



SCHOOL OF  
ECONOMICS AND  
MANAGEMENT

# A lagom level of debt: Swedish household indebtedness in the 21st century

by

Sebastian Krook [[se3467kr-s@lu.se](mailto:se3467kr-s@lu.se)]

**Abstract:** This thesis studies the causes of rising household and particularly mortgage debt in Sweden between 1995 and 2020. It aims to contribute to the understanding of institutional factors behind increasing debt, such as policy regulating lending. It undertakes a qualitative analysis of previous literature on household debt, and the Financial Accelerator framework. The Financial Accelerator (Bernanke & Gertler, 1989) proposes a procyclical feedback loop between asset values, income, and debt levels. Favourable lending conditions, low interest rates, and an inelastic housing supply are found to be key factors behind the increase in mortgage debt. These factors constitute conditions necessary for a Financial Accelerator to operate, suggesting a high probability that a Financial Accelerator effect is in place.

**Keywords:** household debt, debt-to-income ratio, mortgage, financial stability, Financial Accelerator

Programme code: EOSK12  
Bachelor's Thesis (15 ECTS)  
May 2023  
Supervisor: Jaco Zuijderduijn  
Examiner:  
Word count: 12425

## Acknowledgements

There are many to whom I owe a great debt for help, mental support, and kind words of encouragement in writing this thesis. My dear friend Ondrej Gomola, for lending your time and patience with my many questions. Mother and Father, who so kindly housed a fortnight's writing retreat. Jaco, for your steadfast support and interest in my progress despite my rather optimistic attitude toward deadlines. Isak, an invaluable asset for his backhanded yet kind reminders of my approaching deadline. Finally, cheers to Gillespie, Armstrong, Baker & Presley for your constant company.

# Table of contents

<b>Acknowledgements</b> .....	<b>1</b>
<b>Table of contents</b> .....	<b>2</b>
<b>List of abbreviations &amp; Definitions</b> .....	<b>3</b>
<b>I - Background</b> .....	<b>4</b>
Introduction - The case of debt.....	4
Aim & Contribution.....	6
Method.....	7
Scope.....	7
Limitations.....	9
<b>II - The Financial Accelerator - a Framework on Debt</b> .....	<b>11</b>
<b>III - Literature Review</b> .....	<b>14</b>
Closely Integrated: mortgages and housing markets.....	14
The Housing Market.....	16
The supply of debt.....	17
Discussing tighter regulation.....	19
Policy developments.....	21
Taxes.....	23
<b>IV - Discussion</b> .....	<b>24</b>
Cost of borrowing.....	24
Housing Supply: Elasticity to stop an Accelerator?.....	27
Debt Supply.....	28
<b>V - Conclusion</b> .....	<b>28</b>
<b>References</b> .....	<b>30</b>

## List of abbreviations & Definitions

### **DTI-ratio**

*Debt-To-Income-ratio.* A commonly used measure of debt within the literature on household debt. The DTI-ratio is obtained by dividing the aggregate of any type of debt, in this case, household debt, by the aggregate income of the population. The ratio serves to illustrate the degree of leverage to which the population is exposed.

### **LTV-ratio**

*Loan-To-Value-ratio.* The loan-to-value ratio measures debt divided by the value of an underlying asset. It can be used to broadly illustrate how the relationship between debt and wealth in an economy develops over time. On an individual level, it is commonly proposed or used as a restriction on mortgage lending; where any single loan is not permitted to exceed a certain percentage of its underlying property's value.

### **SCB**

Statistics Sweden, or Statistiska Centralbyrån. The Swedish governmental agency tasked with measuring, presenting, and preserving data on eg. the Swedish economy.

### **Fi**

Finansinspektionen, The Swedish Financial Supervisory Authority

### **Housing**

The collective term for owner-occupied residential property, for the purpose of this paper. This includes primary-residence houses, apartments in “bostadsrättsföreningar”, or housing cooperatives, the most common way of organising Swedish flats, and finally, condominiums. The *housing market* collectively addresses the markets for the purchase and sale of the above. Dwellings that are rented, are for the purpose of this essay, on the *rental market*.

# I - Background

## Introduction - The case of debt

In 2007, Ben Bernanke, then chairman of the Federal Reserve, spoke at a conference hosted by the Federal Reserve Bank of Atlanta, in Georgia, USA. His message was clear; Economists should speak more about lending. Governments, companies, and households, he argued, make many of their key decisions - whether to expand infrastructure, launch a product, or buy a home - with the aid of debt. Speaking on the importance of a vital financial system and the close intertwining of monetary policy, bank lending, and the buildup of financial risk within an economy, Bernanke put emphasis on a specific detail; the potential impact on the economy of changes to borrowers' financial conditions.

Bernanke had good reason to speak about lending. Leading up to the Financial Crisis and Great Recession, significant asset- and credit bubbles had developed across the world's advanced economies; in the 1990s, real house prices had broken a century-long mostly flat trend and increased rapidly in many Western countries (Knoll et al., 2017). In the US, mortgages as a share of GDP rose from 60 per cent in 2000 to 100 per cent just ahead of the 2007-9 recession (Davis & van Nieuwerburgh, 2015). The bubble was felt in bank lending to firms and households, which grew rapidly and exceeded its previous trend relationship to GDP across the modern world for much of the early 2000s before the recession (Hume & Sentance, 2009). A major culprit behind growing debt was mortgage loans to households, which had outpaced non-mortgage lending in much of the modern world since the 1990s (Jordà et al. 2014b).

Studying 17 advanced economies, Jordà et al. (2014b) found that mortgage lending over GDP had grown from an average of 20 per cent to 70 per cent from the early 1900s up until their writing. Meanwhile, mortgage lending had become an increasingly large fraction of banks' business dealings. Across their sample, they found mortgages to make up two-thirds of banks' total assets, up from one-third in the early 1900s. This uptick in mortgages fundamentally changed the business model behind banking, from a clear majority spent funding businesses, to primarily funding private households' purchases of real estate (Jordà et al. 2014a; 2014b).

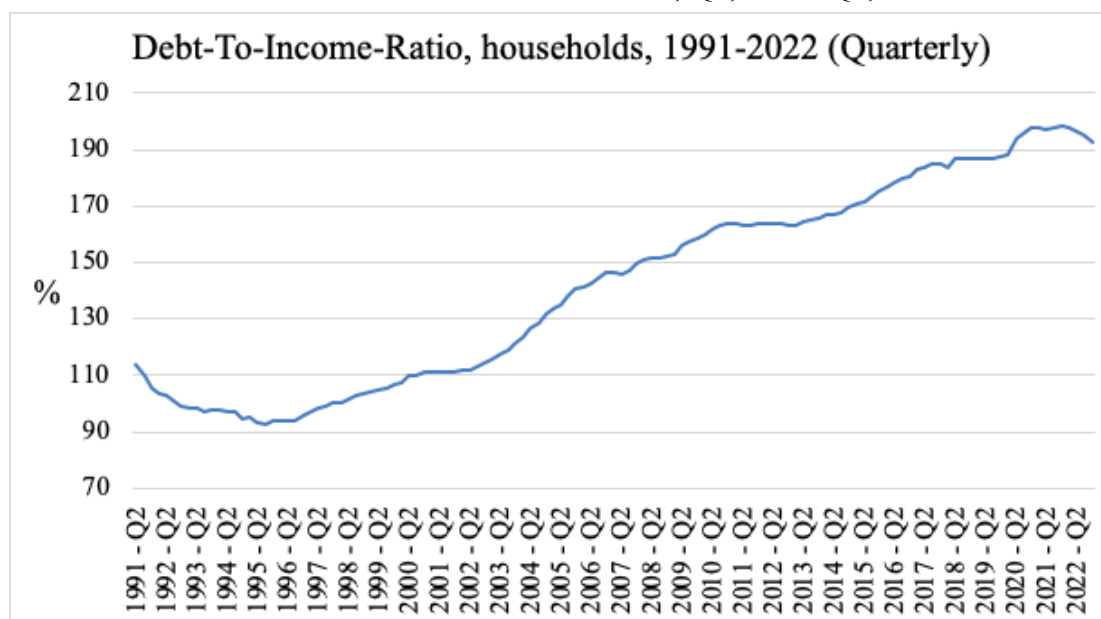
In the household debt debate, Sweden, in particular, has become a relative centre of attention. There is good reason to be concerned with its debt levels. In 2022, Sweden had Europe's third highest rate of total debt per capita - 42 000 EUR - (excluding CSN, Swedish study loans), beaten only by Denmark and Luxembourg (Statistiska Centralbyrån, 2023b). The increase in household debt in Sweden has been significant; from 90 per cent in 1995 to 200 per cent of disposable income in 2020 as per Statistics Sweden (see Figure 1). Håkansson et al. (2022) put their estimations even higher, putting their conservative estimate for 2020 at 205 per cent of disposable income.

The growth of household debt has not gone unnoticed. Much of the literature on the growth of household debt in recent decades highlights the risks of increasing debt. High debt increases

the financial risk exposure of individual households; rising interest rates have the potential of causing households to cut consumption or sell off assets to cover increasing debt servicing costs (Finocchiaro et al. 2011). Highly leveraged households, especially with mortgages subject to free-floating exchange rates are extra sensitive, and tightening monetary policy is expected to quickly translate into budgetary strain (Finocchiaro et al. 2016; Guerrieri & Uhlig, 2016).

Figure. 1

Total Debt-To-Income-Ratio of Swedish households, Q1, 1991- Q4, 2022



Source: SCB, 2023a

Aside from exposing households to risk, growing debt has affected the risk picture on a macro level. Jordà et al. (2014a) highlight that as house prices and leverage increase, the financial sector becomes increasingly sensitive to housing market fluctuations. Borio & Zhu (2008) add that the growth of household debt - and its portion of total credit in the financial system - has increased households' exposure to market risk. As households become the majority recipient of bank lending, the financial system is increasingly dependent on households' risk and resource management, they argue. In a similar sentiment, Finansinspektionen (2023) show that rising debt-to-income levels have made the margins and consumption patterns of Swedish mortgage lenders increasingly sensitive to changes in the cost of borrowing.

Considering the growth of debt - both in volume and as a share of the financial sector - and the risks associated, Bernanke's speech on debt was well grounded. It was however not Bernanke's first time worrying about debt. Years prior, Bernanke and Gertler (1989) had laid out the *Financial Accelerator*, a critique against the assumption of perfect credit markets, but most importantly an argument to show that shocks in the real economy are prolonged and propagated through the market for loans. With the debt market as a vehicle, they argue, small changes in eg. the policy rate can have major effects on investment and consumption. This framework is further detailed in section II.

## Aim & Contribution

This thesis aims to contribute to a greater understanding of the factors underlying the growth of household debt, especially mortgage loans, in Sweden around the early 21st century. To achieve this aim, it poses the Research Question,

*‘What factors lie behind Sweden’s growing household debt between 1995 and 2020?’.*

With the use of recent descriptive statistical data from Statistics Sweden (The Swedish Government Statistical Agency, henceforth *SCB*), it contributes to the current literature by offering updated situational awareness. This is a welcome addition to the literature on Swedish debt, much of which ends around 2010. Through studying findings on international cases of increasing debt, and Sweden’s particular circumstances, it aims to highlight factors behind increasing demand and supply on the Swedish debt market. Finally, it aims to highlight the role played by Sweden’s particular institutional setting and policy choices in creating its current debt environment. It offers insights and aims to draw (albeit careful) conclusions regarding the impact of policies implemented to curb debt during the 2010s. Through international comparison and a focus on Swedish idiosyncrasy, it contributes to the wider discussion of how Sweden’s institutional setting shapes its economy.

Discussing a wide range of causes behind Sweden’s increasing household debt contributes to the broader debate on the causes of increasing debt. By showing that debt accumulation is indeed multicausal, this study contributes to educating any further policy decisions to counteract increasing debt, should any such be implemented. Finally, by studying a range of contributors to the current debt environment, this thesis serves as a useful guide for further research. At the time of writing, high inflation and increased policy rates have many households experiencing high mortgage rates for the first time. This has caused household debt to enter public debate. As such, an accessible contribution serves significant public interest.

Finally, employing the Financial Accelerator as a theoretical framework aims to contribute to the understanding of how the Financial Accelerator can be implemented to analyse a particular country case. This contributes to the debate on its relevance and applicability outside of a controlled research environment of macroeconomic modelling. Exploring factors affecting the mortgage market also helps understand what conditions are necessary to operate a Financial Accelerator, and whether it can explain credit buildups in an economy. Finally, this thesis contributes with knowledge on how the effects of an Accelerator can be diminished, should that be wished for.

## Method

The aims and research question of this thesis call for a method of analysis that can analyse, weigh, and juxtapose a wide range of factors that may lie behind a growth in debt. As stated

above, this thesis aims to contribute to a better understanding of the Financial Accelerator's impact on an economy; a goal hopefully achieved by studying Sweden. A qualitative method of analysis fulfils these needs and enables the achievement of this thesis' aims; it allows for comparing descriptive statistics and qualitative observations such as changes in institutional setting or sentiment. In sum, a qualitative analysis allows for a relatively wide exploration of the topic.

To answer its research question, this thesis explores several strands of research; the writing cited within includes international findings on the relationship between debt and housing markets, previous discussion and estimation of the factors affecting the Swedish debt market, and estimations of the impact of recent policy. The thesis subsequently explores this literature, and complementing data, to seek suggestions which support the occurrence of any part of the Financial Accelerator mechanism.

The included literature covers long-run developments in debt and house prices, both internationally and in Sweden (eg. Schularick & Taylor, 2012; Jordà et al. 2014a; 2014b; Ahnland, 2015; Knoll et al. 2017). It covers house prices' relation to mortgage lending and empirical evidence of a Financial Accelerator on housing markets (eg. Jacobsen & Naug, 2004; Hume & Sentance, 2009; Anundssen & Jansen, 2013). Finally, it utilises previous literature written specifically on Sweden's household debt and related policy, (eg. Finocchiaro et al 2011; 2016; Hansen, 2013; Riksgälden; 2015; Turk, 2015). (Statistics are further discussed in *limitations*.)

As described in section II, the Financial Accelerator operates in the relationship between asset values, income, and the cost of debt. In exploring the data and literature, several observations will be of interest to suggest that there is an Accelerator in place. The findings in the international literature on the interaction between debt and house prices, and the possibility to apply those findings to the Swedish setting will be of special interest. So will debtor response to shocks in income or regulation. As mentioned in *limitations*, Sweden lacks microdata on the debt and assets of individual households over time. This makes meaningful econometric analysis difficult, motivating the choice of a qualitative method. The aims of this thesis reflect this, and as a result, conclusions of the previous literature and observed patterns in the data will be of extra importance to *suggest* the existence of a Financial Accelerator.

## Scope

To achieve the aims of contributing to the understanding of Swedish households' debt accumulation, Sweden is a natural geographical scope. Besides this, there are several motivations behind singling out a country for study. Focusing on one country avoids a large issue of heterogeneity; economic and institutional circumstances differ vastly between countries, and housing markets, monetary regimes, and the experience of the Great Recession remain highly idiosyncratic among eg. European countries. Given the differences in the economic conditions and institutions that shape both supply and demand of debt, studying a



single country improves the tenability of providing concrete suggestions for further research, or policy.

Sweden stands out by more than just its high levels of debt mentioned in the introduction. For example, for most of the 2000s, a vast majority of mortgages have been subject to *free-floating rates*, where the interest rate on parts of, or the whole mortgage is fixed for short periods of time, sometimes only months at a time. This setup is less common in eg. the US where *fixed-rate* mortgages have been dominant, meaning interest rates are locked in for a considerable number of years (Englund, 2011; Finocchiaro et al. 2011; Riksgälden, 2015). Sweden has a heavily regulated housing market; municipalities claim a monopoly on planning permissions, sub-letting is virtually nonexistent, and apartment rents are determined by an artificially regulated ceiling (Burgert et al. 2016; Emanuelsson, 2015; Englund, 2011; Finacchiaro 2011; Riksgälden 2015). Finally, Sweden became an outlier among developed economies in 2015, after *Riksbanken*, Sweden's Central Bank, adopted a negative policy rate, an unprecedented monetary move (Andersson & Jonung, 2020). As discussed below, this particular institutional framework has shaped debt growth, and the issue of free-floating mortgages plays a particularly important role when applying the Financial Accelerator framework.

To conclude on the choice of country, Sweden makes a relevant case for several reasons. Firstly, it has experienced large increases in household debt over the last 30 or so years. As aforementioned, previous authors attach weight to its particular policy environment in explaining this increase. A unique policy setting calls for a greater understanding of policy's impact on the Swedish economy, and any potential lessons that might be exportable. Finally, a discussion has arisen suggesting that policies regulating Swedish mortgage lending have been too relaxed, causing a buildup of what could be excessive risk within the system (Finocchiaro et al. 2016; Turk, 2015). Assessing the risk level is beyond the aims of this thesis, but the existence of such a discussion lends this thesis relevance; understanding the factors behind increasing debt is a condition for designing effective policy aiming to slow debt growth. On a final note, previous major contributions to the understanding of Swedish debt levels, eg. Finacchiaro et al. (2011), Hansen (2013) and Riksgälden (2015) are approaching a decade of age. By running to 2020, this study offers the debate a more updated starting point.

The chosen period of study (1995-2020) ensures the availability of statistics, which have proven difficult to obtain for much earlier periods (Ahnland, 2015). It covers the most recent consistent development in both Swedish household debt (Finocchiaro et al. 2011) and follows the first substantial real value appreciation in Swedish house prices for over a century (Jordà et al. 2014a) which both began in the mid-1990s. Yet, it delimits the study to what can be described as the current era of policy; as described below, the late 1980s and early 1990s saw a widespread easing of lending regulations and changes in eg. tax regulation. The chosen timeframe captures this policy change and the years following it, but delimits the thesis to the most recent instance of a prolonged increase. On the other side of the timeframe, 2020 saw the outbreak of Covid-19. With lockdown changing households' consumption habits and governments providing large fiscal stimuli, the pandemic is left for future studies. Such

studies may benefit from the passing of more time, as the pandemic's medium to long-term consequences are yet to crystalise.

This thesis is concerned with household debt, and more precisely mortgages. Household debt, as detailed in Jordà et al. (2014b) has increasingly come to dominate lending institutions' business models over the 20th century. Studying one economy's household debt specifically puts a wide range of economic circumstances and institutions that affect lending to specifically households under scrutiny, eg. the housing market and macroprudential policy related to lending. As of 2021, mortgages constituted 83 per cent of all household debt, with the remainder being either CSN loans (ca. 5 per cent) - Swedish state loans granted for higher studies - bank loans without security, or other types of short-term debt (Håkansson et al. 2022; SCB, 2021). Mortgages deserve closer academic scrutiny due to their large share of total household debt, and given their important role as the main economic liability many households face. Whilst some source material is concerned with household debt at large, the discussion and conclusion of this thesis are delimited to mortgage debt.

It is worth briefly mentioning the key measures of debt and mortgages. This thesis follows the practice across Swedish government agency literature to report and discuss debt expressed over income, or by the so-called DTI-ratio (see Finocchiaro et al. 2011; 2016 and publications by authors at Finansinspektionen). The peer-reviewed literature is divided between this practice (Debelle, 2004) and following developments of the debt-to-GDP ratio (Jordà et al. 2014a; 2014b; Knoll et al. 2017). Following the Swedish example allows for a clearer comparison of different Swedish sources, and strengthens the relevance of this paper within the Swedish literature stream.

Further, the DTI-ratio highlights the risk and sustainability perspective of debt; for any given interest rate, a higher DTI-ratio implies a larger share of disposable income spent on debt service. A high DTI-ratio causes small changes in interest rates or regulation to translate into large effects on disposable income. As such, the DTI-ratio measures the degree to which households borrow relative to their capacity to carry costs, and becomes an important signal of the financial stability of household debt (Finansinspektionen, 2023). In sum, using DTI-ratios allows for more accurate comparison and highlights the topics' relation to financial risk which made it relevant in the first place.

## Limitations

A number of limitations pertaining to data quality and the quality of written sources are to be addressed. As for data quality, the descriptive statistics presented within are from SCB. The SCB is used and trusted for data on the Swedish economy by other government institutions cited within, such as the Riksbank, Riksgäld, and the Fi. This widespread use can, and probably should, to some degree be viewed as proof of quality. It could be argued that a risk exists in much of the previous work by these government institutions being based on SCB's data; sharing one major original source may make the literature appear wider than it is. On the other hand, the SCB records and transparently publishes the results of the rigorous process of

quality assurance of its data (SCB, 2023c). Given this, the risk of an error large enough to impact the results of this qualitative analysis is regarded negligible.

Further, the Swedish data on household debt and the related housing market is limited. Finocchiaro et al. (2011) point to the lack of data on market sentiment, arguing that such data would improve understanding of how economic behaviour is shaped by perceptions of eg. asset prices and debt accumulation. Almenberg et al. (2021) add emphasis to sentiment, noting that sudden changes in expectations can cause shocks in and of themselves. Since abolishing the wealth tax in 2007, Sweden lacks complete microdata on individuals' assets and liabilities (Håkansson, 2022). The lack of microdata following the wealth, income, and debt of individual households over time is addressed by - and a primary motivator of - the choice of a qualitative method. Rather than micro-level data, conclusions are drawn based on previous Swedish literature, the predictions of the Financial Sector, and the international empirical literature.

The literature on Sweden's particular case of growing debt is dominated by governmental agency reports rather than peer-reviewed literature. Individual authors are accredited in all major pieces except Riksgälden (2015), and these mostly include government agency employees. The review practices behind eg. the Riksbank economic review, in which several articles cited in this thesis are published, are opaque. This issue is addressed by turning to peer-reviewed literature written internationally on the case of Sweden, as well as on the global issue of household debt. Recognising the lack of pluralism within the Swedish literature, any conclusions it backs are drawn with care. As for the peer review literature within, Andersson & Jonung (2020) is considered a pure opinion piece, given its journal's, *Cato*, outspoken Libertarian alignment (Cato, 2023). Its conclusions are considered with care.

The remainder of this thesis is structured as follows. Section II presents the theoretical framework, Bernanke's Financial Accelerator, through which Sweden's increasing household debt is analysed. Section III comprises a literature review which examines the international experience of rising household debt. It reviews both global developments in debt, and lessons drawn from other countries with similar experience. It reviews international attempts to quantify the relative importance of background factors to rising debt such as interest rates and housing prices. It brings attention to the deregulation of financial markets. The literature review also considers major policy updates during the studied period, mainly regarding taxes and amortisation. Finally, it reviews previous contributions to the understanding of the development of Swedish household debt. A discussion is presented in section IV. Section V concludes.

## II - The Financial Accelerator - a Framework on Debt

The International literature on lending is greatly indebted to Ben Bernanke, Chairman Emeritus of the Federal Reserve Bank of the USA. Throughout the 1980s and 90s, he and his co-authors developed a framework - the Financial Accelerator, to further the understanding of

the forces that shape equilibria in the debt market. The Financial Accelerator is founded in a critique against the classical assumption that interest rates alone determine the cost of borrowing. In most economic models, Bernanke et al. (1995) argue, Financial markets - if included - operate at the whim of an exogenously given interest rate. Their critique can be summarised into two points. First, this is an inaccurate depiction of how equilibria establish on the market for loans. Secondly, following from the first, macroeconomic models traditionally fail to accredit lending with nearly enough impact on the real economy (Bernanke et al. 1995). As the Great Depression had shown, as would the subprime crisis, they argue, financial markets and debt indeed affect the real economy.

In short, the Financial Accelerator entails that profits and net worth affect borrower's lending conditions, in turn making borrowing procyclical and able to exacerbate shocks in the real economy. (Bernanke & Gertler, 1989; 1995; Bernanke et al. 1996; 1999). This conclusion is underpinned by a range of assumptions and supporting findings in the above papers. An important initial assumption is that of information asymmetry in the credit market. In their 1989 paper, Bernanke & Gertler devise a typical neoclassical model of business cycles, with the addition of imperfect information in the credit market; lenders have to pay a fee to audit borrowers on their financial conditions which are otherwise unknown.

Imagine a scenario where borrowers are *not audited*. If so, the aggregate debt market suffers a deadweight loss (Bernanke & Gertler, 1989; Bernanke et al. 1999). If borrowers are not audited, lenders have no information on their financial conditions or intentions. The authors show that following this, a deadweight loss appears, representing the loss from loans that fail to produce interest and/or default. To compensate for this loss, lenders charge a fee representing their share of the deadweight loss. The market for loans suffers an asymmetrical information problem; lenders lack full information on borrowers and must charge to compensate for this.

Along the lines of their 1989 model, Bernanke & Gertler (1995) highlights several imperfections in the credit market. These include information asymmetry between lender and borrower on the condition of the borrower's finances, costs to measure and monitor risk exposure, and risk of default. As described above, lenders face the decision between suffering a deadweight loss, or absorbing the cost of auditing their borrowers to find out the actual risk associated with lending to a particular borrower. In sum, this causes the lender what has been dubbed *the external finance premium*, or the notion that taking on external financing (debt) will be more costly than *internal financing*, ie. using profits (income) to fund investment.

Bernanke & Gertler (1989; 1995) argue that the *external finance premium*, or the cost of lending, hinges on the financial conditions of the borrower. As mentioned, this cost will represent the aggregate deadweight loss, which intuitively increases if borrowers suffer financial hardship. As such, the (1989) model shows an inverse relationship between the borrowers' net worth and the external finance premium. With this, the cost of borrowing becomes countercyclical: Growing net worth depresses cost of borrowing and vice versa. The

authors go even further and claim, citing Gertler (1988), that “the most secure portion of expected future profits” (Bernanke & Gertler, 1989, p. 28) can also contribute to bring down costs. With this, the first critique, that borrowing costs rely not solely on a given interest rate, but on the financial condition of the borrower, has been developed.

The external finance premium’s sensitivity to borrowers’ financial conditions has far-reaching consequences. Bernanke et al. (1999) show that “endogenous developments in credit markets work to amplify and propagate shocks to the macroeconomy” (p. 1342). They compare two modelled economies: one where credit costs are given purely by a classical cost-of-capital equation (exogenous interest rates), and one where the lenders ratio of credit over net worth determines their borrowing cost. In the latter model, borrowing costs become endogenous, the hypothesis being that this will allow a Financial Accelerator to operate. The authors conclude that in the latter model, an exogenous shock to interest rates has a greater effect on credit costs than just the increase in interest rate would suggest.

In the latter model, a decreasing fed rate stimulates demand for capital, which raises investment and subsequently the price of capital. A rise in the price of capital, ie. asset prices, increases net worth, which lowers the external finance premium, further lowering credit costs and boosting investment. This is simulated by a shock decrease in the fed rate by 25 points. Compared to the baseline model with classical capital costs, the model with a Financial Accelerator causes 50 per cent greater increase in output, and a twofold higher increase in investment. With the Accelerator active, the effect of an exogenous shock on the real economy is also significantly prolonged, they show.

Whilst initially concerned with corporate lending, the Financial Accelerator has been argued to extend to the housing market, too (Bernanke & Gertler, 1995; Bernanke et al. 1996; Bernanke, 2007). Bernanke & Gertler (1995) introduce households in a discussion aimed at answering how changes in the policy rate translate into the real economy. They note that the economy is sensitive to small changes in the policy rate (more so than a typical cost-of-capital model of investments and consumption would suggest). They also note that changes in the policy rate typically have their largest impact on housing investment. The principal explanation for this, they dub the *balance sheet channel*.

They propose that the external finance premium for households will depend on their net worth, defined as the “liquid asset and marketable collateral” (Bernanke & Gertler, 1995, p. 35). As for companies, households’ borrowing costs move inversely with the value of their assets and ability to post collateral. Consider a tightened policy rate; debtors face higher interest costs and on aggregate lose income (the authors assume a tightening reduces employment). As cash flows tighten, so does the demand for housing which is dependent on the ability to produce a down payment and service and amortise debt. Lower housing demand depresses housing prices, negatively affecting owners’ balance sheets. The sum is lower value collateral and shrunk cash flows - or a higher external finance premium. With mortgages increasingly expensive, the process is in a loop. This, Bernanke & Gertler (1995) argue,

explains their observation that investment typically drops with a lag after a policy tightening, and remains lower even following the rate's return to its previous state.

Whilst monetary tightening serves as an intuitive vehicle to explain the Accelerator, it holds no exclusive right to the effect. As described above in Bernanke et al.'s (1999) parallel run of a classic cost-of-capital model with exogenous interest rates, and the model with an integrated Accelerator, a *positive* shock too can be propagated by the Accelerator. Bernanke et al. (1996;1999) highlight that as long as income and net worth are procyclical, borrowing costs will be counter-cyclical. Whilst modelled above for firms, this holds for households too; a positive shock to income or net worth, for any reason, will lower borrowing costs and expand lending capacity. This increases the demand for assets such as housing, causing its value to appreciate. In the absence of any restraints such as debt-to-income ceilings, higher asset value allows for greater collateral, further lowering the cost of lending per unit of loan.

Before concluding the Financial Accelerator, some additional remarks are worthwhile. As briefly mentioned, the Financial Accelerator is noted to affect the timing of various shocks' transmission into the real economy. On this theme, Bernanke (2007) especially highlights the impact of fixed and variable-rate mortgages. Variable-rate lenders are more likely to be affected without delay in both a negative and positive shock to interest rates, and thus quicker react by altering both demand for housing and overall consumption. In an economy with a larger degree of fixed-rate mortgages, the effect will be less distinct, since servicing costs only increase or decrease with a significant lag, eg. when rate fixtures expire, are renegotiated, or when buying a new property. Whilst fixed rates may protect current lenders in a downturn, a negative shock is likely to quickly subdue turnover. As lending conditions worsen from decreasing asset values and cash flows, households become hesitant to invest.

A final conclusion of Bernanke and co-authors' that is relevant is the external finance premium's asymmetrical effects on borrowers. Bernanke et al. (1996) offer a discussion on different variables that might affect the effectiveness of the Financial Accelerator. First of all, they argue, the Accelerator effect should strengthen towards the extreme end of any business cycle. Since the external finance premium is based on the strength of a household or firm's balance sheet, the effect should strengthen as a recession deepens or bubble expands. Following from this, they propose, is a so-called *flight to quality* (Bernanke et al. 1996). In short, those with larger agency problems or interest costs, eg. from having larger debt-to-asset ratios or lacking own funding, will see their finance premia increase more than those with smaller loans or otherwise better finances. As such, consumption and investment amongst less 'qualitative' borrowers will be disproportionately sensitive to a downturn. Similarly, unanswered demand for debt makes the reaction to positive stimulus stronger among weaker borrowers: In Bernanke et al.'s (1999) model, firms with relatively less access to credit respond to monetary expansion by increased investments at three times the rate of firms with relatively good credit access.

To summarise, this section has presented the Financial Accelerator. It is based on the notion of imperfect credit markets due to agency costs and asymmetric information. Given this,

lenders must cover their risk (or monitoring cost) by charging borrowers a fee proportionate to the agency cost. This cost moves inversely with the borrowers' income, but most importantly the value of their assets or ability to post collateral. The financial condition of borrowers can be altered by shocks to the economy such as recession, interest rate changes, or policy measures eg. taxes. As for interest rates specifically, the Financial Accelerator predicts that the *impact* of any change in rates will be *greater* than the initial change itself. In the end, small inputs or shocks that affect borrowers' conditions propagate, potentially giving the market for debt strong power over real economic outcomes.

### III - Literature Review

#### Closely Integrated: mortgages and housing markets

The tight-knit relationship between household debt and the housing market is a common feature of the household debt literature. As detailed, mortgages constitute a large share of household debt. This fact provides rationale for a close relation between fluctuations in the housing market and the development of the household debt stock.

In two studies of the Norwegian housing market, Jacobsen & Naug (2004) and Anundsen & Jansen (2013) dissect the relationship between house prices and household debt. Following financial deregulation in the 1980s, Norway saw expanding mortgage debt and appreciating house prices. Anundsen & Jansen (2013) test the result of an exogenous shock to house prices and debt. They conclude that the relationship between debt and house prices tends to be proven bicausal and difficult to precisely specify. Subsequently, they suggest a bidirectional relationship: long-run house prices and debt volumes affect one another. House prices are driven by debt, real interest rates, income, and elasticity of supply of housing. Jacobsen & Naug (2004) quantify this relationship, estimating that Norwegian house prices fall by 17 per cent given a 10 per cent growth in the housing supply.

In turn, both author pairs argue, mortgage debt volumes are driven by the supply and value of houses, income levels, and interest rates. Anundsen & Jansen (2013) conclude that a Financial Accelerator is in operation on the Norwegian housing market, with significant feedback between house prices and debt levels. The effect weakens, they conclude, when an increased supply of housing is modelled as a response to higher prices, stabilising debt at lower DTI-ratios. Increasing the responsiveness of construction also subdues the price-debt spiral more quickly compared to baseline.

Similar strong support for a Financial Accelerator is found in broader panel studies of housing markets. Almeida et al. (2006) examine the role of LTV-ratios in facilitating the translation of income increases into higher house prices across 26 countries over the late 20th century. They find strong suggestions of a Financial Accelerator, and show that countries with higher aggregate LTV-ratios (smaller down payments) experience larger house price appreciation following a positive income shock than countries with more restrictive LTV requirements. They lend support to the notion that households' ability to post collateral significantly impacts

house prices, and suggest that lower LTV requirements enable stronger translation of income increases into house price appreciation. This effect, and the Financial Accelerator is subdued, they argue, if households are subject to income constraints on borrowing that bind before the LTV ceilings kick in.

Comparing a similar sample, Jorda et al. (2014a) test for a Financial Accelerator through the monetary channel. They study the effects of changes to the ECBs policy rate on countries where a change was *not* optimal for or brought on by that particular member country's economic circumstances, thereby arguing that the change in rate can be equated with an exogenous interest shock. Such an interest decrease by 1 per cent initially causes half a per cent's increase in mortgage stock/GDP. The effect grows stronger over time, resulting in a 3 per cent increase in mortgage volumes after 4 years, which in turn increases house prices by 4 per cent. They also suggest a potential long-term feedback effect as higher house prices allow for expanding mortgages through the grown collateral. Hume & Sentence (2009) and Borio & Zhu (2008) similarly emphasise the role of interest rates in creating the rapid increase of credit leading up to the financial crisis. The macroeconomic stability of low inflation and low interest rates of the early 2000s, they argue, played twofold roles.

First, as by Jorda et al. (2014a), as generous economic fundamentals for debt growth, and secondly as a strong signal of perceived stability and low risk, encouraging banks and households to expand leverage. Knowledge of having "too big to fail" status, meaning bail-outs in times of crisis are almost guaranteed, may also lead financial institutions to take on excessive risk and leverage in lending (Bernanke, 2010). Borio & Zhu (2008) provide a richer discussion on perceived risk, suggesting that asset value appreciation distorts risk perception, by eg. reducing the perceived risk of defaults. This in turn encourages further investment - a risk perception accelerator. A risk channel may also exist from low interest rates, they argue, as low rates expand the gap between the risk-free rate and investor targets, encouraging risk-taking to meet target returns.

Returning to Norway, Jacobsen & Naug (2004) establish several characteristics which define the relationship between housing market and mortgage market. First, they show that debt increases materialise slowly following a value appreciation of the housing stock. The higher value is realised whenever a house changes owners; higher value means the new buyer's loan is likely larger than the current owner's was. Given this, they argue that debt is likely to continue rising long after the housing stock has stabilised at higher prices. Essentially, a higher level of value contributes to higher debt "until the entire housing stock has been sold at the new price" (Jacobsen & Naug, 2004, p. 105). Another noteworthy feature is that of turnover. They note that the above process is, intuitively, more quickly realised at a higher turnover rate, estimating that for the period 1994-2004, a 10 per cent increase in turnover resulted in a 17 per cent increase in household debt. Higher turnover, being an expression of high demand, also puts upwards pressure on prices, eventually necessitating even more debt. Finally, they estimate that an increase in mortgage interest by 1 per cent results in debt declining by 2 per cent, highlighting the importance of low-interest rates in facilitating the debt-price spiral identified by Anundsen & Jansen (2013).



## The Housing Market

The characteristics of the housing market, including all forms of owner-occupied property, is well documented in both international and Swedish literature as a key determining factor shaping outcomes on the mortgage market. By regular microeconomics, increased demand for housing by eg. a growing population or urbanisation will translate into higher prices or increased construction (supply) depending on the elasticity of supply. If supply is relatively inelastic, increased demand effectively translates into higher prices, requiring households to take on larger loans per unit of income, all else equal. As such, the elasticity of supply of housing eventually contributes to determining the demand for debt (Debelle, 2004). With the elasticity of supply being a key determining factor of housing market conditions, the Swedish household debt literature contains rich discussion on the forces that shape it. The topic begs a thesis of its own, but its key characteristics and their consequences are detailed below.

One topic to receive much attention in the household debt literature is Sweden's unique rental market. Several features recur in much of the literature. First, the rent facing tenants of Swedish rental apartments is set according to a utility function, or *bruksvärdesystem*, where factors such as size, wear, proximity to public transport, and standards in kitchens and bathrooms determine the price in a negotiation often handled centrally by the Swedish tenants' association, hyresgästföreningen (Fastighetsägarna, 2023).

Several authors highlight that this regulation causes a reported underprovision of rental apartments. As rents do not keep up with their estimated market values, they become disproportionately low compared to comparable owner-occupied homes (Turk, 2015; Burgert et al. 2016). Englund (2011), Finocchiaro et al. (2011) and Emanuelsson (2015) support this conclusion, stating that rental regulation incentivises development of owner-occupied flats which offer better return. Surveys of Swedish municipalities given in 2013 reveal that 85 per cent of municipalities experienced a lack of rental flats, compared to 30 per cent stating a shortage of owner-occupied flats (Riksgälden, 2015). A shortage of rental flats causes significant queues (Finocchiaro et al. 2011); Hellekant (2022) shows that between 2010 and 2018, queue times in Sweden's three largest cities ranged from 3 to 10 years.

Ultimately, the shortage of rental apartments pushes households on the margin of the rental market, who do not wish to buy but theoretically could, to the owner-occupied market (Finocchiaro et al. 2011; Riksgälden, 2015; Finansinspektionen 2021). These households would prefer to rent, but cannot, and thus unwillingly enter the owner-occupied market. Finocchiaro et al. (2011) argue that these marginal dwellers are likely to be among the financially weaker on the owner-occupied market, requiring large debt to purchase. Ultimately, those fleeing poor access to the rental market increase aggregate demand for owner-occupied housing (Finansinspektionen, 2021).

Municipal surveys asides, determining the existence of a housing shortage is difficult due to the large range of possible definitions of 'shortage' (Emanuelsson, 2015; Riksgälden, 2015).

There is however a broad consensus within the literature on household debt and housing that, in addition to a dysfunctional rental market, the elasticity of supply in the Swedish housing market is low (Englund; 2011; Finocchiaro et al. 2011; Riksgälden, 2015, Turk, 2015; Finansinspektionen, 2021). Emanuelsson (2015) shows that after a rapid slump following the financial turmoil of the early 1990s, construction of both owner-occupied and rental housing remained at an estimated average of half the rate prior to the 1990s. He applies a “population increase per newly-built bed”-measure (p. 50) showing that population growth has outpaced capacity expansion since the early 1990s.

Several contributing factors are suggested. Swedish planning permissions are exclusively administered through local municipalities, which through excessive red tape serves as a bottleneck for new development (Riksgälden, 2015; Turk, 2015). This, both authors argue, increases risk for developers as time horizons of projects become uncertain. Going further than bottlenecks, Riksgälden (2015) and Emanuelsson (2015) suggest that municipalities may be incentivised *not* to expand the housing stock; more housing implies heavier pressure on municipal services such as schools and primary healthcare, increases traffic and noise pollution, and risks decreasing the value of existing housing, all in all, risking agitated voters.

High cost of land in urban areas is thought to put upwards pressure on the cost of construction (Turk, 2015; Emanuelsson, 2015; Finansinspektionen, 2021). Less government subsidy to the construction sector compared to the postwar decades is also thought to play a role (Emanuelsson, 2015). Between 1975 and 2015, Riksgälden (2015) show that the index of construction costs outpaced consumption index and disposable income, with a key driver being high land prices, possibly because of high demand in popular areas, or artificially low supply by municipal red tape or unwillingness to free up land.

Riksgälden (2015) develops the cost of construction argument further: at the time of their study, construction rates (mainly of houses) were affected by the relative profitability of building compared to buying from current stock. The profitability of construction is expressed as this ratio, ‘Tobin’s Q’<sup>1</sup>. If the ratio (average construction cost/purchase price of comparable, existing property) is *greater* than 1, construction is profitable and should be higher. Riksgälden (2015) show that for many Swedish municipalities, property prices and higher rates of construction do correlate, but that variation is large, especially in higher-cost municipalities. This, they conclude shows that rather than cost, other - structural - factors inhibit construction.

Returning to the effect on household debt, the result of high prices pushing construction is ambiguous; Riksgälden (2015) conclude that whilst construction expands supply and should depress prices, increasing the stock in expensive areas means larger loans taken for each household moving in, compared to if construction occurred in areas with less demand.

---

<sup>1</sup> Average total cost of construction / average purchasing price of comparable property

## The supply of debt

The literature on household debt lists towards discussing the *demand* side of the mortgage market, as is reflected in this literature review through the heavy emphasis on housing supply, regulation, and the cost of debt - all affecting demand. The discussion concerning *supply* of debt is briefer and largely discusses banking regulation.

The greatest focus on supply-side changes is found in the literature covering longer perspectives than this study, chiefly Jorda et al. (2014b) and Schularick & Taylor (2012) but also Ahnland (2015) who, together, cover a period of 1870-ca 2010. Taking the longer perspective, Jorda et al. (2014a; 2014b) emphasise a gradual process across the 20th century of greater access to debt, and higher leverage. Dubbed “The Great Mortgaging” (Jorda et al. 2014b, p. 9), it is summarised as significantly growing finance sectors, mortgages playing a major role in that growth, and a large increase in the leverage amongst households over the same period. Up until the 1970s, Jorda et al. (2014b) conclude that policy concerned with home ownership determined much of the increase. Modern differences in rates of home ownership date from eg. the US offering generous mortgages to war veterans following WW2, whilst countries such as Germany and Switzerland retained stricter LTV-ratios and still see substantially lower rates of homeownership.

From the 1970s and onwards, the growth of mortgage debt intensified, both over GDP and as share of total outstanding debt (Jorda et al. 2014b); across their sample, bank lending (over GDP) nearly doubled between 1980 and 2010, rising from 70 to 120 per cent with mortgages constituting a majority of the increase. Some literature quite vaguely cites *banking deregulation* as a key factor behind the late 20th-century surge in debt (eg. Finocchiaro et al. 2011 fall victim). Debelle (2004) breaks this trend by providing a global overview of mortgage market deregulation across the 1980s; Sweden enters in 1985 with “interest rate deregulation...[, and] Lending controls for banks abolished” (p. 16). No further explanation is given. Debelle (2004) does, however, conclude that deregulation generally occurred both on the consumer side (eg. LTV-ratios) and on banks themselves, such as lifting caps on their deposit interest rates or issued debt. The end result: tougher competition for lending institutions, and greater availability.

Sweden followed the great mortgaging. By 2007, mortgages constituted almost two-thirds of all bank lending, growing at a faster pace than non-mortgage lending (Jorda et al. 2014b). Sweden became subject to the Basel I accord in 1988, in which mortgages were assigned lower risk ratings than corporate lending, allowing banks to issue higher leverage to households than firms, ultimately incentivising banks to expand mortgaging (Jorda et al. 2014b). Basel II & III are also noteworthy; Riksgälden (2015) note that whilst the former, in force from 2007, allowed banks higher yet ratios of mortgage lending to capital, the latter reversed this effect and was followed by even stricter national restrictions in Sweden. Any net effects on lending volumes are not mentioned.

Finally, Riksgälden (2015) detail access to international capital markets as an important factor enabling banks to expand mortgage lending. Swedish households, they note, place a majority of their savings (private, and pension funds) on the stock exchange, meaning that banks cannot cover mortgage demand with bank deposits. Instead, Riksgälden show, they rely on so-called *covered bonds*. Introduced in the early 2000s, these are backed by pooled mortgages and heavily risk-regulated. Paying low interest, Swedish banks sell these on international markets as a source of relatively cheap capital. The authors conclude that this source of funding has been a key factor for Swedish banks to manage meeting increasing mortgage demand.

### Discussing tighter regulation

During the 2010s, several amendments to Swedish policies on mortgage lending have been implemented. These are detailed further below. Parallel to these developments, several authors have modelled potential policy designs to decrease household debt. When modelled or suggested in the literature, the case for policy-induced tightening of lending conditions is likely to be backed by two arguments (Finocchiaro et al. 2016; Burgert et al. 2015; Turk, 2015). Firstly, a high and increasing DTI-ratio constitutes a source of risk within the financial sector. Secondly, they cite households' increasing sensitivity to changes in debt servicing costs. With servicing costs chiefly made up of interest payments, these are sensitive to the Riksbank policy rate. Given this, increasing debt intensifies the degree of effect an increase in policy rate would have on aggregate demand (Finocchiaro et al. 2016). This fear is backed by findings suggesting that the consequences of house price fluctuations are heavily asymmetric, with relatively small initial declines having led to large drops in consumption, significantly contributing to the depth of the financial crisis (Guerrieri & Iacoviello, 2017)

Finocchiaro et al. (2011; 2016) conclude that the different policies are bound to affect the lending market differently. They highlight that ceiling on the LTV-ratio of new borrowers should immediately reduce the rate at which new debt is added, whilst higher amortisation or a reduction in interest tax deductions affects the pre-existing stock of loans too. The even effect across the debt stock is granted that policies apply retroactively, and not exclusively to new loans. Removing the deduction or otherwise increasing interest rates may on the other hand reduce amortisation as households prioritise their costs (Finocchiaro et al. 2011).

With this motivation in mind, Finocchiaro et al. (2016) analyse the implications of a stricter LTV ceiling, an individual DTI-ratio ceiling, amortisation requirements, and the abandonment of interest rate tax deductions. In a model economy, they calculate the required measure for each policy to *individually* depress the aggregate DTI-ratio by 10 per cent. To decrease the DTI-ratio by 10 per cent, LTV values in their model much approach an average of 70 per cent. Interest costs decrease, and funds shift to slightly up consumption. A DTI ceiling which reduces the DTI-ratio by 10 per cent is simply placed 10 per cent below the current level.

Finocchiaro et al. (2016) model an introduced amortisation requirement, as do (Burgert et al. 2016). They model the policy differently, both when measuring the effect and required rate.

Finocchiaro et al., aiming again for a 10 per cent decrease in aggregate DTI estimate that the average time to must decrease from 50 to 45 years, or by 10 per cent. Burgert et al. (2016) meanwhile stipulate a 10 per cent decrease-target in the rate of mortgage debt over GDP. This, they find, requires households to increase amortisation by 0.6 per cent annually. As a consequence, they estimate, affected households reduce “housing investment by 3.5-4%” (Burgert et al. 2016, p. 4). Both an LTV ceiling and greater amortisation depress total debt, however (Finocchiaro et al. (2016) argue that an LTV ceiling carries a sharper impact on housing investment since purchase are dependent on admittance of a new loan, which their LTV ceiling disproportionately affect (Finocchiaro et al. 2016).

Finally, there is a discussion on abandoning mortgage rate deductions. Turk (2015) highlights that whilst the interest deductibility in Sweden is high and grants lenders a generous fiscal environment compared to other EU countries, it has gradually decreased; from between 50 and 60 per cent in the 1980s, to finally 30 per cent in 1991 where it remains. Finocchiaro et al (2016) highlight that the tax deduction differs from other policy measures in being the only fiscal measure. As such, it plays the role of a subsidy when in place. They illustrate that the effect of removing it depends on where the public funds saved from such removal are allocated. In the most likely case, they argue, of redistribution through government spending or reduced taxes, the deduction must be reduced to between 3 to 6 per cent to achieve a 10 per cent decrease in the DTI-ratio. In their model, this causes a 6% decrease in the consumption of housing for lenders (Finocchiaro et al. 2016).

Burgert et al. (2016) instead find that a complete removal of the deduction reduces household debt over GDP by 1.3%. In their model, indebted households also drop housing investment by 6%. The translation to house prices is limited, as non-mortgage households react by increasing their housing consumption. Burgert et al. (2016) are alone to model increased property taxes: to match the effect of their deduction removal, they estimate that annual taxes on average must increase by 0.6% of property value.

Turk (2015) models two different scenarios of abandoning interest deductibility. An immediate reduction of ten percentage points, to 20 per cent yields a 1.5 per cent decrease in house prices in four years. Real household debt decreases by 2 per cent in just over five years. A gradual phase-out, by five percentage points/year, is more drastic. House prices are down four per cent after 8 years, and household debt over 5 per cent after ten years. All values are given in real numbers. Turk comments that whilst low policy rates mute the effect of reducing deductibility, they also ensure that households can afford and adjust to the increased cost without strong burden.

Among those who modelled several policies, Finocchiaro et al. (2016) remain indifferent to which of their modelled policies would achieve the greatest debt decrease with the least harm to growth or housing investment. Burgert et al. (2016) however conclude that steeper amortisation requirements or a shift away from fiscal subsidies would render the greatest effect, pointing to the latter's large role in incentivising high indebtedness in the first place. Almenberg et al. (2021) add noteworthy points on how policies may differ in impact: an LTV

ceiling, effectively a steeper collateral requirement, has greater strain on households' liquid assets relative to an amortisation requirement, which rather tends to have a short-run negative impact on disposable income.

## Policy developments

Parallel to the endeavours to model the debt market's reaction to tightened regulation and removed fiscal stimuli, the rules indeed evolved. The primary changes to policy as highlighted and discussed by the literature is the *Bolånetak*, literally "*the mortgage ceiling*", a ceiling on the LTV-ratio of collateral-backed mortgages, and an introduction and subsequent amendment of *amorteringskrav*, or "*amortisation requirements*".

In 2016, the Fi introduced an amortisation requirement (henceforth *the 2016 requirement*). The goal was to "counteract macroeconomic and financial stability risks in connection to large debt amongst households" (Fi, 2017, p. 2, own translation), much like Finocchiaro et al. (2016) had reasoned would be the rationale. Only new loans were covered by the requirement, leading Fi (2017) to conclude that it would take significant time until it applied to a large portion of outstanding debt. (Compare to Jacobssen & Naug's (2004) conclusion on prices' lagging effect on debt). The required rate of amortisation in the 2016 requirement is determined by the LTV-ratio: mortgages exceeding 50 per cent of market value require annual amortisation of 1 per cent. Loans exceeding 70 per cent require two per cent annual amortisation.

By comparing households just above, and just below the new thresholds, as well as by comparison to behaviour in the years prior to the 2016 introduction, Finansinspektionen (2017) conclude several effects of their 2016 requirement. In summary, the requirement decreased the average size of new loans and shifted housing demand towards cheaper dwellings. The 2016 requirement affected heavily indebted households disproportionately. Fi (2017) conclude that the debt-to-income ratio of borrowers whose loans required amortisation (> 50 per cent loan-to-value) began declining, most pronounced among borrowers exceeding the 70 per cent threshold. Meanwhile, the debt-to-income ratio of households with smaller loans (<50 per cent LTV) continued to increase.

Finansinspektionen (2017) estimates, that as of 2017 the DTI-ratios of the *individuals* (not the aggregate) issued *new* loans had decreased by 9 per cent. Amongst the total population with outstanding mortgages, the DTI-ratio on mortgages remained stable at the 2015 level of 350 per cent at the time of their study. They estimate that had they *not* introduced the 2016 requirement, mortgage DTI-ratios would have increased to 380 per cent by 2016, an increase of almost 9 per cent. As a result of the 2016 requirement, they conclude, the total DTI-ratio decreased by 9 per cent. Further, they very carefully (due to lack of detailed data) conclude that the 2016 requirement depressed the price of dwellings by an average of 3 per cent. They argue that the discrepancy between the decrease in debt and housing prices (6 points) reflects the increased demand for smaller (or less expensive) homes.

In March 2018, the amortisation requirement was amended; henceforth *new* mortgages with an household mortgage-to-income ratio exceeding 450 per cent were to amortise an additional 1 per cent of the outstanding loan annually. Depending on the LTV-ratio, this 1 per cent could be in addition to the either 1 or 2 per cent prescribed by the 2016 requirement (Andersson & Aranki, 2019). The rationale was similar to the 2016 introduction; to lower aggregate risk and households' sensitivity to cost increases. By the time of their writing, the policy had several measurable effects. First, increased amortisation. Amortising amongst households in the +450 bracket rose by 0.7 per cent. This, on average, represented an increase from 8 to 10 per cent in the share of income spent on amortising, an increase by 25%. Secondly, households borrow less. Affected households were estimated to borrow 8,5 per cent less than they otherwise would have. As a result, total spending on housing decreased by 1 per cent, a smaller drop since only a small portion of households were affected, the authors reason. Finally, they estimate that the total share of households exceeding the mortgage-to-income ratio of 450 per cent would drop from 5,7 to 1 per cent after 5 years. However, between introduction and their writing, Andersson & Aranki (2019) show that households were increasingly lumping together just below the 450-mark.

Sweden also has a ceiling on the LTV-ratio, the *bolånetak* or mortgage-ceiling, which caps the LTV at 85%, introduced in 2010; previous to this, LTVs of 90-95% were accepted, given that the property was posted as collateral (Nordea, 2023). Finansinspektionen (2021) conclude that this affected fewer borrowers than the later amortisation requirements. They cautiously estimate that the 20 per cent of borrowers that were affected decreased their additional lending by 13 per cent. In total, new borrowing decreased by 2 per cent.

In summary, over the final ten years of the period considered by this thesis, three macroprudential measures that directly impact borrowers have entered into effect to slow the accumulation of household debt. Finansinspektionen (2021) heavily emphasise the difficulty in assessing the total impact, but estimate that the volume of debt *added* between 2010 and 2021 would have been 10 per cent larger if left unrestrained. The LTV ceiling's impact has been reducing the volume of new debt, whereas amortisation has caused borrowers to both reduce new lending *and* repay outstanding debt faster.

Finansinspektionen (2017; 2021) shows that the overall policy impact has been unevenly distributed; areas where borrowers are more likely to be affected by any introduced policy, such as Stockholm, have experienced a greater decline in house prices (at least post-2016), turnover, and the rate of added loans than other areas. In other words, the larger the DTI- or LTV-ratio, the more effective the policy. Finansinspektionen (2021) summarise that in total, LTV-ratios have converged towards the 25-50 span, but argue this might be because of the banks' continuous updating rising asset prices, which by themselves depress the LTV-ratio. A more reliable signal, they propose, is the decline in loans in the >450% DTI bracket since the second amortisation rule, as that measure is insensitive to house prices.

## Taxes

The topic of taxes connected to mortgages and housing is a common feature across the household debt literature. Whilst a general consensus exists that Swedish property taxes are low and decreasing, the relative importance of their contribution to increasing debt levels is subject to debate. On a general level, Debelle (2004) presents a number of tax system design features that affect mortgage markets. Two cases are particularly relevant; first, Debelle shows that giving preferential tax treatment to mortgages (ie. deductibility) affects households' decisions between entering the rental or owner-occupied market. Secondly, preferential tax treatment of mortgages compared to the interest of non-collateralised loans, incentivising households to borrow against their dwelling in order to leverage other investments, eg. on the stock market (Riksgälden, 2015). Further, Debelle (2004) presents a simple model market for mortgages in which mortgage interest is either fully- or non-deductible, showing that deductibility grows households' disposable income, easing their liquidity constraints and allowing for larger borrowing.

As for Sweden, taxes are levied both continuously and on a one-off basis. For the entire period of this study, continuously decreasing annual taxes have been levied according to property value. Englund (2011) estimates that between two major reforms in 1991 and 2008, taxes totalled ca 1 per cent of market value, annually. After 2008, this decreased to ca 0,5 per cent. The 2008 reform capped the tax to an index-based ceiling which for many households decreases the tax further than the 0,5 of market value, Englund comments. In 2023, the ceiling amounts to just over 9000 SEK for a detached house (Skatterverket, 2023a). Further, a stamp duty, 1,5 per cent of the selling price, is levied on buyers when property changes hands. Upon selling a property, a capital gains tax of 22 per cent is charged on any value appreciation; subject to a range of conditions, this tax can be postponed if the purpose of selling is the purchase of a more expensive dwelling. The tax is subsequently added to the payment on the next sale (Skatteverket, 2023b).

The net effect of the tax system and its development on household debt is a matter of debate. The major change, the property tax, is thought to contribute to higher indebtedness by easing the liquidity constraint on households, meaning they can afford larger loans (Riksgälden, 2015). Turk (2015) goes further, describing post-2008 property taxes as “virtually abolished” (p. 15), in line with Englund's (2011) argument that the halving of property taxes since the 1990s has rendered them negligible. Englund (2011) also argues that when divided over the lifetime of a housing investment, the stamp duty has little impact on housing affordability. The impacts of capital gains taxes receive little attention aside from Riksgälden (2015) claiming its most likely impact is a small lock-in effect, only *possibly* somewhat reduced by the postponement option.

Finally, as briefly mentioned, households can deduct 30 per cent of mortgage interest payments from taxes (up to 100 000 SEK). In line with Debelle (2004), Finocchiaro et al. (2016) propose this as a factor of increasing household debt through increasing affordability, whilst Riksgälden (2015) are more cautious; they conclude that, since the 30% deductibility



has remained untouched since 1991, it should have had little impact on increasing household debt. They do however admit that lower taxes or tax incentives generally incentivise borrowing. Finally, Hansen (2013) quantifies the impact of the above policies; since the early 1990s, the total property tax pressure has decreased both in 1991 and through the 2008 reform. In total, Hansen estimates that between 1994 and 2010, lower taxes on housing contributed to some 12% per cent, or 10 percentage points, of the increase in the aggregate household debt-to-ratio. He however also concludes that these estimations are most uncertain.

## IV - Discussion

This thesis tasks itself with answering the research question ‘*What factors lie behind Sweden’s growing household debt between 1995 and 2020?*’. It has focused its study on mortgages, seeing as these dominate both household lending and the liability side of most housing-owning households. As described in *Aim & Contribution*, it aims to understand what factors and policy choices have contributed to growing mortgage debt in Sweden. In addition, it aims to understand how the Financial Accelerator can be utilised to explain a rise in household debt.

### Cost of borrowing

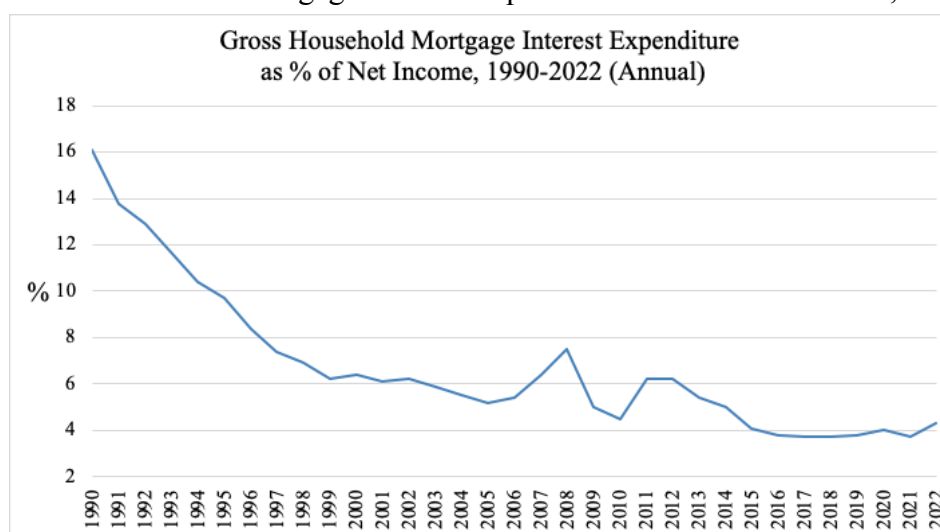
A number of themes reoccur across the Swedish debt literature. Many of the topics, such as lending restrictions, taxes and interest rates pertain to the broader theme of borrowing costs. Whilst no exhaustive study of households’ borrowing costs and its components’ developments over time has been presented, its parts are extensively discussed separately. The international literature most frequently discusses interest rates, likely because it is the cost which affects different housing & mortgage markets most similarly, as eg. tax codes differ between countries. In the international setting, this study finds practically unquestioned support for the notion of low or decreasing interest rates as a facilitator behind expanding debt. Studies focus both on the direct effect (Jacobssen & Naug, 2004; Anundsen & Jansen; Jorda et al 2014a) and the impact of monetary policy through the channel of communicating expectations or perception of risk (Borio & Zhu, 2008; Bernanke, 2010; Finocchiaro et al. 2011). These strands of writing hold no inherent contradiction, as the direct and indirect effects of monetary policy likely complement one another.

These findings are most probably transferable to Sweden, which has seen two decades of rather loose monetary policy, as highlighted by Turk (2015) and Andersson & Jonung (2020). As seen in Figure 2, which displays SCB’s data on households’ mortgage interest costs relative to net income, interest payments have become more affordable with time. After a rapid decrease in the early 1990s, costs remained relatively stable throughout. Interest costs are presented relative to income as it complements the data in Figure 3, which shows the average interest rates on mortgages. The relative measure also serves as a substitute for the years where average interest data is unavailable, granting a more complete picture. Note that the gross expense includes the deductible portion of interest expenditure.

It seems safe to conclude that low interest rates through their direct effect on borrowing costs have contributed to making borrowing very affordable for Swedish households. The SCB provides data on average mortgage interest rates from 2006. Figure 3 displays this. Interest rates fluctuate quite heavily between 2006 and ca 2013. This may be cause for doubt that lending volumes were driven by a reassured or overly optimistic market as discussed above. Figure 3 clearly shows continuously low mortgage rates (approaching 1 per cent) during the period of negative policy rates, 2015-2020 (Andersson & Jonung, 2020).

Figure. 2

Gross Household Mortgage Interest Expenditure as % of Net Income, 1990-2022



Source: SCB, 2023d

As noted by Bernanke (2007) and Finocchiaro et al. (2011) the setup of free-floating versus fixed mortgage rates is a key determining factor behind the speed and intensity with which a policy rate change translates into changed costs for households. If rates are mainly fixed, a policy rate decrease may only lead to income increases with a significant lag, diminishing any Financial Accelerator-income effect. For Sweden, the opposite seems to have been the case - as rates throughout this study have commonly been free floating, policy changes effectively translate to an income change.

Figure. 3

Average Mortgage Interest Rate on loans issued by Monetary Financial Institutions, Sweden. Reported by SCB since 2006



would otherwise have been the case. The idea of perceived stability affecting decisions may be relevant here too; if households can count on deductions remaining in place, they may be more inclined to spend more on housing, as the risk of a sudden cost increase from removed deductibility is low.

From a Financial Accelerator point of view, the cost of borrowing affects households' disposable income and their external finance premium. For the Financial Accelerator to operate in a way which stimulates further debt, income or net worth has to increase, as explained in section II. Jorda et al. (2014a), Jacobssen & Naug (2004) and Anundsen & Jansen (2013) all present support for different aspects of operating a Financial Accelerator on the housing market. Both Norwegian studies find a causal link from increasing income to housing prices to debt levels, and given Sweden's generally similar institutional setting to Norway, the income effect of low borrowing costs are likely to feed this mechanism similarly in Sweden. As presented by Almeida et al. (2006), the income effect on housing expenditure is likely to be stronger when LTV restrictions are loose, which indeed was the case up until 2016 when LTV-ratios of new loans began declining thanks to the 2016 Loan-To-Value amortisation requirement.

In conclusion, this thesis finds support for the income-related portion of a Financial Accelerator. As lending costs decrease, or just remain low, households will - all else equal - expand their borrowing capacity. This can work through savings adding net worth, home improvement increasing the value of a property, or through households gaining a more favourable debt-to-income ratio for any level of debt. Through the increased borrowing capacity, a Financial Accelerator is likely to operate with house prices as found by Anundsen & Jansen (2013). Sweden's relaxed lending conditions, lasting throughout the noughties before tightening with 2010's LTV-ratio restrictions and subsequent policies, can be said to quite probably have fed a Financial Accelerator through an income channel.

### Housing Supply: Elasticity to stop an Accelerator?

Another key factor to operating a Financial Accelerator is the housing supply's answer to an increased demand springing from higher debt capacity. Households really only need to significantly raise their borrowing capacity if their demand for housing is not met by an adequately expanding supply which keeps prices stable. As suggested by Jacobssen & Naug (2004), house prices fall significantly with the introduction of a more elastic housing supply, subsequently stopping the Financial Accelerator in its tracks; with elastic supply, greater borrowing capacity is not necessarily utilised to escalate prices in an expression of high demand of a limited housing stock. These higher prices (larger collateral) are needed to significantly drive borrowing capacity in turn, as both stipulated in section II and suggested by Anundsen & Jansen (2013). A number of factors contributing to an irresponsive and inelastic Swedish housing supply have been put forth, such as municipal red tape and rental regulation. It is therefore, in line with Jacobssen & Naug's (2004) findings in Norway, safe to say that a possible Financial Accelerator at least has not been hindered by an elastic housing supply.

When housing supply in the desired geography, price range, and timeframe - falls short of demand, borrowers are likely to have to utilise a greater degree of their borrowing capacity, in turn, feeding prices and the size of collateral. As such, any factor contributing to the housing supply's inability to match demand can be suggested to at least enable a Financial Accelerator. Factors increasing demand can be argued to have the same effect, such as population growth or families on the margin between the housing and rental markets being forced to enter the former, as discussed above. All in all, the Financial Accelerator hinges on households having to compete over a fairly limited supply, as their increased borrowing has to trigger higher prices for the Accelerator to increase collateral value and come full circle. This seems to indeed have been the case for Sweden.

## Debt Supply

So far, the discussion has touched upon two important conditions for a Financial Accelerator. First, higher income or asset values to increase the borrowing capacity. Secondly, somewhat inelastic housing supply so that increased borrowing capacity translates into higher prices. A final condition is some supply elasticity on the debt market itself. When households improve their borrowing conditions and wish to increase leverage, lending institutions must be able to meet this demand. Whilst somewhat neglected in the literature, notions of the great mortgaging apply to Sweden too, eg. by means of accessible funding for banks on international markets. The debt supply can simply be concluded to have contributed to a rise in debt by consulting Figure 1; a 100 percentage point increase in the DTI-ratio without increasing debt volumes would imply detrimental income loss, which has not been the case over the course of this study.

## V - Conclusion

Over the last 30 years, Sweden has experienced rapid growth of its aggregate household Debt-To-Income-ratio. This development has followed a global trend of expanding financial sectors, of which mortgage markets make an ever larger share. Scholars and government bodies alike have raised alarm, warning that households shouldering a larger share of the economy's total leverage make their personal finances more sensitive to market fluctuations and changing economic conditions. By qualitative analysis, using both previous literature and Bernanke's Financial Accelerator framework which details the real economy's interaction with debt, this thesis has aimed to answer what factors lie behind Sweden's growing Debt-To-Income ratio, chiefly of mortgages. It finds several underlying factors acting as enablers of high debt, namely favourable lending conditions, a dysfunctional interaction between housing and lending markets due to lending regulation, and the sluggish responsiveness of housing supply to increased demand. Favourable lending conditions have - all else equal - expanded borrowing capacity and enabled a Financial Accelerator. On the other hand, the irresponsive supply of housing has failed to curb an Accelerator, as households have been incentivised to use increasing volumes of debt to compete on the market for property.

In conclusion, this thesis finds support for the necessary conditions of operating a Financial Accelerator on Sweden's housing market. As discussed, the lack of tightly binding lending restrictions, especially before more restrictive policy from 2010 and onwards, has enabled a higher level of debt over both income and asset values than would otherwise have likely been the case. Meanwhile, the supply of debt has been responsive to demand whilst the supply of housing has been less so. Taken together, these are all conditions pointing towards the possibility of a Financial Accelerator operating.

In exploring the factors behind rising debt and viewing them as fulfilled necessary conditions for operating a Financial Accelerator, this study shows that the Financial Accelerator can be fruitfully discussed outside the environment of an isolated economic model. It has also provided a broad picture of the impact of debt-curbing measures - and lack thereof - in the case of Sweden. Its implications mainly lie in pointing further research towards trying to closely study each of the debt enablers brought up here, and their relative importance in driving a debt increase. This can hopefully be done through the use of better microdata, either from Sweden or countries with similar experiences. Such research would help evaluate debt-related policy measures, and further our understanding of the Financial Accelerators' necessary conditions to function, or not function, in a housing market.

## References

Ahnland, L. (2015) Private debt in Sweden in 1900-2013 and the risk of financial crisis, *Scandinavian Economic History Review*, vol. 63, no. 3, pp. 302-323

Almeida, H., Campello, M., Liu, C. The Financial Accelerator: Evidence from International Housing Markets, *Review of Finance*, vol. 10, no. 3, pp. 321-352

Almenberg, J., Kilström, M., Thell, V., Vestman R. (2021). Fi analysis no. 33: Household debt and resilience, <https://www.fi.se/contentassets/69283d29022a4cc3898a4a4a06b3e83a/fi-analys-33-hushallens-skulder-motstandskraft-kriser-eng.pdf> [Accessed 15 May 2023]

Andersson, M., K. & Aranki, T. (2019). Färre sårbara hushåll efter skärpt amorteringskrav. <https://www.fi.se/contentassets/92b694916d5d4b29938d482ba00b18ca/fi-analys-17-farre-sarbara-hushall.pdf> [Accessed 15 May 2023]

Andersson, F., N., G., Jonung, L. (2020). Lessons from the Swedish Experience with Negative Central Bank Rates, *Cato Journal*, vol. 40, no. 3, pp. 595-612

Anundsen, A., K., Jansen, E., S. (2013). Self-reinforcing effects between housing prices and credit: an extended version, Research department, discussion paper, no. 756, Statistics Norway

Bernanke, B., S. (2007). The Financial Accelerator and the Credit Channel, Speech, Credit Channel of Monetary Policy in the Twenty-first Century Conference, Federal Reserve Bank of Atlanta, Georgia, USA, June 17 2007, <https://www.federalreserve.gov/newsevents/speech/bernanke20070615a.htm> [Accessed 13 May 2023]

Bernanke, B., S. (2010). Implications of the financial crisis for economists, speech, Princeton, New Jersey, September 24 2010, <https://www.bis.org/review/r100929a.pdf> [Accessed 20 May 2023]

Bernanke, B., S., Gertler, M. (1989). Agency Costs, Net Worth and Business Fluctuations, *The American Economic Review*, vol. 79, no. 1, pp. 14-31

Bernanke, B., S, Gertler, M. (1995). Inside the Black Box: The Credit Channel of Monetary Policy Transmission, *Journal of Economic Perspectives*, vol. 9, no. 4, pp. 27-48

Bernanke, B., S., Gertler, M., Gilchrist, S. (1996). The Financial Accelerator and the Flight to Quality, *The Review of Economics and Statistics*, vol. 78, no. 1, pp. 1-15

Bernanke, B., S., Gertler, M., Gilchrist, S. (1999). The Financial Accelerator in a Quantitative Business Cycle Framework, vol. 1, in Taylor, J., B., & Woodford, M (eds) *Handbook of Macroeconomics*, Elsevier Science, pp. 1341-1393

Borio, C., Zhu, H. (2008). Capital regulation, risk-taking and monetary policy: a missing link in the transmission mechanism?, Monetary and Economic Department, Working paper, no. 268, Bank of International Settlements

Burgert, M., D'Souza, P., Vermeulen, G. (2016). House Prices and Indebtedness in Sweden: a Model-based Assessment of Policy options, European Commission., in *Economic Brief*, Luxembourg: Publications Office of the European Union

Cato Journal. (2023). About Cato, <https://www.cato.org/about> [Accessed May 14 2023]

Davis, A., M., Van Nieuwerburgh, S. (2015). Chapter 12 - Housing, Finance and the Macroeconomy, vol. 5, in Duranton, J., G, Henderson, V., & Strange, W., C (eds), *Handbook of regional and urban economics*, Elsevier, pp. 753-811.

Debelle, G. (2004). Macroeconomic Implications of Rising Household Debt, Working paper, no. 153, Bank of International Settlements

Emanuelsson, R. (2015). Supply of housing in Sweden, Sveriges Riksbank, *Sveriges Riksbank Economic Review*, vol. 2, pp. 47-75

Englund, P. (2011). Swedish house prices in an international perspective, Sveriges Riksbank., in *The Riksbank's inquiry into the risks in the Swedish housing market*, Stockholm, pp. 23-67

Fastighetsägarna. (2023). Hyressättning, <https://www.fastighetsagarna.se/fakta/fakta-for-fastighetsagare/hyressattning/> [Accessed 13 May 2023]

Finansinspektionen. (2017). Amortingskravet har minskat hushållens skulder <https://www.fi.se/contentassets/808855501f59461692aada9fddf20675/fi-analys10.pdf> [Accessed: 10 May 2023]

Finansinspektionen. (2021). Samlad utvärdering av makrotillsynsåtgärder. [pdf], <https://www.fi.se/contentassets/a4a57058f9684015a801db0bb1527fa4/samlad-utvardering-makrotillsynsatgarder.pdf> [Accessed 11 May 2023]

Finansinspektionen. (2023). Den svenska bolånemarknaden. [pdf], <https://www.fi.se/contentassets/a35a4b8a4a1b4604acbc680ae763153/den-svenska-bolanemarknaden-2023-ny2.pdf> [Accessed 11 May 2023]



- Finocchiaro, D., Jonsson, M., Nilsson, C., Strid, I. (2016). Samhällsekonomiska effekter av att minska hushållens skuldsättning, Sveriges Riksbank, *Penning - och Valutapolitik*, pp. 57-89
- Finocchiaro, D., Nilsson, C., Nyberg, D., Soutanaeva. (2011). Household Indebtedness, house prices and the macroeconomy: a review of the literature, Sveriges Riksbank Review, vol. 1, pp. 6-28
- Guerrieri, v., Uhlig, H. (2016). Housing and Credit Markets: Booms and Busts, in Taylor, J., B., & Woodford, M (eds) *Handbook of Macroeconomics*, Elsevier Science, pp. 1427-1496
- Guerrieri, L., Iacoviello, M. (2017). Collateral Constraints and Macroeconomic Asymmetries, *Journal of Monetary Economics*, vol. 90, p. 28-49
- Hansen, S. (2013). PM 1 – Förklaringar till utvecklingen av hushållens skuldsättning sedan mitten av 1990-talet. [pdf],  
[https://www.fi.se/contentassets/da2afc6c2c9a44828f847ede2b46a1aa/pm1\\_131015ny3.pdf](https://www.fi.se/contentassets/da2afc6c2c9a44828f847ede2b46a1aa/pm1_131015ny3.pdf)
- Hellekant, J. 2022. Rekordlånga bostadsköer – men kötiden planar ut, Svenska Dagbladet, 9 September, <https://www.svd.se/a/8Jl5eE/rekordlanga-bostadskoer-men-kotiden-planar-ut> [Accessed 11 May 2023]
- Hume, M., Sentance, A. (2009). The global credit boom: Challenges for macroeconomics and policy, *Journal of International Monetary and Finance*, vol. 28, pp. 1426-1461
- Håkansson, P., Schüllerqvist, N., Billborn, J., Nordström, S. (2022). En ny statistik över hushållens tillgångar och skulder,  
<https://data.riksdagen.se/fil/9A9F8DE0-059A-4DF7-8C9F-2BBE95BC1AA8> [Accessed 11 May 2023]
- Jacobsen, H., Naug, B., E. (2004). What influences the growth of household debt? Norges Bank Economic Bulletin, vol. 04, pp. 103-1114
- Jordà, O., Schularick, M., Taylor, A., M. (2014a). Betting the house, *Journal of International Economics*, vol. 96, pp. 2-18
- Jordà, O., Schularick, M., Taylor, A., M. (2014b). The Great Mortgaging: Housing finance, crises, and business cycles, working paper, no. 20501, National Bureau of Economic Research
- Knoll, K., Schularick, M., Steger, T. (2017). No Price Like Home: Global House Prices, 1870-2012, *The American Economic Review*, vol. 197, no. 2, pp. 331-353

Nordea. (2023). Bolånetaket – vad är det och hur fungerar det?

<https://www.nordea.se/privat/produkter/bolan/bolanetak.html> [Accessed 21 May 2023]

Riksgälden. 2015. Drivkrafter bakom hushållens skuldsättning. [pdf],

<https://www.fi.se/contentassets/c72e73fd07124d9a8862fdce033d2cb7/drivkrafter-hush-skulder-150701-3.pdf> [Accessed 18 May 2023]

SCB (Statistikmyndigheten). (2021). Bolån till hushållen fortsätter att öka.

<https://www.scb.se/hitta-statistik/redaktionellt/bolan-till-hushallen-fortsatter-att-oka/>  
[Accessed 11 May 2023]

SCB. (2023a). Nyckeltal för inkomstutveckling, sparkvot, skuldkvot, räntekvot efter sektor, indikator och kvartal,

[https://www.statistikdatabasen.scb.se/pxweb/sv/ssd/START\\_\\_NR\\_\\_NR0103\\_\\_NR0103C/SektorENS2010KvKeyIn/table/tableViewLayout1/](https://www.statistikdatabasen.scb.se/pxweb/sv/ssd/START__NR__NR0103__NR0103C/SektorENS2010KvKeyIn/table/tableViewLayout1/) [Accessed 16 May 2023]

SCB. (2023b). Svenskar har höga skulder jämfört med andra europeer.

<https://www.scb.se/hitta-statistik/artiklar/2023/svenskar-har-hoga-skulder-jamfort-med-andra-europeer/> [Accessed 10 May 2023]

SCB. (2023c). Kvalitet och framställning.

[https://www.scb.se/dokumentation/kvalitet-och-framtagning/#:~:text=Statistiska%20registers%20framst%C3%A4llning%20och%20kvalitet%20\(DOKSTAR\)&text=vilka%20datak%C3%A4llor%20som%20har%20anv%C3%A4nts.%2C%20aktualitet%2C%20tillg%C3%A4nglighet%20och%20j%C3%A4mf%C3%B6rbarhet.](https://www.scb.se/dokumentation/kvalitet-och-framtagning/#:~:text=Statistiska%20registers%20framst%C3%A4llning%20och%20kvalitet%20(DOKSTAR)&text=vilka%20datak%C3%A4llor%20som%20har%20anv%C3%A4nts.%2C%20aktualitet%2C%20tillg%C3%A4nglighet%20och%20j%C3%A4mf%C3%B6rbarhet.) [Accessed 15 May 2023]

SCB. (2023d). Nyckeltal för inkomstutveckling, sparkvot, skuldkvot, räntekvot efter sektor och indikator. År 1950 - 2022,

[https://www.statistikdatabasen.scb.se/pxweb/sv/ssd/START\\_\\_NR\\_\\_NR0103\\_\\_NR0103F/SektorENS2010ArKeyIn/](https://www.statistikdatabasen.scb.se/pxweb/sv/ssd/START__NR__NR0103__NR0103F/SektorENS2010ArKeyIn/) [Accessed 16 May 2023]

SCB. (2023e). Nyckeltal för finansmarknadsstatistik 2006M01 - 2023M03,

[https://www.statistikdatabasen.scb.se/pxweb/sv/ssd/START\\_\\_FM\\_\\_FM5001\\_\\_FM5001X/NTFM5001/](https://www.statistikdatabasen.scb.se/pxweb/sv/ssd/START__FM__FM5001__FM5001X/NTFM5001/) [Accessed 16 May 2023]

Schularick, M., Taylor, A., M. (2012). Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870-2008, *American Economic Review*, vol. 102, no. 2, pp. 1029-61

Skatteverket. 2023a. Fastighetsavgift och fastighetsskatt.

<https://www.skatteverket.se/privat/fastigheterochbostad/fastighetsavgiftochfastighetsskatt.4.69ef368911e1304a625800013531.html> [Accessed 18 May 2023]

Skatteverket. 2023b. Förutsättningar för uppskov.

<https://www.skatteverket.se/privat/fastigheterochbostad/forsaljningavbostad/uppskov/forutsattningarforuppskov.4.233f91f71260075abe8800030623.html> [Accessed 18 May 2023]

Turk, R., A. (2015). Housing Price and Household Debt Interactions in Sweden. European Department, Working paper, no. 275, International Monetary Fund