s first universal public pension insurance system, which included all old-age pensioners and cripples, but at very low amounts that were far below the subsistence level.⁶⁰ A major reform of this system came in 1948 when pension amounts were substantially raised and for the first time allowed people to live only off their pension. There were also extra allowances for widows and compensation for people living in expensive areas (“dyrortstillägg”). The next major reform came in 1960, when the income pension was introduced and an additional amount, related to earnings during the working life, was added. Income pensions started being paid out for the first time in 1963. In 1995, a new major pension reform was decided in Parliament. This reform changed the funding principles of the system, making it more robust with respect to economic downturns. However, a new pension type was introduced: the premium pension, a funded pension of the defined contribution type.

Data on the net present value of Swedish public pension entitlements are scarce. From the year 2001 onward, the Swedish Pensions Agency publishes annual estimations of the current value of future pension claims of Swedish households for both income and premium pensions. For 1978 Ståhlberg (1981) made a careful estimation of the public pension wealth, and this estimate was adjusted to 1985 by Jansson and Johansson (1988). Berg (1983) made estimations for the period 1950–1978, including both public pension wealth and also employment-related pension entitlements (see next section). Berg’s series lands at a somewhat lower than Ståhlberg’s, and I therefore adjust Berg’s series upwards. I use all of these values as reported, but subtract a latent tax debt (since pension income is taxed) of 25 percent. Years in between point estimates are linearly interpolated.

For the period 1914–1950, estimations are very crude. The main source of information is Elmér (1960) which reports pension amounts and eligibility rules. The guarantee pension was at this time divided into one basic component and one means-tested component. Elmér (1960, pp. 532ff) reports the pension amounts and number of individuals in each class. I compute pension amounts in each class assuming that people live eleven years after retirement age (67 years), based on demographic statistics about remaining life expectancy rates (Statistics Sweden, 2010, p. 281).

⁵⁹ See Olofsson (1996) for a useful survey of the Swedish pension system between 1913 and 1993.

⁶⁰ Elmér (1960, pp. 261f) reports that the guarantee pensions were between a third and half of the official minimum living standard defined by social authorities in the first half of the 20th century.

D2. Occupational pensions

Occupational pension arrangements have existed during the entire study period, but their structure and scope have changed profoundly. As in the case of public pension schemes, there is a general lack of information about the employment-related systems. Harrysson (2000, ch. 4) sketches the broad picture concerning the late 19th century up to the pension reform of 1948. During this period, most employees did not enjoy any occupational pension benefits whatsoever, but over time the share that did increased gradually. The most common arrangement was employee- or employer-run pension thrifts (“pensionskassor”). The operations among these thrifts differed, with some offering members a fixed pay after retirement while others were less transparent concerning the benefits associated with membership. For employees in public administration, the employer (the state) guaranteed a continued salary payment after a certain age (e.g., 70) for those who had been employed for at least a certain time (e.g., 30 years).⁶¹ In the 20th century, an increasing amount of employers started offering their employees some sort of pension after retirement, partly as a way to reward longevity in firms but also due to bargaining agreements with labor unions. In general, these employment-based pensions were small, ranging between a tenth and almost a full average worker salary (Harrysson, 2000, pp. 47f). The postwar period saw an increased ambition in setting up these employment-related pension schemes, and blue- and white-collar workers have had general schemes on top of the public pensions.

Sources on occupational pension schemes are not as problematic as they are for public pensions, but they still pose a number of challenges. The major reason for why occupational pension wealth is easier to estimate is that they were mostly set up as defined contribution schemes (although there were also examples of defined benefit schemes, such as in the case of state employees as mentioned above). This means that in order to calculate their net present value, it suffices to acquire information about the total value of the different pension funds at year end. However, there are no comprehensive sources where all of these funds are listed and there are thus gaps in the series.

Data on 19th century employer- or employee-run occupational pension funds are not rich. Sundbärg (1901, pp. 996f) describes the history of the Swedish pension thrifts and presents a table with their number for ten categories and their total fund value in 1895. Furthermore, Harrysson (2000, p. 43) lists the number of thrifts once or twice each decade since the 1840s. Based on Harrysson’s and Sundbärg’s descriptions of the evolution of the number of thrifts during the 19th century and their average fund value in 1895, a rough calculation of the value back to 1810 is conducted.⁶² In the first half of the 20th century, the total fund value of state-run occupational pension thrifts is published in Statistical Yearbook by Statistics Sweden. To this I add an estimated value of non-state thrifts using their observed share of the total value in 1895.

For the postwar period, the point of departure is the official post-1980 series of the Financial

⁶¹ See, e.g., the encyclopedic entry “Pension” in *Nordisk Familjebok* from 1888, pp. 1001f, available at <http://runeberg.org/nfal/0507.html>.

⁶² Specifically, Sundbärg states on p. 996 that there were twenty thrifts existing in the 18th century, that an additional 38 were founded in the period 1801–1850 and that yet another 115 emerged during 1850–1895. Harrysson (2000, p. 43), citing a previous study by Günther Sollinger, lists the number of thrifts each decade between the 1840s and 1895. Assuming the number of thrifts being 20 in 1810, I then interpolate linearly between the other years for which data exist to get an annual series. To get values, I first use the average fund value in 1895 (0.52 million SEK) and deflate it back to 1810 using CPI (landing at an average value in 1810 of 0.32 million SEK). Finally I then multiply the number of thrifts by their estimated average value.

Accounts. These are available at a disaggregated level for collective private pensions, i.e., occupation pensions, from 1980 onward. Note that the official series at the Financial Accounts includes the premium pension savings in the public system (PPM) from 1996, but here they are removed since they actually belong to (and are here also already included in) the public pension series as described in the previous section. During 1950–1979, there is thus no official series on the stock of occupational pensions in the Financial Accounts. Instead I use the annual transactions on collective pension savings collected by Berg (2000). In addition, Berg has estimated stocks based on estimated values of pension thrifts, namely the white-collar occupation pension scheme (ITP) that came in 1960 and the blue-collar occupational pension (STP) that came in 1973. I subtract these flows from the stock of 1980 and backwards to 1950.

It would be valuable to check the robustness of the stocks estimated. There is no public authority responsible for compiling and reporting stocks of the collective private pension system as is done for public pensions by the Swedish Pensions Agency. For single years, however, there are estimates. Sjögren Lindquist and Wadensjö (2007) estimate the stock to be about 887 billion SEK in 2004, which is about 30 percent higher than the estimate of 688 billion SEK in the Financial Accounts. For 1991, Olofsson (1993) finds a number of 355 billion SEK which is almost 40 percent larger than the official estimate of 259 billion SEK. Even more problematic, in 1980 Olofsson (1993) finds a number of 158 billion and Ståhlberg (1981) estimates it to be 110 billion SEK in 1978, both of these estimates are about three times larger than the Financial Accounts-based series. It is not clear what explains the discrepancies, and for consistency reasons I stick to the official series in the Financial Accounts.

A final remark on the occupation pensions concerns the extent to which they are to be considered inheritable assets (i.e., transferrable to relatives at death) or not. There exists little evidence on this issue for long historical periods. The default for most funded pension systems seems to be that unpaid pension assets that remains when someone dies are reinvested in the fund and not transferred to the family members. In some cases the insured have been offered the possibility to purchase an arrangement (“återbetalningsskydd”) where remaining assets are inherited by the family. In the occupational pension scheme for white-collar workers (ITP), about one fifth of all newly signed pension schemes during 2007–2010 had this additional arrangement and were thus inheritable (Collectum, 2010). Unfortunately there exists no comprehensive statistics on the total stock of occupational pensions, but the share of inheritable schemes should be considerably higher than the one fifth observed in newly signed ITP pension schemes since these were signed by predominantly young workers who perhaps lack a family and who have not started to think actively about their own death.

Appendix E Data series

E1. Non-financial asset data, 1810–2010

To be added.

E2. Financial asset data, 1810–2010

To be added.

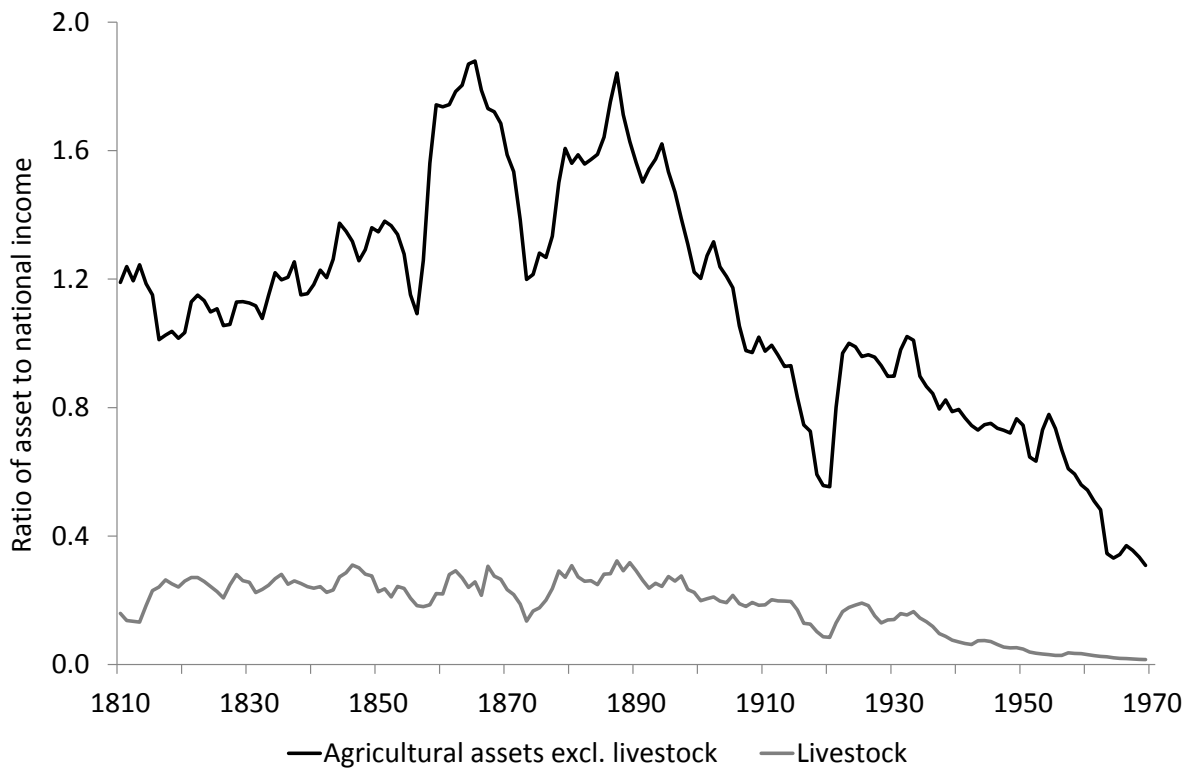
E3. Liabilities, 1810–2010

To be added.

E4. Pension wealth, 1810–2010

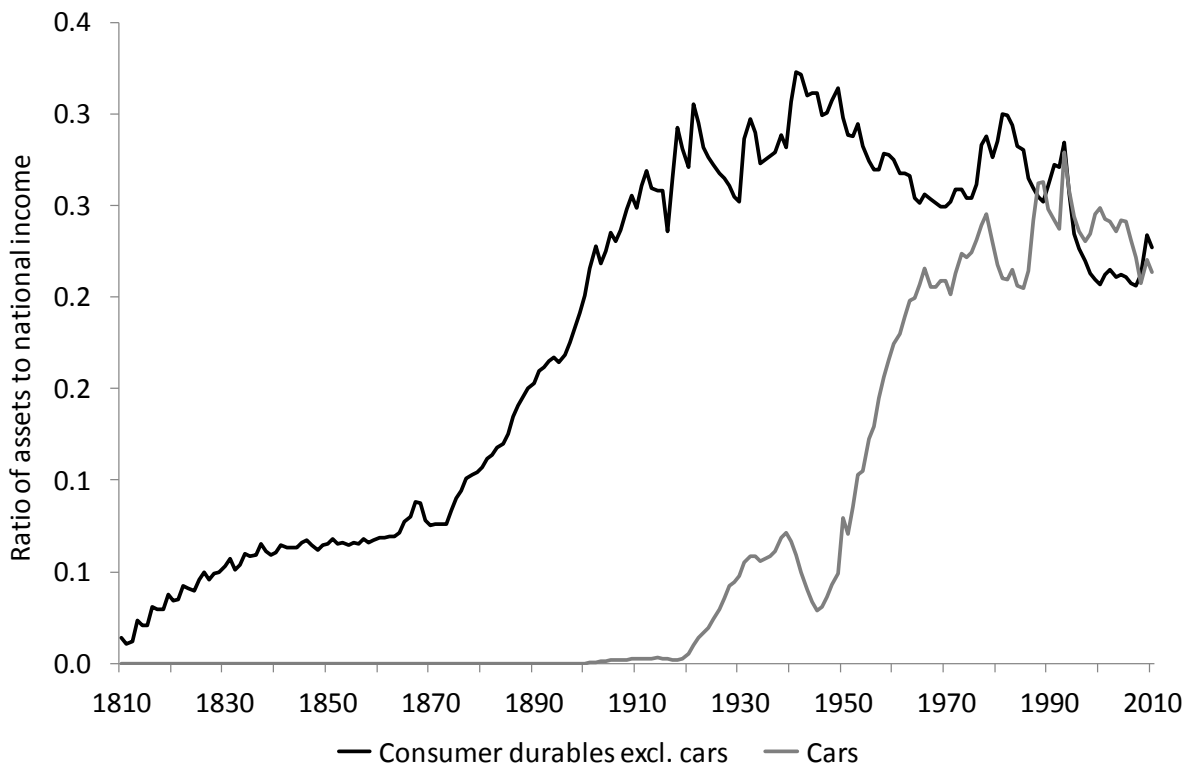
To be added.

Figure A1: Agricultural fixed assets and livestock as share of national income, 1810–2010.



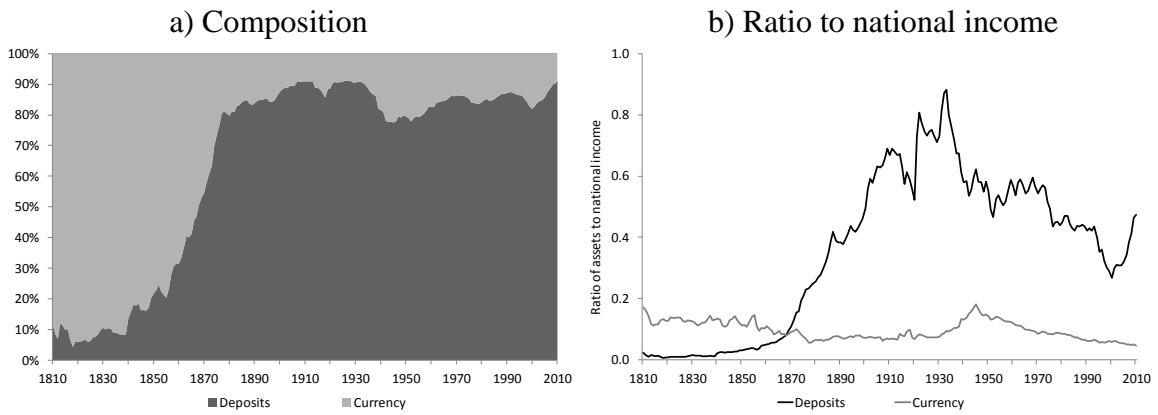
Source: Appendix E.

Figure A2: Consumer durables and cars as share of national income, 1810–2010.



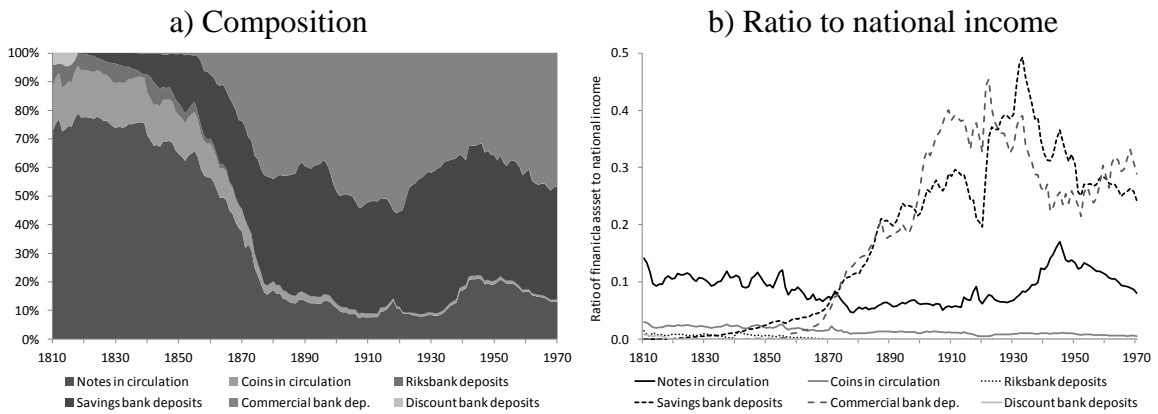
Source: Appendix E.

Figure B1: Liquid financial assets in household portfolios, by source, 1810–2010.



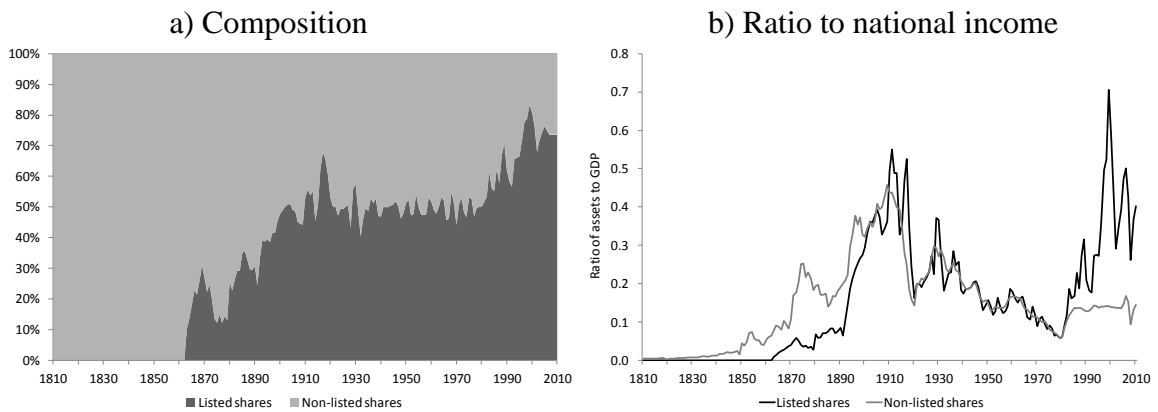
Source: Appendix E.

Figure B1: Deposits and currency in household portfolios, by source, 1810–1970.



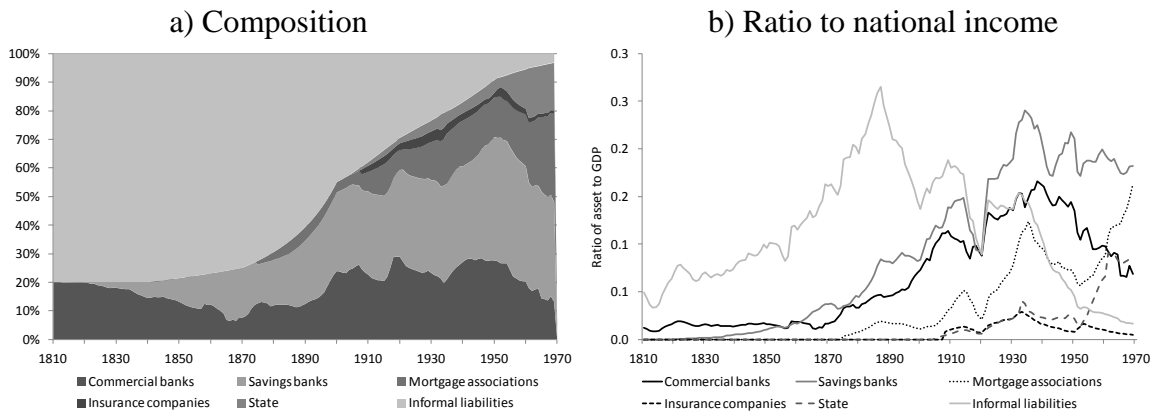
Source: Appendix E.

Figure B3: Corporate shares (listed and non-listed) held by households, 1810–2010.



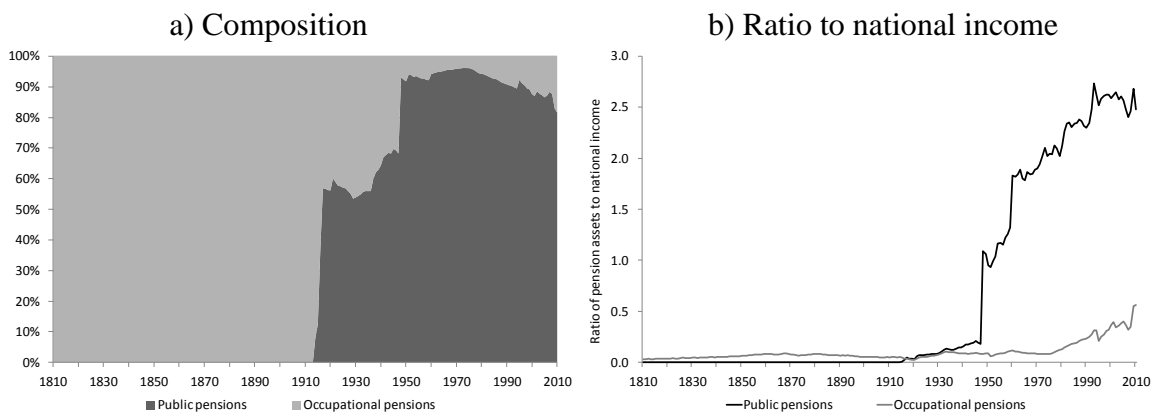
Source: Appendix E.

Figure C1: Financial sector credits to households, 1810–1970.



Source: Appendix E.

Figure D1: Public and occupational pension assets in household portfolios, 1810–2010.



Source: Appendix E.