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Mortgage Borrowing Revisited
- A study of Mortgage Equity Withdrawal in Sweden 2004-2006

Abstract
The aim of this master's thesis is to find out to which extent Swedish households with residential mortgages have withdrawn funds by increasing their mortgage debt, and what they have done with the funds withdrawn. Households' motives for withdrawing funds are also examined, as are the gross and net amounts withdrawn by a sample of Swedish mortgage takers in the 2004-2006 period. These figures are compared with an aggregate measure of mortgage equity withdrawal provided by the Swedish Riksbank. It is found that the most common uses for withdrawn equity are home improvements and vehicle purchases. The gross amounts of housing equity withdrawn have been substantial during the period, but it cannot be concluded that households with residential mortgages have caused a net flow of equity from the housing market when injections are accounted for.

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1. Introduction

> The more collateral a household can offer for their loans, the greater the possibilities to take on loans and thereby consuming. When the value of the household dwelling increases, it also gives an opportunity to take on further loans secured on housing, in order to finance rebuilding or renovations of the housing and further increase its value, or in order to consume other goods."[1]
>
> Lars Nyberg, Vice Chairman of the Swedish Riksbank

1.1 Why the housing market matters

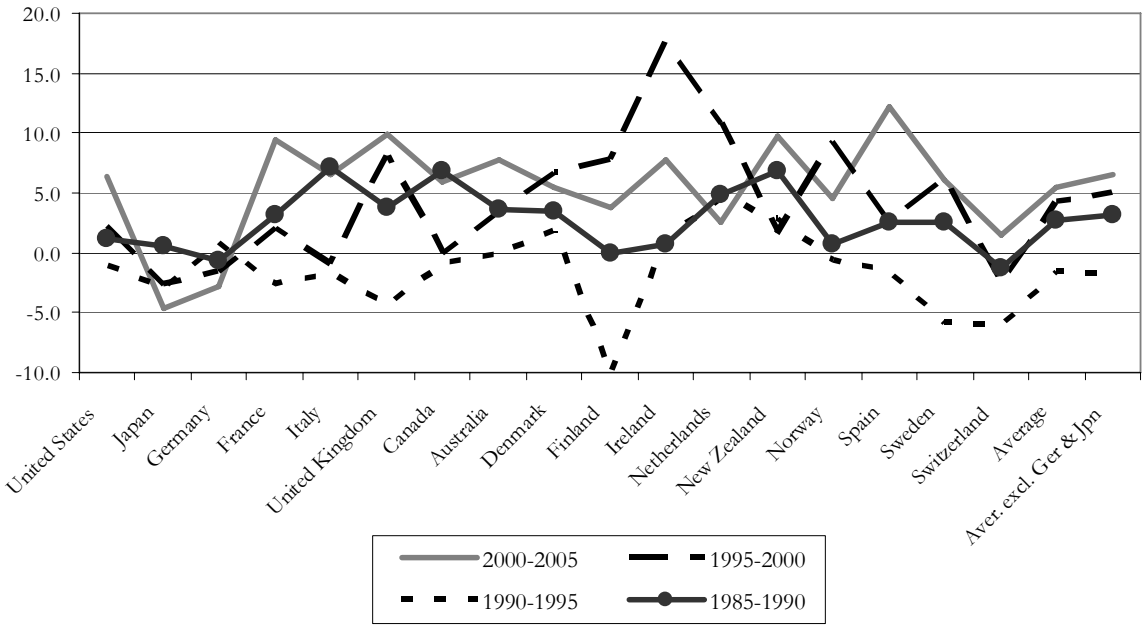
Everybody needs a place to live, and the decision where to settle down is one of the most important ones an individual makes. From a financial point of view, buying a home is probably the biggest investment in an individual's life. It is therefore no surprise that housing is top of the agenda of most people, and since society consists of an aggregate of individuals, policymakers are interested in the housing market as well. The housing market affects the overall economy in a number of ways. Residential investment affects the market for goods and services and increases the demand for jobs in the construction business and among its suppliers. Furthermore, turnover in the housing market creates demand for other services – real estate agents, insurance companies, financial services and so on. In addition, home-owners enjoy capital gains when prices on housing increase – gains that can be realized either through a sale or by taking on additional debt.

In recent years, many developed countries have experienced increases in the growth rate of housing prices. Figure 1.1 depicts the average percentage annual rates of change in real house prices for 18 OECD countries during four five-year time periods, starting with the period 1985-1990 and ending with the period 2000-2005. [2]

[1] "Ju större säkerheter ett hushåll kan erbjuda för sina lån, desto större blir möjligheterna att låna och därmed att konsumera. När värdet på den bostad som hushållet äger stiger, ger det också möjlighet att belåna bostaden ytterligare, t.ex. för att bygga till eller renovera och ytterligare höja värdet på bostaden eller för att konsumera andra varor." – Lars Nyberg, speech at Evli Bank, Stockholm 19 Dec 2005.

[2] How the term "real house prices" is defined and measured varies across countries. In many countries, it does not, for example, include prices of owner-occupied apartments.

Figure 1.1: OECD18 real house prices average annual rates of change



The highest average for the OECD18 group was reached in 2000-2005, with the second highest in 1995-2000. Researchers have also pointed out that a number of features in the current housing price boom have not been observed before: the size and duration of the real price increases, the degree to which they have moved together across countries, and the extent to which they have been disconnected from the business cycle (Girouard et al, 2006).

1.2 Savings rates and housing as an ATM

It is one aspect of the higher growth rate in house prices that has, arguably, attracted the most attention in recent years. As house prices increase, home owners might be tempted to realize some of the resulting capital gains. The process whereby capital gains on housing are transformed into cash is usually known as *mortgage equity withdrawal* (MEW) and is the topic of this master's thesis.[3] In this way, even though they do not add to income, capital gains can be used to finance consumption among other things.[4] We will return to the concept of MEW further down, defining it in more detail and elaborating on how it is measured.

[3] In the literature one also encounters the terms *housing equity withdrawal* and *home equity withdrawal.*
[4]. The reason capital gains are not included in income according to the standard national accounts definition is that only book saving can finance capital investment. There has been some argument about whether this is

In effect, it has been possible for home owners to use their housing as a kind of ATM (cash machine). This process has been fueled by low mortgage interest rates, in turn a result of lower inflation expectations and a number of other factors (Federal Reserve Board, 2005). According to one paper, four-fifths of the rise in home mortgage debt since 1991 in the US can be attributed to "discretionary extraction of home equity" (Greenspan and Kennedy, 2005). Needless to say, policymakers are aware of the link between consumption and the realization of capital gains from inflated house prices:

> "…it is difficult to dismiss the conclusion that a significant amount of consumption is driven by capital gains on some combination of both stocks and residences, with the latter being financed predominantly by home equity extraction."[5]

As households realize capital gains on housing to finance consumption, the measured savings rate falls (Federal Reserve Board, 2005).[6] A fall in savings rates, by itself, does not prove that people use their homes as cash machines. But it can be interpreted as an indication of mortgage equity withdrawal, and indeed, there exists are strong negative correlation of mortgage equity withdrawals with saving rates, for example in the US since the mid-90's. Whether there is also a causal link is more debated (Klyuev and Mills, 2006). We will return to the causality issue further down. The savings rate is an interesting measure in any case since it can be easily calculated from national accounts and is routinely published by governmental authorities across the world. The US savings rate has been steadily decreasing since the late 1980's and turned negative in 2005 (at which point it was also slightly negative in two

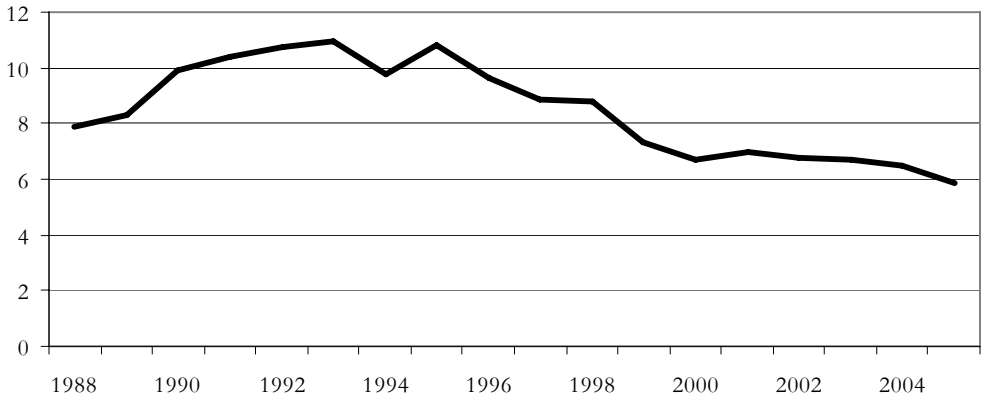
correct, however. Especially as some countries' savings rates have turned negative, there has been some criticism against this "flow" measure, where household saving is calculated as the difference between disposable income and consumption. A different approach would be to calculate saving as the change in net household wealth. See Klyuev & Mills, pp. 3-4, for a review of the discussion on this topic.

[5] Federal Reserve Board, 2005.

[6] This fact can be easily derived from the identity [household disposable income (Y) = household saving (S) + household consumption (C)], giving an expression for the household savings rate: $S / Y = 1 - C / Y$. When C increases without Y increasing, the savings rate S / Y falls.

European countries: Finland and Denmark). Average OECD household saving rates have been steadily decreasing since sometime in 1995, which can be clearly seen from Figure 1.2.[7]

Figure 1.2: OECD20 - Average household saving rates 1988-2005
(% of disposable household income)

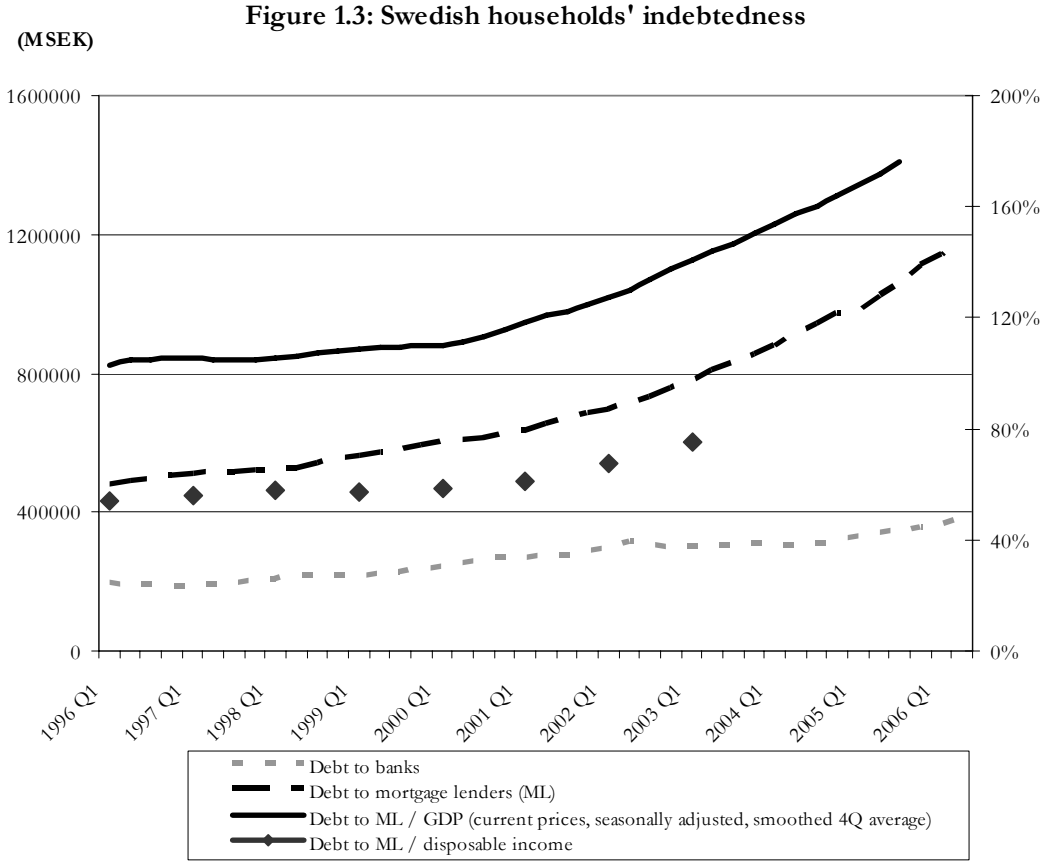


We note that the decrease in savings rates roughly corresponds to the period of increasing real house prices after 1995 that we can see in Figure 1.1. The average rate of change in real house prices has been positive for all five-year periods since 1985, except for the period 1990-1995, during which the OECD20 average household saving rates increased. This observation points to another possibility: that households might reduce their saving, for example through retirement programmes, when house prices increase, thereby pushing down the savings rate.

Sweden's household savings rate reached 7.9% in 2005, which is slightly higher than its average of 6.3% for the period 1988-2005 and well above the 2005 OECD20 average of 5.9%. The savings rate of Sweden's households has not been negative since the 1980's, and cannot be interpreted as a sign that Swedish households use funds extracted from housing to finance consumption. Instead, the discussion in Sweden has focused more on the debt burden of Sweden's households. Figure 1.3 shows the increase in Swedish households' debt to banks and mortgage lenders, as well as the debt to mortgage lenders as a share of GDP and disposable income, during the period 1996-2006. Debt to mortgage lenders over GDP has increased from around 100% to almost 180%, and debt to mortgage lenders over disposable income from 54% to 75%, in just a decade.

[7] The OECD20 group referred to here consists of the 30 OECD countries minus Greece, Hungary, Iceland, Ireland, Luxembourg, Mexico, New Zealand, Poland, the Slovak Republic and Turkey.

Figure 1.3: Swedish households' indebtedness



The Riksbank has expressed worries regarding the debt burden of Swedish households, worries that are reflected in an ongoing policy debate on whether the Riksbank should take into account housing prices when adjusting the repo interest rate.[8] Obviously, policy-makers in Sweden are also aware of the fact that household consumption makes up almost 50% of Swedish GDP, which makes it relevant to track and understand households' decisions to save or consume out of their disposable income. If in one year households decide to save more than previously, household consumption and thus GDP are affected directly (Statistics Sweden, 2006 (c)).

[8] The general idea here is that by increasing its key interest rate, the Riksbank might to some extent discourage households from taking on high levels of debt when purchasing homes in a market with inflated housing prices, and thereby cool off the housing market somewhat. For a glimpse of the debate, see for example Swedish daily newspaper Dagens Nyheter, 30 November, 2006: http://www.dn.se/DNet/jsp/polopoly.jsp?a=593361.

1.3 Research motive and question

Given the decreasing savings rates and the upward shift in the growth rate of real house prices in the OECD, combined with the importance of household consumption and the increased debt burden of Swedish households, one might expect mortgage equity withdrawal to have attracted a lot of attention in Sweden as well. This has not been the case. The explanation might be that household savings rates have not fallen sharply in Sweden, but nevertheless, the fact remains that there is very little literature on the subject in Sweden.[9]

This thesis therefore aims at providing an introduction to mortgage equity withdrawal in Sweden. More specifically, we wish to investigate *why* households withdraw equity with their housing as collateral, and *what the uses are* for the equity withdrawn. Furthermore, we will try to quantify the amounts of equity withdrawn, and say something about why different measures of mortgage equity withdrawal give different results and have different implications.

It is worth pointing out that this thesis does not take an interest in housing prices as such, in deciding whether the housing market is nearing or has reached a peak, or in judging whether the current levels of mortgage debt in Sweden are too high.

1.4 Outline

The thesis is organized as follows. In section 2 we provide the reader with a foundation for exploring MEW. This covers a definition of MEW, along with the components that constitute an aggregate measure and the problems arising when compiling such a measure. In section 3 we then outline the methodology used when gathering household data, and present the results from using this methodology. These results are then analyzed in further detail in section 4, where comparisons to aggregate figures and other surveys are made. We also try to provide a bigger picture with brief implications for lenders and policy makers. Conclusions are drawn in

[9] A few papers have been written on the relationship between asset prices and consumption in Sweden, but they are not concerned with mortgage equity withdrawal directly. The results from this literature are touched upon in section 2.1 below. Some Swedish commercial banks have briefly ventured into MEW territory though. SEB asked mortgage takers in 2005 and again in 2006 whether they had taken on additional mortgage debt to fund purchases of capital goods – 10% said they had in 2005, 11% in 2006. Nordea asked mortgage takers in 2005 whether they might consider taking on additional mortgage debt (without specifying a use for the funds withdrawn) – 20% said they might. 23% of respondents in the Nordea survey said they would consider increasing mortgage debt during the following two years to buy a car or boat.

section 5 and discussed in section 6. Section 7 and 8 contain references and appendices, respectively.

2. Approaching MEW

2.1 The link between housing wealth and household spending

Housing as a component in the wealth of households is in some respects special – many households own their home and have invested a lot of money in it, often more than in other assets they invest in, such as stocks, funds, bonds or retirement programmes.[10] Furthermore, a home is probably less frequently traded, for natural reasons, than for example stocks that the same household has invested in.[11] So, housing is a rather "sticky" asset, but one that nevertheless constitutes a large share of the wealth of many households.

Figure 2.1: Households' (housing wealth / total assets)
(market prices)

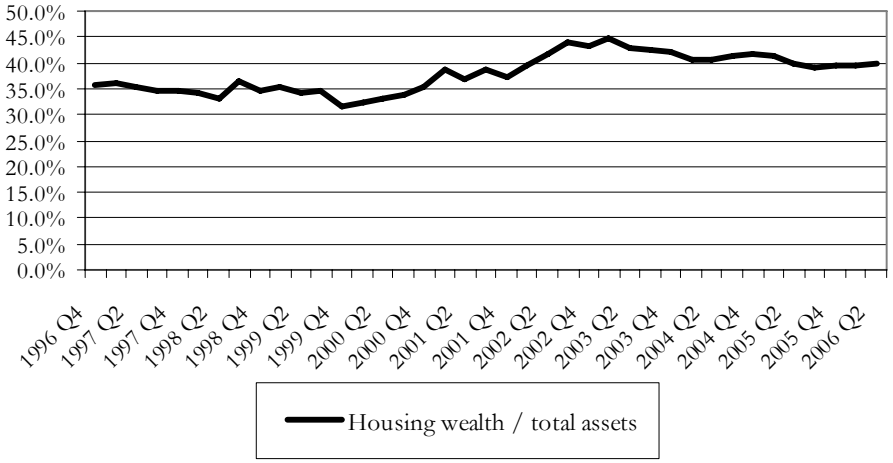


Figure 2.1 depicts Swedish households' housing wealth as a share of total household assets, both in market values.[12] The ratio has increased from 35.8% in 1996 to 39.8% in 2006, with a

[10] In 2001-2002:, 49.9% of the population in Sweden were owners-occupiers, another 15.4% lived in tenant-owned housing co-operatives (Sw. bostadsrätter) and 33.7% of the population lived in rented housing (Statistics Sweden, 2004).
[11] In 2004, the last year for which there is a reliable figure, transactions amounted to 5.8% of the stock (measured in units of housing, not in value), of the owner-occupied housing in Sweden. Turnover of tenant-owned co-operative apartments was higher (at 10.6%) than of single-family houses (3.5%) (Kilander, 2006).
[12] Total household assets has been calculated as the market value of housing held by households, plus interest-bearing assets and shares (Swedish and foreign) held by households. Interest-bearing assets include cash in the bank, certain insurance policies, government bonds, savings with the Swedish National Debt Office (Rikgsgäldsspar) and savings with the Premium Pension Authority (PPM). The figures are from SEB's Sparbarometer, Q3 2006. It should be noted that this is not a measure of *net* household wealth – this only shows gross housing wealth, before deduction of mortgage loans, as a share of total household gross assets.

peak at 44.6% in 2003. Since housing wealth constitutes such a large part of total household assets, it is hardly surprising that households react to changes in housing prices. As we noted above, housing is a "sticky" asset that is seldom traded. This means that capital gains on housing are not instantly available for households to spend. Even so, household might react to changes in housing prices.

Perhaps the most interesting variable in measuring the reaction of households to changes in housing prices is consumption. But how do changes in housing wealth relate to the consumption patterns of households? There exist two different schools of thought here. Proponents of the first argue that there is a direct link between housing wealth and consumption, so that households consume out of the capital gains on their home by increasing their residential mortgages, through mortgage equity withdrawal (MEW). Or, as the second line of argument goes, both housing wealth and consumption might be affected by the same fundamental drivers, such as confidence in the future and/or higher income expectations. In the latter case, changes in consumption are *not* caused by increased housing wealth and MEW. The first school of thought argues that if there is a slump in the housing market, so that the growth in housing prices slows down or turns negative, there will be a strong impact on consumption since household can no longer finance consumption through MEW. Which is correct? The academic answer so far, based on a number of surveys in the US, UK and across OECD countries, seems to be that MEW is primarily occurring through housing transactions, and not by households increasing their existing residential mortgages. Furthermore, it seems that only a small part of the equity withdrawn through MEW is used to finance consumption (Klyuev and Mills). Even so, there exists a strong positive correlation between changes in MEW and consumption. In the UK, the coefficient has been estimated at 0.5 for the period between 1987 and 2000 (Davey and Earley, 2001), but this does not in itself imply causation.

In Sweden, different estimates for the marginal propensity to consume out of housing wealth have been proposed. Chen (2005) finds that for a 1 SEK rise in net housing wealth, 0.056 SEK is consumed. His study is based on Swedish quarterly aggregate data spanning from 1980 Q1 to 2004 Q4. Johnsson and Kaplan (1999) estimate the long-run marginal propensity to consume out of net housing wealth to be slightly lower, at 0.04, based on Swedish annual data for the period 1970-1998.

Summing up: regardless of whether one believes that rising house prices increase consumption through MEW, or that rising consumption and MEW are caused by the same drivers, it is clear that housing wealth matters to households and that MEW is a channel for extracting gains from increased housing wealth. We now need to define MEW in order to be able to continue our analysis.

2.2 Defining MEW

Mortgage equity withdrawal (MEW) arises when households borrow money with their housing as collateral and can be defined as *the flow of secured lending out of the owner-occupied housing market after taking into account all injections and withdrawals*. This definition takes into account loan repayments (amortizations) and is thus a net measure. When we speak of MEW in this thesis, we refer to this net measure.

MEW is a measure of residential borrowing spent on other things than home purchases or home improvements. The latter (home improvements) is considered an investment and as such increases the market value of the home by the full cost of the improvements.[13] Thus, if money is borrowed with housing as collateral (a *withdrawal* from the housing market) and the full amount is spent on home improvements (an *injection* into the housing market) the two will simply cancel each other out.

We have thus defined MEW on a conceptual level, but we need to be more specific if we want to estimate MEW in Sweden and compare it to MEW in other countries. This is where defining MEW becomes somewhat tricky, and we need to break it down into its components.

[13] This is also the case in Sweden. In the Swedish national accounts, all "consumption" of construction-related items is treated as investment in the housing stock, even though it is carried out by private individuals (Statistics Sweden, 2006 (c)).

2.2.1 Components of MEW[14]

There exist six major ways in which a household can withdraw housing equity, summarized in Table 2.1 below.

Table 2.1: Components of MEW

Type of withdrawal	Descriptions
Last-time sales	A property is sold by someone and the proceeds are released from the housing market, i.e. they are not used to finance further housing purchases. This typically occurs due to inheritances and divorces.
Trading down	An individual sells his/her home and moves to a cheaper one, paying off his mortgage or reducing it by less than the difference in housing prices.
Over-mortgaging	An individual increases his/her mortgage by more than the difference between the old and the new house prices.
Re-mortgaging	An individual increases his/her mortgage without moving house and does not spend all of the money on improving the property.
Further advances and second mortgages	An individual takes a second loan (not necessarily a mortgage loan) secured on his/her existing property and does not spend all of the money on improving the property.
Sales to other sectors	An individual sells his/her property to an agent in another sector (e.g. a housing association or a business), thereby reducing the owner-occupied housing stock.

Source: Davey and Earley - Mortgage Equity Withdrawal (2001)

From these six means of withdrawing equity, two distinct categories of withdrawers can be derived. There are *borrowers* – those who borrow to withdraw equity (Over-mortgaging, Re-mortgaging, Further advances and second mortgages), and *other withdrawers* – those who withdraw equity from the proceeds of the sale of their property (Last-time sales, Trading down and Sales to other sectors). There is a major difference between the two, as the o*ther withdrawers* category do not increase their indebtedness as they withdraw equity. Their withdrawals are results of sales, and the long-run changes in the amount of such withdrawals

[14] This section builds heavily on Davey and Earley (2001), but the definitions and perspectives used are found extensively in the literature on MEW and are not specific to these authors.

will most likely depend on structural changes in mortality and divorce rates.[15] The other category, *borrowers*, increase their indebtedness in order to withdraw equity, and the decision to do so will probably depend on interest rates, housing prices or liberalized financial markets. In fact, this category of MEW has by some authors been labeled *quasi-consumer credit* due to its similarities to unsecured lending, and we conclude that the reasons behind the two groups' withdrawals will most likely not be same.

Repeating the definition of MEW from above: MEW is *the flow of secured lending out of the owner occupied housing market after taking into account all injections and withdrawals*, with repayments of loans included in the injections component. The total amount of MEW in an economy at any time t will be the sum of borrowers' and other withdrawers' MEW,

$$MEW_t = MEW_{B,t} + MEW_{O,t}$$

As stated above, the underlying motives for withdrawing equity will probably not be the same for the two groups and it might be justified to analyze the two components separately. In this master's thesis, we will focus on borrowers' MEW. We do this for the following reasons:

- Previous literature has indicated that $MEW_{B,t}$ is more sensitive to changes in the business cycle, and studying $MEW_{B,t}$ might increase our knowledge of how the economy might be affected by cycles in the housing market. This aspect is of interest to central banks setting interest rates, since interest rates affect the loan behavior of individuals. It might also be of interest from a financial stability perspective, since increased household indebtedness makes households more vulnerable to downturns in the economy.
- Lenders, such as banks and mortgage institutes, might be interested in the market for MEW-related products, and the most interesting target group is

[15] However, short-term variations in the value of such withdrawals will most likely depend on other factors such as the house price level, interest rates etc. See Davey and Earley (2001) for a further explanation on this matter.

potential $MEW_{B,t}$ households, since they are, by definition, the ones extracting equity through increased borrowing.

2.3 Measuring MEW

There exist a number of ways of measuring MEW, and it can be done on a number of different aggregate levels, from the individual borrower to the national accounts. In the literature, one encounters three methods of quantifying MEW:

- *National accounts (macroeconomic measure).* The easiest way to calculate the total amount of MEW in an economy on a regular basis is to use national accounts (macroeconomic) data, or other regularly compiled data sets from national statistics agencies where such exist. Such an approach will make a measure easy to follow over time, which is of interest for policy makers and others. However, using macroeconomic data makes it harder, if not impossible, to break down MEW into its components in order to assess the impact of borrowers.
- *Microeconomic flow measures.* Basically, this approach aims at quantifying directly the six components of MEW listed in Table 2.1. Whereas such quantifications have been done by Holmans (2001) using vast amounts of data from different sources, similar data is not readily available in Sweden. Second, the calculations involved would demand making somewhat unrealistic assumptions, as Davey and Earley (2001) have pointed out. Third, the tedious work associated with such calculations makes such measures unrealistic to follow on a regular basis.[16]
- *Consumer surveys.* This is the most direct way of measuring MEW, but also the most demanding in terms of staff resources.[17] The upside is evident, however: Using surveys, it is possible not only to quantify MEW, but also to assess directly the casual links

[16] Holmans' measure is based on both national accounts and survey data. He groups his sources into the following categories: statistical series (regular monthly, quarterly and annual), periodical regular surveys and one-off surveys. Mixing these types of sources makes his measure hard to follow up. In the case of survey data, Holmans has, in the absence of new surveys, regularly used ratios from older surveys and assumed that they apply also for latter years. He concludes himself that his measure "can convey a greater precision than is warranted by the sources" (Holmans, 2001). Holmans uses the Survey of English Housing (SEH), a major household interview survey, as one of his sources. One specific example where Swedish data is not readily available is the part in the SEH which looks at the number of moving owner-occupiers with mortgages on their previous dwellings.

[17] An example of the consumer approach is the Survey of English Housing, involving face-to-face interviews with 15 000 households. We find this approach to be beyond the scope of this master's thesis.

between, for example, MEW and consumption. The demanding nature of consumer surveys means they are not conducted very frequently, though.

This thesis focuses on borrowers' MEW in Sweden, a topic which we will approach by means of a consumer survey. First, though, we introduce the Bank of England's measure of total MEW (i.e. including both $MEW_{B,t}$ and $MEW_{O,t}$). This is done in order to show how an aggregate MEW measure can be calculated from national accounts. It is also used as a reality check for the Swedish Riksbank's hereto unpublished MEW measure, which we introduce next. If sufficiently small and slow-growing, the Riksbank's measure might indicate that Swedish MEW is negligible from a policy makers' perspective in the first place. In any case, although it will not give us a good measure of the equity withdrawn by borrowers, it will give us an upper bound for the value, since by definition $MEW_t > MEW_{B,t}$.

We thereafter grab the bull by the horns, setting out to quantify borrowers' MEW in Sweden directly, using a consumer survey. We note here that quantifying all six components of MEW would demand a large survey with detailed questions about housing sales, mortgage loans and consumption over time, so it is convenient to focus on borrowers' MEW as we choose to do here. To be even more precise, we focus on Re-mortgaging, Further advances and second mortgages[18]. When we henceforth refer to $MEW_{B,t}$, we mean mortgage equity withdrawal through these two channels.

2.3.1 A macroeconomic approach: The Bank of England MEW measure

Since MEW is net money flows from the housing market to households, a natural way of calculating an aggregated measure is to take the amount of net mortgage lending during a period of time and subtract various investments in housing. Most housing transactions involve one household taking on a mortgage loan and another household repaying a loan, and these housing transactions have a zero net effect on MEW. Hence, we need only take into account investments in newly built housing, or transfers between the household sector and other housing owners (e.g. organizations). These investments and transfers, as well as loan

[18] We actually leave out over-mortgaging even though it belongs to borrowers' MEW, since over-mortgaging, too, would demand detailed questions about housing sales.

repayments, can then be subtracted from lending, and we arrive at a measure of the net amount of secured lending flowing from the housing market to households.

An aggregate measure of UK MEW (i.e. a measure of MEW_t) is calculated by the Bank of England, using data from the British Office for National Statistics (ONS). This is how it is calculated:

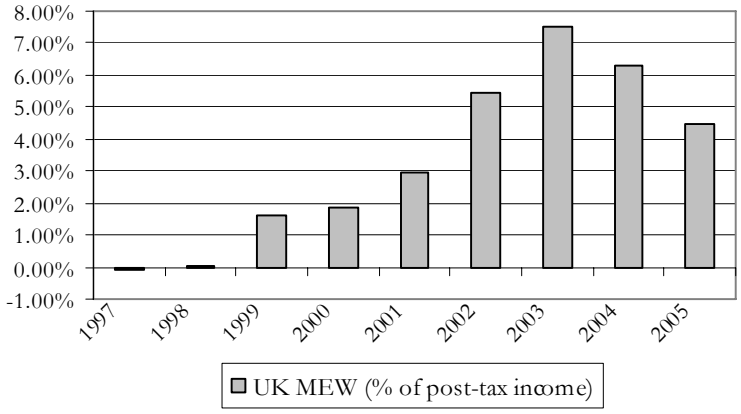
+ Household net lending secured on dwellings (BoE Monetary and Financial)
+ Capital grants for housing paid to the personal sector and housing associations (ONS)
- Household sector investment in dwellings (ONS Blue Book)
- Net transfers of land to the household sector (ONS UK Economic Accounts)
- Household transfer costs and transfers of dwellings between sectors (ONS Blue Book)
= UK Aggregate Net Mortgage Equity Withdrawal

The subtractions include the household sector's investments in new dwellings, purchases of dwellings and land from other sectors (e.g. government right-to-buy schemes) and the transfer costs of moving (such as stamp duty and estate agent fees, while these are measured by the ONS as investment, not consumption expenditure).[19]

The UK MEW measure as a percentage of post-tax income for the years 1997 to 2005 is presented in Figure 2.2 below[20]. We see that UK MEW has been positive during most of the time period, i.e. more equity was withdrawn than injected into the housing market. During 1999 to 2003, UK MEW reached higher levels and peaked in 2003 where it reached 7.5% of post-tax income, after which it has been steadily declining.

[19] In the appendix, a table showing the ONS data codes for obtaining the above information is presented.
[20] Source: http://www.bankofengland.co.uk/statistics/mew/2006/jun/index.htm

Figure 2.2: UK MEW (% of post-tax income)



2.3.1.2 Calculating an aggregate Swedish MEW measure

In contrast to Bank of England's MEW measure calculated using ONS data, no one has so far proposed a standardized Swedish equivalent measure. This does not, however, mean that MEW as a phenomenon is unknown to Swedish policy makers and mortgage lenders. The Swedish Riksbank's Financial Stability Department has used a number of measures similar to the Bank of England measure, one of which is presented below. The measure uses data from Statistics Sweden and the Riksbank itself, information which in most cases can be downloaded from the Internet. The Riksbank's measure, hereafter referred to as MEW_{rb}, is calculated as

+ Net lending secured on dwellings (The Riksbank's financial market statistics)[21]
- Gross residential property investment (Statistics Sweden)[22]
= MEW_{rb}, Swedish Aggregate Mortgage Equity Withdrawal

Calculations of MEW_{rb} are presented in Table 2.2 below.

[21] Sw. "Förändringar i bolånestocken" (Riksbankens finansmarknadsstatistik). In practice, this money comes from mortgage institutions only, which is elaborated upon below.
[22] Sw. "Fasta bruttoinvesteringar efter investeringstyp (ENS95)" (Nationalräkenskaperna, SCB).

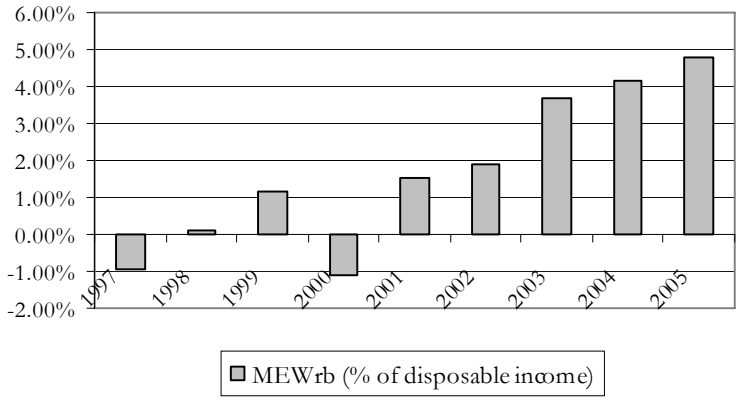
Table 2.2: MEW_{rb} measure

(MSEK)	2000	2001	2002	2003	2004	2005
Net lending secured on dwellings	27041	62330	73989	100850	117452	138611
Gross residential property investment	38923	44638	50520	54067	63596	74807
MEW_{rb}	-11 882	17 692	23 469	46 783	53 856	63 804
Disposable income	1078042	1170090	1230828	1268210	1301320	1337755
MEW_{rb} / Disposable income, %	-1.10%	1.51%	1.91%	3.69%	4.14%	4.77%

Source: Riksbanken

MEW_{rb} as a percentage of disposable income for the years 1996-2005 is presented in Figure 2.3 below.

Figure 2.3: MEW_{rb} (% of disposable income)



What we see here differs quite a lot from the UK figures. MEW_{rb} stays below zero (i.e. equity is injected into the housing market) during 1997, 1998 and 2000, after which it starts increasing. In the end of 2005 (as well as during the first quarter of 2006), MEW_{rb} has almost reached 5% of disposable income, a figure comparable to the UK average figures during the same period, although it does not come close to the high UK figures of around 7.5% in 2003. During 7 of the 9 years during the period 1997-2005, the UK measure is higher. The average for the period 1997-2005 is 3.34% for the UK, compared to 1.69% for Sweden.

We note, however, that MEW_{rb} is made up of two components only, net mortgage lending and gross residential property investment. This makes the measure straightforward to calculate, but

such simplifications obviously lead to lack of precision, giving rise to problems on both the plus and the minus side of the MEW equation. On the plus side, capital grants are missing. According to the Bank of England, capital grants represented around 20% of UK MEW in 2000. Furthermore, net lending in the Riksbank's financial market statistics does not include the share of mortgage loans provided by banks, which leads to a significant underestimation of net lending.[23] On the minus side, MEW_{rb} does not take into account investments in co-operative tenant-owned apartments, net transfers of land to the household sector, nor transfer costs. Second, the Statistics Sweden data used (i.e. gross residential property investment) does not include all home improvements. Judging from the historical impact of land transfers and home improvements on UK MEW, where transfers made up the largest figure in absolute terms, not including them in the MEW_{rb} measure will most probably lead to an overestimation of MEW_t in Sweden. In addition, MEW_{rb} does not tell us anything about borrowers' MEW in Sweden. Summing up, we conclude that even though we have now presented a measure of total Swedish MEW, we need a different approach in order to arrive at a more precise measure of borrowers' MEW.

2.3.1.3 The survey approach to measuring $MEW_{B,t}$

As said before, when using aggregate figures little is said about actual consumer behavior. Even though a regression analysis might prove MEW to be significantly correlated with aggregate consumption, or housing prices to be correlated with MEW, this does not necessarily imply causality. In addition, with aggregated macroeconomic data there is the problem of estimating borrowers' MEW, since when taking on additional mortgage debt, a loan taker is not obliged to telling what the money will be used for, making borrowers' MEW hard to separate from MEW by other withdrawers. In order to assess the causality between interest rates, house prices, additional mortgage loans and consumption, as well as to quantify

[23] This might sound strange to the reader, but the fact is that most mortgage loans in Sweden are provided not by banks but by mortgage institutes (Sw. bolåneinstitut/bostadsinstitut). Banks generally provide only a part of the residential mortgage loan. Mortgage institutes might provide 85% of the purchasing price of a new home, while a bank might provide another 5%, for a total loan-to-value ratio of 90%. The top 5% of the total mortgage loan would normally come with a higher interest rate and tougher amortization plan than the bottom 85% of the total loan. In January of 2006, some 15.4% of total loans approved to Swedish households, with housing as collateral, were provided by banks rather than mortgage institutes (Statistics Sweden, 2006 (b)).

borrowers' MEW, a direct approach is justified – namely asking households about their mortgage loans and how these are used.

One might ask why we would want to settle with an upper bound for $MEW_{B,t}$ by only asking mortgage takers about additional loans in general. Why not ask specifically about additional loans used for other purposes than investment in housing, which would give an accurate measure of borrowers' MEW? Well, in our survey we do that too. By only considering the amount of additional loans taken by mortgage takers who said that they used the money for other purposes than home improvements, we can subtract the sum of all repayments in a similar fashion and arrive at a more correct estimate of $MEW_{B,t}$, which is done in section 3.3. However, in order to be able to compare our survey results with the MEW_{rb} measure, we consider all net additional loans instead of the "pure" $MEW_{B,t}$ measure (i.e. the measure that only considers net additional loans used for other purposes than home improvements and the like).

3. A household survey of borrowers' MEW in Sweden

3.1. About the survey

3.1.1 General information and aims

Our household survey, which can be found in the appendix, was conducted between 27 and 29 November 2006 by Synovate Sweden, a Swedish market research agency formerly known as Temo.[24] The survey was financed by Nordea, the Nordic financial services and banking group.

The main aims of the survey were the following:

- To investigate borrowers' motives for withdrawing mortgage equity.

[24] Temo was acquired in 2005 by Synovate, a global market research company with some 5500 employees in 50 countries.

- To investigate the uses of funds extracted through mortgage equity withdrawal by borrowers.
- To quantify

- Net additional loans taken by borrowers in Sweden during 2004-2006, i.e. the net amounts withdrawn by all households with existing residential mortgages after subtraction of loan repayments. Net additional loans includes funds used for home improvements and the like, and is as such not measure of MEW.

- The amount of borrowers' MEW, $MEW_{B,t}$, in Sweden during 2004-2006. Our definition of $MEW_{B,t}$ is mortgage equity withdrawn by Re-mortgaging and Further advances and second mortgages (see Table 2.1 for definitions), i.e. not including over-mortgaging occurring in connection with moving.

- The net and gross amounts of equity withdrawn by $MEW_{B,t}$ households (this is not the same as above, since we do not consider repayments by other households in the net measure, and no repayments at all in the gross measure here).

The questions included in the survey have been specified by the authors of this master's thesis, but survey technicalities, such as the order of questions, wording, etc., have been decided in co-operation with the staff at Synovate Sweden and Nordea. The authors have also discussed the survey questions with Prof. Peter Englund at the Stockholm School of Economics, as well as with Martin W. Johansson of the Swedish Riksbank's Financial Stability Department. For natural reasons, the survey was carried out in Swedish, but we present here the results in translation. The translations have been done by the authors.

3.1.2 Target group

The survey focuses on borrowers' withdrawals of housing equity in Sweden. When designing a survey, one must begin by deciding what age group might be relevant, whether to target households or individuals, and other more specific issues relating to the nature of the survey aims. Our starting point has been individuals in the 25-65 age bracket that own their home and have residential mortgages, simply because this is a subset of the Swedish population that can be easily targeted using an existing database with these parameters specified (namely, the Synovate Sweden web panel – more on this in the methodology section below). Excluding the

age groups below 25 and above 65 will lead to an underestimation of MEW, since there are some households between 18 and 25 as well as over 65 with mortgage loans (an individual under 18 is not allowed to have a mortgage loan). However, the mortgage loan group aged 18-25 will probably be quite small, since this group includes students with limited economic means. This also goes for senior citizens; although the group aged 65-75 might still have some mortgage loans left that will not be included in our survey. Even though we target individuals, the questions we ask them concern the household they live in. Targeting individuals, but asking about the household they are a part of, means that we let one individual represents a household with more than one member on average. This is efficient, since we would have to target a larger number of individuals if we only asked about that specific individual's mortgage loans. Furthermore, housing is, for natural reasons, closely associated with the household as a unit, and so it makes sense for the respondents to answer questions about the household's residential mortgages. Henceforth, when we speak of household, we mean the household the individual participating in the survey belongs to.

Why do we target owners-occupiers with residential mortgages? Again, this has been done for practical reasons. Our focus is borrowers' equity withdrawals. By targeting only owners-occupiers we might miss out on individuals that have sold their home but did increase their residential mortgage during 2004-2006 before selling. Furthermore, we exclude individuals who might have had a residential mortgage in, say, 2004, but then amortized it down to 0 and therefore is not included in our survey.

3.2 Methodology

3.2.1 Choice of method

When carrying out a consumer survey, there are several methods to choose from, phone interviews and questionnaires filled out by the interviewees being among the most common ones. For this specific survey, a web questionnaire was used. The reason for choosing a web questionnaire was the speed and cost efficiency in such an approach, combined with the nevertheless fully acceptable integrity and quality of the database used as a basis for the sample taken.

3.2.2 The sample

The sample was collected by sending out an e-mail to 1 300 members of the Synovate web panel matching the selection criteria (25-65-year-old owners-occupiers with residential mortgages). The e-mail contained a link to a web questionnaire with 26 questions, through which information was collected from the interviewees.[25] A total of 701 persons clicked the link in the e-mail, giving a response rate of 53.9%. Out of these, 126 persons were screened out since they claimed not have a mortgage loan (even though they were recorded in the Synovate database as having one), while 41 people did not complete the questionnaire. This brings the number of respondents from which we collected a complete set of answers down to 534 (or 41.1% of the number of persons that received the e-mail). These 534 individuals constitute our sample.

The individuals targeted had previously been contacted as part of the Temo omnibus survey (Temo Direkt) and had all agreed to participate in Temo Synovate's web panel. The Temo Direkt omnibus survey targets 1 000 Swedish households every week and is representative of the population as a whole. The web panel participants are representative of the population using the Internet, but taking the high level of internet penetration in Sweden into consideration, the web panel closely resembles, and can be used as a proxy for, the population as a whole.[26]

3.2.3 Questionnaire design

Included in the web questionnaire were general questions about where the household is situated, about age and level of education of the interviewee, as well as yearly income and size of the household (defined as the number of people eating together on a daily basis). We then proceeded by asking about type of housing (house/apartment etc.), about the size of their mortgage loan and their perceived loan-to-value ratio (mortgage loan/market value of residence).

The lion's share of the survey was dedicated to questions about additional mortgage loans. We asked all households if they have taken on additional mortgage debt with their housing as

[25] The actual number of questions answered varied with the response pattern of the interviewee.
[26] Temo Synovate sometimes uses a method called Propensity Score Weighting to correct for potential differences between the online and offline populations. Due to a sufficiently high internet penetration within the target group (25-65-year-olds), the method was not used in this particular survey.

collateral anytime during the years 2004-2006. We asked them how much they borrowed during each of these years, and whether they paid back some of their mortgage loans during the same years. For those taking on additional debt, we then asked how the money was used, and what their motives behind taking on additional mortgage debt were. We also asked whether they would consider taking on additional mortgage debt during the years 2007-2009 and what they would then do with the money.

The survey concluded with a number of questions regarding the households' general view of the economy (i.e. what they think of interest rates, their private economy and the market value of their residence) and their attitude towards mortgage lending.

3.2.4 Quantitative vs. qualitative data

Following Trost (2001) we might argue that no survey, including this one, is purely quantitative or qualitative. In this survey, different types of answers were collected. We might divide the data collected into quantitative and qualitative, and break these categories down even further. The purely quantitative data includes answers to questions about household size and income, size of mortgage loan, amounts of additional mortgage loans taken, and amortizations. Some quantitative inputs were given in integers (whole numbers), while others were given in intervals. For the questions regarding the use of funds withdrawn, the answers were grouped into categories. The reasons for withdrawing equity were ranked on a scale of 1-5. The questions of a more qualitative nature include views on the future developments of interest rates and the financial situation of the household itself.

As the authors of the survey, we have enforced some qualitative judgments regarding what category some inputs belong to. For example, we have simply defined MEW withdrawals as all uses of withdrawn funds other than home improvements, purchase of a second home, housing abroad and/or housing for one's children.

3.3. Results from the consumer survey

As stated above, 534 individuals, representing an equal number of households, turned out to have a mortgage loan. 229 households (which accounts for 42.9% of the sample) said that they

increased their mortgage loans during the period 2004-2006. We label this group *additional loan takers*. However, only 211 of these households provided us with the amounts by which they increased their loan. The average loan increase per household among these 211 households during the period 2004-2006 was SEK 208 901. We asked the interviewees what they did with the money, presenting them with a number of alternatives. Three of these were related to investments in the housing stock (home improvements, weekend houses and housing for one's children) and are therefore not labeled as mortgage equity withdrawals. 126 households (23.6% of the sample) said that they had increased their mortgage loans and used at least part of the money for other purposes than home improvements, weekend houses and/or housing for one's children, during the period 2004-2006. We call this latter group *mortgage equity withdrawers*. 117 of these provided us with figures for their loan increases, and the average loan increase per household across these 117 households for the period 2004-2006 was SEK 178 048.

Furthermore, 178 households said they could consider increasing their mortgage loan during the period 2007-2009. Out of these, 78 households increased their mortgage loan in 2004-2006.

3.3.1 Additional mortgage takers and their motives for withdrawing equity

229 households in our sample increased their mortgage loans during the period 2004-2006. We asked them what they did with the money, and allowed up to three different simultaneous answers (since a mortgage taker of course might use an additional loan for multiple purposes). In Table 3.1 below is a summary of how the money was used, with confidence intervals on the 5% level presented for percentages over 3%.[27]

[27] These calculations are based upon a binomial distribution approximated by a normal distribution, with values tabulated by Synovate.

Table 3.1: Uses of additional mortgage loans

Use of additional loan	Number	% of 229 additional-loan takers	+/-	% of total sample
Improvements to the home	149	65,1%	6,8%	27,9%
New furniture/goods for the home	10	4,4%	3,1%	1,9%
Purchase of car/boat	96	41,9%	6,9%	18,0%
Purchase of capital goods	9	3,9%	3,1%	1,7%
Consumption (clothing, food etc)	1	0,4%		0,2%
Holiday in Sweden	1	0,4%		0,2%
Holiday abroad	4	1,7%		0,7%
Weekend house/second home in Sweden	5	2,2%		0,9%
Longer trip (eg. trip around-the-globe)	1	0,4%		0,2%
Investments in securities (eg. stock, funds)	4	1,7%		0,7%
Paid off other debt (non-housing loans)	15	6,6%	3,1%	2,8%
Buy housing for my children	1	0,4%		0,2%
Other gift or loan to my children	3	1,3%		0,6%
Other use	19	8,3%	3,1%	3,6%

Source: Synovate

It is worth noting here that the total number of responses here sum to 318, which exceeds the 229 households that increased their mortgage loans during the period 2004-2006. Similarly, the percentages add up to more than 100. That is simply because the respondents were allowed to specify more than one field of use for the equity withdrawn, as stated above.

The most common use by far is home improvements (65.1% of additional mortgagers), followed by purchase of car/boat (41.9% of additional mortgagers). There are 43 respondents (18.8% of additional mortgagers) that have used withdrawn equity *both* for home improvements and car/boat purchases. Since many of the loan uses were ticked by a small number of households only, the percentages of households using the money withdrawn for consumption, holidays etc. cannot be considered significantly different from zero on a 5% level. The only significant response options worth mentioning are "paid off other debt" and "other use". Under the label "other use" we note purchases of shares/companies, investments in the start-up of a business, purchase of real estate and installation of ground source heat pumps.

Turning to the motives behind increased mortgage loans, we arrive at Table 3.2 below. We see here that both the low interest rates and increased market value of residences were considered important or very important by around 50% of the households when deciding to increase their

mortgage loans. Furthermore, around 40% of the households considered consolidating their loans to be quite important or very important.

Table 3.2: Factors affecting the decision to increase the mortgage loan

Feature	Not at all important	Not so important	Neither/ Nor	Quite important	Very important
Information from my primary bank	36%	17%	28%	14%	5%
Higher income	28%	19%	28%	21%	4%
My bank allowed a higher loan-to-value ratio than before	31%	16%	30%	19%	4%
Increased market value of residence	15%	70%	27%	31%	20%
More advantageous loan repayment requirements than before	25%	18%	32%	18%	7%
I wanted to consolidate my other loans (eg. car loans)	33%	10%	17%	24%	15%
Generally lower interest rates	14%	9%	21%	34%	23%

Source: Synnovate (2006)

3.3.2 Mortgage equity withdrawers

We now turn our attention to the 126 mortgage equity withdrawers in our sample (keep in mind though that only 117 of these provided us with the sum withdrawn). As mentioned above, these are defined as households having increased their mortgage loan in the period 2004-2006, not solely using the money withdrawn for home improvements, weekend houses and/or housing for one's children. However, 63 out of the 126 mortgage equity withdrawers actually used part of their withdrawn money for investments in housing, which makes the amount withdrawn subject to uncertainty as to how much of it that was really used for purposes other than housing. We return to the effects of our somewhat broader definition of mortgage equity withdrawal in section 6. The uses of the withdrawals are summarized in Table 3.3 below. Confidence intervals on the 5% level are presented for the relevant answer alternatives.

Table 3.3: Uses of MEW loans

Use of equity withdrawn	Number	% of 126 mortgage equity withdrawers	+/-	% of total sample
Improvements to the home	63	50,0%	10,0%	11,8%
New furniture/goods for the home	10	7,9%	6,0%	1,9%
Purchase of car/boat	96	76,2%	8,7%	18,0%
Purchase of capital goods (tv, stereo etc)	9	7,1%	6,0%	1,7%
Consumption (clothing, food etc)	1	0,8%		0,2%
Holiday in Sweden	1	0,8%		0,2%
Holiday abroad	4	3,2%		0,7%
Weekend house/second home in Sweden	1	0,8%		0,2%
Longer trip (eg. trip around-the-globe)	1	0,8%		0,2%
Investments in securities (eg. stock, funds)	4	3,2%		0,7%
Paid off other debt (non-housing loans)	15	11,9%	6,0%	2,8%
Other gift or loan to my children	3	2,4%		0,6%
Other use	3	2,4%		0,6%

Source: Synovate

Naturally, improvements to the home decreases as a share of the loan takers since households citing that as only use of their loans have been explicitly ruled out when defining our mortgage equity withdrawers. We see now that purchases of car and boats dominate the group, along with households paying off other debt. This is in line with the analysis above regarding consolidation of loans.

3.3.3 Characteristics of additional loan takers and mortgage equity withdrawers

What, then, are the characteristics of a household withdrawing equity? We break down additional loan takers and mortgage equity withdrawers by their (mortgage loan/market value of residence) ratios, and compare these with a corresponding breakdown of the sample as a whole. We then perform similar breakdowns by household income and age. The results are presented in Figures 3.1 and 3.2 below.

Figure 3.1: Breakdown by loan/market value

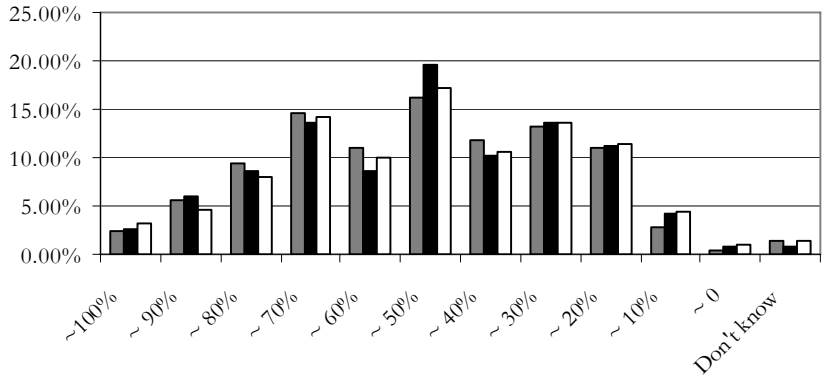


Figure 3.2: Breakdown by household income

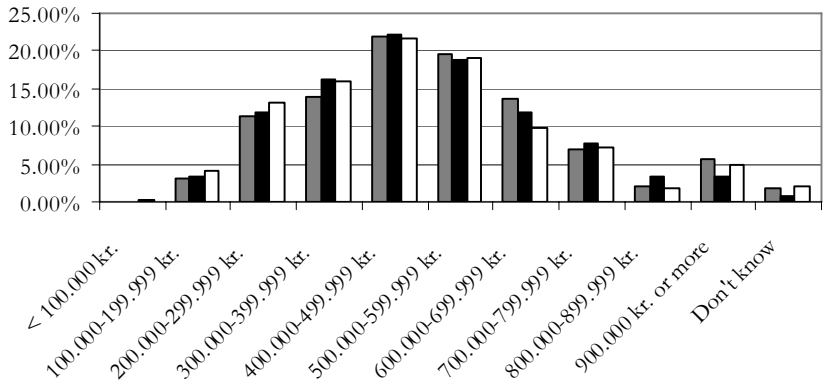


Figure 3.3: Breakdown by age

The three groups differ little. Additional loan takers and mortgage equity withdrawers share roughly the same characteristics in terms of mortgage indebtedness and income – most of them have a mortgage loan of around 50% of their housing market value, and a household income of around SEK 450 000. Equity withdrawers having increased their indebtedness hence do not differ a lot from mortgage takers in general. One exception can be found, though. Within the age category 26-35-year-olds, both additional loan takers and mortgage equity withdrawers are underrepresented in comparison to the sample in general.

3.3.4 Amounts withdrawn and loan repayments

In this subsection, we will present four measures of withdrawn housing equity, measures that will be illuminated in greater detail in the Analysis section. The measures are

1) Net additional loans for the whole sample (534 households)
2) Net $MEW_{B,t}$ for the whole sample (534 households)
3) Net $MEW_{B,t}$ for those households producing $MEW_{B,t}$ (126 households)
4) Gross $MEW_{B,t}$ for those households producing $MEW_{B,t}$ (126 households)

We have 229 additional loan takers and 126 mortgage equity withdrawers in our sample. If we sum up all additional loans per year and subtract all repayments during the same year, we arrive at "Net additional loans" per year for the sample as a whole. In the same fashion, we can sum up all loans per year used (or at least partly used) for other purposes than investments back into the housing market[28] and subtract all repayments during the same year, arriving at "Net $MEW_{B,t}$" per year for the sample as a whole. Furthermore, we calculate the net $MEW_{B,t}$ produced by those households performing mortgage equity withdrawal in our sample, i.e. subtracting the repayments of those 126 households but without subtracting the repayments by other households. Lastly, we calculate $MEW_{B,t}$ withdrawals for the 126 households without subtracting repayments, arriving at gross $MEW_{B,t}$ for $MEW_{B,t}$ households.

[28] We remember here that we have defined all uses as mortgage equity withdrawal, except home improvements, weekend houses and housing for one's children.

Performing these calculations and calculating descriptive statistics, we arrive at Table 3.4 below.

Table 3.4: Descriptive statistics of borrowing

	2004	2005	2006
Net additional loans (SEK) for entire sample			
- minimum	-800 000	-300 000	-120 000
- mean	9 741	16 363	9 675
- median	-7 000	-7 680	-8 000
- maximum	2 400 000	1 986 000	755 000
- standard deviation	136 074	150 087	74 617
Net $MEW_{B,t}$ (SEK) for entire sample			
- minimum	-800 000	-300 000	-1 100 000
- mean	-3 427	-1 154	-3 172
- median	-10 000	-10 000	-10 000
- maximum	1 300 000	860 000	755 000
- standard deviation	80 601	67 077	73 514
Net $MEW_{B,t}$ by $MEW_{B,t}$ households (SEK)			
- minimum	-85 000	-60 000	-60 000
- mean	38 029	42 920	42 443
- median	-5 000	-5 000	-2 640
- maximum	1 300 000	860 000	755 000
- standard deviation	146 309	129 566	106 309
Gross $MEW_{B,t}$ by $MEW_{B,t}$ households (SEK)			
- minimum	0	0	0
- mean	56 167	60 954	60 927
- median	0	0	0
- maximum	1 300 000	900 000	800 000
- standard deviation	143 330	133 971	106 369

Sources: Synovate, authors' calculations

Note that the numbers in Table 3.4 are not directly comparable to the mean numbers reported in the beginning of section 3.[29] We see that the minimum values for the upper two loan groups coincide for 2004 and 2005, i.e. the households that took no additional loans but paid back large amounts of mortgage loans belong to both groups, which should follow by definition. As for the maximum values, some of the Net $MEW_{B,t}$ values are lower than the corresponding Net additional loans, which is not strange, since by definition all MEW loans are also

[29] I.e. the average *loan increase* – SEK 208 901 – for those 211 households that reported by how much they had increased their mortgage loans, and the average *loan increase* – SEK 178 048 – for the 117 MEW households that provided us with their withdrawal figures. These two numbers are before deduction of repayments.

additional loans but not the other way around. What is really interesting are the mean values and the standard deviations – since they account for the average net effect of additional lending and Net MEW in the sample. We see that additional loans give a positive net effect during the three years, whereas Net MEW is negative on average. However, the standard deviations are huge compared to the mean values, which is not strange since the individual figures consist of a large number of small, negative numbers due to repayments and a small number of large, positive figures due to additional loans, since additional loans, when they do exist, are usually a lot larger than repayments.

The skewed structure is further highlighted by the median values. The median for Net additional loans is not as negative as the median for Net $MEW_{B,t}$ (both for the whole sample), which is in line with the difference in the mean values for these two groups. Looking at only $MEW_{B,t}$ households, we find that Net $MEW_{B,t}$ is actually negative. The explanation is again that a few large withdrawals lift the mean without a corresponding effect on the median values. It is somewhat surprising though that households increasing their mortgage loans for MEW purposes engage in repayments at the same time. Gross $MEW_{B,t}$ by $MEW_{B,t}$ households is more straightforward. Here, both the mean and the median values are positive, even though the mean is again higher than the median. We can see that the $MEW_{B,t}$ household in the middle of the distribution increased its loans by SEK 100 000.

The bottom two groups consist of the 126 households that we have defined as net $MEW_{B,t}$ households in our sample. Why do we list $MEW_{B,t}$ for these households specifically? The problem is that when we calculate net $MEW_{B,t}$ for the whole sample, we include loan repayments for all 534 households (with a negative effect on $MEW_{B,t}$), but only the positive effect from those 126 households performing $MEW_{B,t}$ withdrawals.[30] The fourth measure, i.e.

[30] For example, there is one household in our survey that increased its residential mortgage by SEK 1 100 000 in 2006, bought a second home (ie. not an MEW transaction), then repaid the whole amount later that year. Looking at the whole sample, we would register this as having an impact on $MEW_{B,t}$ amounting to SEK – 1 110 000.

Gross $MEW_{B,t}$ for the 126 households, is calculated for the following reason: We argue that repayments are rather stable over time for all households, since most mortgage loans come with a set repayment schedule over some 30 or 50 years. Repayments are therefore arguably not primarily the result of a conscious decision-making process on the household level, at least not to the same extent that a decision to increase the household's residential mortgage is. Gross $MEW_{B,t}$ for the 126 households making MEW withdrawals is therefore a measure of how much equity is withdrawn from the housing market for spending-related purposes. This measure does not subtract loan repayments for those 126 households, nor for the rest of the 534 households constituting our sample. A more thorough analysis of the last measure will be presented in the Analysis section.

Descriptive statistics for loan repayments are listed in Table 3.5 below. We see that on average, households with mortgage loans paid back slightly less than SEK 20 000 per year during 2004-2006. What is interesting to note, though, is that households that took additional mortgage loans during the period actually paid back *more* than the average. This is somewhat surprising considering the fact that they have all made a conscious decision to increase their mortgage loans.

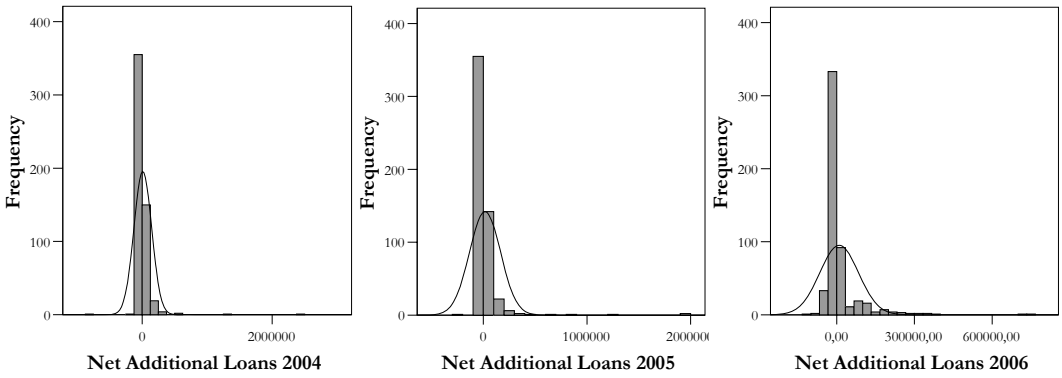
This might also be one reason why $MEW_{B,t}$, when aggregated to the level of all Swedish households, turns out to be non-significant.

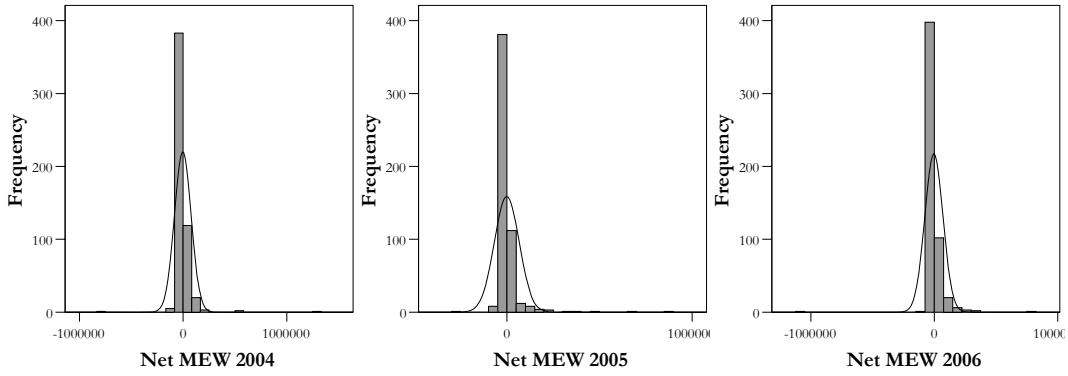
Table 3.5: Descriptive statistics - loan repayments

	2004	2005	2006
All households with mortgage loans			
- minimum	0	0	0
- mean	19 676	17 935	19 915
- maximum	800 000	300 000	1 100 000
- standard deviation	41 193	19 777	53 541
Additional loan households			
- minimum	0	0	0
- mean	25 185	22 528	27 304
- maximum	800 000	300 000	1 100 000
- standard deviation	60 082	26 218	81 796
MEWb households			
- minimum	0	0	1
- mean	21 011	20 686	21 413
- maximum	85 000	85 000	95 000
- standard deviation	16 448	16 622	17 978

Sources: Synovate

The effect mentioned earlier from many small repayments and a relatively few but large loan additions can also be seen in the histograms below.





In the histograms, the majority of non-equity withdrawing households, repaying small amounts, are easily spotted. However, we do have a sample size of 534 households which, according to the central limit theorem, allows us to treat the amounts as normally distributed around their mean value. This will be used in section 4 in order to calculate confidence intervals of aggregated net additional loans and mortgage equity withdrawals.

3.3.5 Additional loans in the future

As stated above, 178 households said they could consider increasing their mortgage loan for other purposes than first-time buying of housing during the period 2007-2009. This accounts for 33% of the total sample, which is a decrease compared to the 43% households that increased their loans in 2004-2006. In fact, on a 5% confidence level the share of future additional loan takers is significantly lower than the share of historical loan takers. We asked the households what they would do with the money withdrawn during 2007-2009, and collected the results in Table 3.6 below.

Table 3.6: Future additional loans

Use of additional loan	Number	% of 178 potential loan-takers	+/-	% of total sample
Improvements to the home	150	84,3%	5,1%	28,1%
New furniture/goods for the home	22	12,4%	4.2%	4,1%
Purchase of car/boat	52	29,2%	6,5%	9,7%
Purchase of capital goods (tv, stereo etc)	7	3,9%		1,3%
Consumption (clothing, food etc)	1	0,6%		0,2%
Holiday in Sweden	1	0,6%		0,2%
Holiday abroad	6	3,4%		1,1%
Weekend house/second home in Sweden	13	7,3%	4,2%	2,4%
Weekend house/second home abroad	1	0,6%		0,2%
Longer trip (eg. trip around-the-globe)	3	1,7%		0,6%
Investments in securities (eg. stock, funds)	7	3,9%		1,3%
Paying off other debt (non-housing loans)	15	8,4%	4,2%	2,8%
Education	3	1,7%		0,6%
Buy housing for my children	13	7,3%	4,2%	2,4%
Other gift or loan to my children	2	1,1%		0,4%
Other use	16	9,0%	4,2%	3,0%

Source: Synovate

The uses of future loans do not differ a lot from the historical equivalents. During 2007-2009 households still would primarily use an increased loan for home improvements, followed by purchases of car and boats. Other potential uses for future loans are mainly housing related, such as new furniture, weekend houses and housing for children. Consolidating loans is still attracting households, which is in line with what money was used for historically.

4. Analysis

In this section, we analyze the results from the survey. We look at, in turn, the households withdrawing equity, the amounts and uses of their withdrawals, and what this might imply for policy makers and lenders.

4.1. The withdrawers

4.1.1 The typical mortgage equity withdrawer

Judging from the results presented in section 3, what can we say about the "average" mortgage equity withdrawer? Well, looking at mean values it seems that the average household withdrawing mortgage equity resides in a larger Swedish city, consists of three persons of which two are married, earns an approximate SEK 500 000 before deduction of taxes, has undertaken higher education and has a mortgage loan of about SEK 800 000, approximately equivalent to 55% of the market value of the home. If one would compare this to the average mortgage loan taking household, it would probably not differ much.

We note that net additional loans are mainly taken by households aged over 35.[31] This is most likely due to households under 35 recently having taken on their first mortgage loan, not wanting to increase their indebtedness further. However, the small number of respondents per age category makes any inference based on age uncertain.

Furthermore, little can be said about the withdrawers in terms of trends over time. Households that have increased their mortgage debt during 2004-2006 are approximately evenly distributed over the years regarding which year the loan was taken, although there is a small increase in number of households increasing their loans from year to year during the period. The increase from year to year is very small however, and since the number of households claiming they could consider increasing their loans during 2007-2009 is lower than the number having increased their loans in 2004-2006, the weak positive trend during 2004-2006 is contradicted, and we cannot draw any clear conclusions based upon it . In addition, among those who claim they could consider increasing their mortgage loans during 2007-2009, households are equally

[31] When we speak of "household age" here, we mean the age of the interview person representing that household.

distributed among those who have already increased their mortgage loans during 2004-2006 and those who have not.

It is also worth noting that, when asked about their attitudes toward their future economic situation as well as the economy in general (more specifically, the interest rates), neither past nor future mortgage equity withdrawers tend to be more positive than the average sample household regarding the value of their property, future interest rates or their economic situation in general.

4.1.2 Predicting MEW using regression analysis

Let us now try performing an analysis the other way around. Instead of looking at the characteristics of a known withdrawer, does the data make it possible for us to predict a household's withdrawal of mortgage equity by studying parameters such as age, income, loan-to-value ratios etc.? The figures in section 3.3.3 suggest that this is not the case, as additional loan takers and mortgage equity withdrawers differ little from other mortgage takers in our sample in terms of these characteristics. However, in order to assess this more thoroughly, we perform a number of regressions.

First, we look at mortgage takers (i.e. all of our sample) and try to predict, using known parameters such as income, age and loan-to-value ratio, whether the household is likely to be a MEW household. A dichotomous variable taking on the value 1 if the household is a mortgage equity withdrawer and 0 otherwise is constructed, and we then use this as dependent variable in our regression and estimate

$$MEW_{boolean} = \beta_{income} \cdot income + \beta_{age} \cdot age + \beta_{mortgageloan} \cdot mortgageloan + \beta_{loantovalue} \cdot loantovalue + \\ + \beta_{region} \cdot region + \beta_{civilstatus} \cdot civilstatus + \beta_{householdsize} \cdot householdsize$$

where we use class variables as independent variables, in accordance with the survey layout. This means that the independent variables takes on integer values corresponding to the survey alternatives (for instance, *income* is registered as a figure between 1 and 11 – see Appendix 8.3

for information on how the survey data was recorded)[32]. Second, we again look at mortgage takers (i.e. all of our sample) and try to predict how much MEW the household is likely to withdraw. We now use the sum withdrawn by mortgage equity withdrawers during 2004-2006 (not subtracting repayments) as the dependent variable, and estimate

$$MEW_B = \beta_{income} \cdot income + \beta_{age} \cdot age + \beta_{mortgageloan} \cdot mortgageloan + \beta_{loantovalue} \cdot loantovalue + \\ + \beta_{region} \cdot region + \beta_{civilstatus} \cdot civilstatus + \beta_{householdsize} \cdot householdsize$$

using the same class variables as independent variables, like before. Finally, we look at known MEW households (i.e. we use the sub-sample of 117 mortgage equity withdrawers) and try to predict the sum of MEW withdrawn (i.e. given that a household is a mortgage equity withdrawer, how much will it withdraw?). We hence use a different sample and perform the above regression once more:

$$MEW_B = \beta_{income} \cdot income + \beta_{age} \cdot age + \beta_{mortgageloan} \cdot mortgageloan + \beta_{loantovalue} \cdot loantovalue + \\ + \beta_{region} \cdot region + \beta_{civilstatus} \cdot civilstatus + \beta_{householdsize} \cdot householdsize$$

The regression results are summarized in Table 4.1 below, with significant coefficients displayed (with corresponding t-values in brackets).

Table 4.1: Regression results

	Regression 1	Regression 2	Regression 3
General regression results			
- R^2	0.021	0.058	0.210
Significant coeff. on a 5% level (and t-values)			
(constant)			
- income			**23388 (2.67)**
- age		**1304 (2.41)**	
- mortgage loan size		**7747 (3.34)**	**21385 (3.36)**
- loan-to-value ratio			
- region			
- civil status			
- household size			
- level of education			

Sources: Synovate, The Riksbank, authors' calculations

[32] A linear regression as used here violates the assumption of normally distributed residuals. There are ways of dealing with this, such as using a logit model. However, we choose to limit the scope of such analysis with regard to the scope of our thesis.

What does this tell us? We see that only 4 coefficients came out statistically different from zero on a 5% level, but even so the R-squared values in regression 1 and 2 are so low that we cannot draw any conclusions from them. Although an R-squared of 0.21 is also low, regression 3 might still deserve a comment. In this regression, the income and mortgage loan size coefficients are significantly different from zero on a 5% level, carrying values of 23 388 and 21 385, respectively. Now, what does this mean? Well, the income variable indicates income classes and takes on values between 1 and 11, where a value of 1 equals a household income of less than SEK 100 000, a value of 2 indicates an income of SEK 200 000 etc. In the same fashion, the mortgage loan size variable takes on a value of 1 for a mortgage loan of SEK 100 000 or less and increases with higher variable values, see the appendix (question 10 in the survey) for more details. This indicates that, given that a household is a mortgage equity withdrawer, the amount withdrawn will be high given a high household income and/or a low mortgage-loan size. A higher income of SEK 100 000 (i.e. one income class higher), for instance, will correspond to an increased mortgage equity withdrawal of SEK 23 388. However, due to the low R-squared value one should not jump to conclusions. In general, the regression results confirm what was seen in section 3.3.3, where additional loan takers and mortgage equity withdrawers differ little from the sample in general in terms of the above characteristics. Hence, there is no evident way of determining whether a mortgage taking household will withdraw mortgage equity by just looking at parameters such as age, income, etc.[33]

4.2. The withdrawals

4.2.1 Uses of loans

The most common use of equity withdrawn is home improvements, judging from our tables in section 3. How can this be, since home improvements are not a part of MEW? Well, when asked about what the withdrawn equity was used for, households was allowed to state multiple purposes but when asked for the sum, we did not allow them to specify exactly how much was used for each purpose. This is of course a shortcoming in our results, but there could in fact be a reason for actually including some home improvement amounts in the MEW measure due to

[33] It needs to be mentioned that we can only try to predict residential mortgage takers, not households in general, since our survey was aimed exclusively at mortgage takers.

the very nature of home improvements. Even though a household claims that it has withdrawn equity in order to improve the house, some of the money might actually have gone to non-value adding spending such as furniture etc., which is not to be considered an investment in housing.

Apart from home improvements, Swedish households withdraw equity in order to buy cars and/or boats. It accounts for an important share of equity withdrawn in the years 2004-2006 (41.9% of additional mortgage takers, or 18.0% of the total sample), and it seems to be important in the coming three years, too. One way of looking at this would be that these households are using the mortgage loan instead of car loans, a form of consumer credit. Adding to this, 6.6% of additional mortgage takers (or 2.8% of the sample as a whole) used the equity withdrawn to pay off old loans. Judging from the fact that around 40% of the households considered consolidating their loans to be quite important or very important, we can view this as evidence of households consolidating their loans into mortgage loans through withdrawals of housing equity.

It is worth noting that out of the 211 mortgage takers that provided us with the amounts by which they increased their loans, 181 also made repayments of their mortgage loans during the same period. One way of interpreting this could be that some households increase the part of their low-interest share of their mortgage loan provided by a mortgage institute in order to repay the high-interest mortgage loan provided by a bank. This would add to the above conclusion that households consolidate their loans into low-interest carrying mortgage loans.

4.3. Aggregating the survey data

As stated in section 2, this thesis aims at quantifying borrowers' MEW in Sweden. We will use the survey results in order to do so, or at least to arrive at an approximate figure. This will require aggregating the survey results, collected from 534 households with mortgage loans to a national level.

4.2.1 Households and calculations

Our survey targets households, not individuals. Although some households consist of one individual only, most of them do not, which is why there is need of a measure of how many

households with residential mortgages there are in Sweden. We use an approximate figure for the number of households with residential mortgages, calculated by using the number of inhabitants in the 25-65 age bracket in Sweden as a starting point (Statistics Sweden, 2005).[34] An estimated 67% of the population in this specific age bracket own their home and an estimated 73% of home-owners have residential mortgages (Nordea, 2005). Combining the number of inhabitants for the three years in our sample with these two ratios, we have that an estimated 2 380 731, 2 389 169 and 2 403 479 people had residential mortgages in 2004, 2005 and 2006 respectively. Knowing that the average household size is 1.82 persons in our sample[35], we estimate that the number of households with a mortgage loan, in the 25-65 age bracket, was 1 308 094, 1 312 730 and 1 320 593 in 2004, 2005 and 2006 respectively. These figures are then used as a basis for estimating aggregate Net Additional Loans and Net $MEW_{B,t}$ in the population of Swedish households in the 25-65 age bracket, as well as net and gross $MEW_{B,t}$ by those households involved in MEW withdrawals. Multiplying the mean values of the four ratios from Table 3.4, we arrive at aggregate measures according to Table 4.2 below, with 90% confidence intervals displayed[36].

[34] The figures available from Statistics Sweden are for 1 November 2004, 2005 and 2006 respectively.

[35] We arrive at this figure using the following approximation: 96 of our households are 1-person households. This leaves 437 households with 2 or more inhabitants, of which we assume 2 to be in the age 25-65 (if more than two people live in a home, we hence assume the rest of them to be children). This gives an average household size of (96*1+437*2)/534=1.82 persons aged 25-65 in an average household.

[36] The confidence intervals are calculated using the fact that the net measures are approximately normally distributed according to the central limit theorem, see section 3.3.4. To obtain the upper and lower bounds, we multiply the corresponding upper and lower bounds of the sample by the number of households. The upper and lower bounds of the sample are in turn calculated by using the sample standard deviation, adjusting for the sample size *n* and the 1.645 factor yielding a 90% confidence interval. This yields the bounds $1220000 \cdot (\hat{\bar{x}} \pm 1.645 \cdot \hat{\sigma}/\sqrt{n})$. The reader might be interested to know why we choose to do 90% confidence intervals instead of the 95% confidence intervals used in other sections. The decision to do so was in order to make an attempt to exclude the zero from the Net MEW confidence interval. However, even with a 90% interval the zero is still included, and we choose not to try lower confidence levels.

Table 4.2: Aggregating survey results

	2004	2005	2006
Data for aggregation			
- no. of households with mortgage loans	1 308 094	1 312 730	1 320 593
- disposable income (MSEK)	1 301 320	1 337 755	*
Net additional loans aggregated 90% conf. interval			
- aggregated mean lower bound (MSEK)	72	7 455	5 762
- aggregated mean (MSEK)	12 743	21 480	12 777
- aggregated mean upper bound (MSEK)	25 414	35 505	19 791
- aggregated mean lower bound (% of disp. income)	0.01%	0.56%	*
- aggregated mean (% of disp. income)	0.98%	1.61%	*
- aggregated mean upper bound (% of disp. income)	1.95%	2.65%	*
Net $MEW_{B,t}$ aggregated 90% conf. Interval			
- aggregated mean lower bound (MSEK)	-11 989	-7 784	-11 100
- aggregated mean (MSEK)	-4 483	-1 515	-4 189
- aggregated mean upper bound (MSEK)	3 022	4 753	2 722
- aggregated mean lower bound (% of disp. income)	-0.92%	-0.58%	*
- aggregated mean (% of disp. income)	-0.34%	-0.11%	*
- aggregated mean upper bound (% of disp. income)	0.23%	0.36%	*
Net $MEW_{B,t}$ by $MEW_{B,t}$ households, aggr. 90% conf. int.			
- aggregated mean lower bound (MSEK)	4 522	6 677	7 603
- aggregated mean (MSEK)	10 899	12 345	12 281
- aggregated mean upper bound (MSEK)	17 276	18 012	16 959
- aggregated mean lower bound (% of disp. income)	0.35%	0.50%	*
- aggregated mean (% of disp. income)	0.84%	0.92%	*
- aggregated mean upper bound (% of disp. income)	1.33%	1.35%	*
Gross $MEW_{B,t}$ by MEWB,t households, aggr. 90% conf. int.			
- aggregated mean lower bound (MSEK)	9 850	11 671	12 948
- aggregated mean (MSEK)	16 098	17 532	17 629
- aggregated mean upper bound (MSEK)	22 345	23 392	22 310
- aggregated mean lower bound (% of disp. income)	0.76%	0.87%	*
- aggregated mean (% of disp. income)	1.24%	1.31%	*
- aggregated mean upper bound (% of disp. income)	1.72%	1.75%	*

* = disposable income 2006 not yet available

Sources: Synovate, The Riksbank, authors' calculations

What do these figures tell us? Net additional loans has positive mean values, whereas Net MEW is negative on average, for the period 2004-2006. Negative Net MEW means that when excluding most of the investment in housing (not all, we remember here that some of the mortgage equity withdrawers actually used part of their money for investment in housing, but we cannot tell exactly how much), equity is on average INJECTED into the housing market.

Hence, the money extracted by mortgage takers for private consumption is actually compensated for by repayments of mortgage loans.[37] Turning to $MEW_{B,t}$ households, we can see that the aggregate mean numbers for both gross and net $MEW_{B,t}$ by these households are positive, and significantly so on a 10% level. Again, we argue that it is of interest to study withdrawals by $MEW_{B,t}$ households specifically, without subtracting repayments by other households, since it is these $MEW_{B,t}$ households that leave a positive contribution to aggregate $MEW_{B,t}$. Put differently, these households "produce" borrowers' MEW in the economy, which might be of interest for lenders since this measure can be seen as an estimate for the market size for loan products target at MEW.[38] The difference between gross and net $MEW_{B,t}$ by $MEW_{B,t}$ households is repayments by those same households (not corrected for in the gross measure but subtracted in the net measure).

4.2.2 Comparison with MEW_{rb}

As seen in the above section, the amount of Net additional loans and Net MEW calculated using survey data differs quite a lot from the Riksbank's MEW measure. There are a number of different reasons for why this is the case.

First, the Riksbank's measure might overestimate MEW in Sweden. Even though the measure does not include the mortgage lending provided by banks (yielding a 15% lower net lending measure), gross investment as subtracted from the net lending is too low (mainly due to the fact that investments in cooperative tenant owned apartments are not included). Hence, the 4-5% MEW_{rb}/disposable income ratio is on the high side.[39]

[37] This should be interpreted with caution. Looking at the 90% confidence interval in table 4.2, we note that we cannot say for sure whether MEW is positive or negative, due to the upper bounds being positive and the lower bound being negative.
[38] More on this in the implications section.
[39] One way of dealing with the kinds of discrepancies mentioned on this page would be using, for instance, UK data and look at the importance of various components. If UK data suggest, for example, that capital grants to households accounts for 20% of MEW we could assume this to be the case in Sweden, too. However, although justified such assumptions would be somewhat speculative and we choose not to do so.

Second, and more importantly, MEW_{rb} includes the *other withdrawers'* category. Hence, last-time sales, trading down etc. are included in the Riksbank's measure, which should account for quite a large component of MEW as a whole. Going back to the identity $MEW_t = MEW_{B,t} + MEW_{O,t}$, the Riksbank's measure MEW_{rb} is actually a measure of MEW_t whereas our aggregated survey results is a measure of $MEW_{B,t}$.

Lastly, if we were to pick one of our aggregated survey figures for estimating $MEW_{B,t}$ in order to compare with the Riksbank's measure of MEW_t, should we use the Net additional loans measure (from which investment in housing has not been subtracted) or the more restrictive calculation of net $MEW_{B,t}$ (i.e. the borrowers' MEW)? We would argue that Net additional loans is more closely comparable to the MEW_{rb} measure, since MEW_{rb} actually does include home improvements. Even so, it is important to point out that Net additional loans is a measure of something else than MEW_{rb} since the latter measure take into account all sales-related components.

4.3 Implications

In this section we aim at extracting the information from the consumer survey most relevant for policy-makers and lenders (commercial banks and the like).

4.3.1 Implications for policy makers

For a central bank such as the Swedish Riksbank, the most important instrument in the monetary policy arsenal is the interest rate. In our consumer survey, the factor cited most frequently as "quite important" or "very important" in deciding to increase the household's mortgage loan, was "generally lower interest rates". 57% of the respondents answered in this manner. This indicates that the level of the interest rate is central to households' decision to take on additional mortgage debt, and suggests that the Riksbank might have some influence over the prevalence of mortgage equity withdrawal in the economy. "Increased market value of residence", the second most frequent decision factor, was cited by 51% of respondents as "quite important" or "very important". Since house prices to some extent depend on the

interest rate, this latter finding further strengthens the view that changes in the interest rate might have effects on the borrowing behaviour of existing mortgage takers.

Financial stability is another concern of policy makers, including the Riksbank. One component of interest here might be the indebtedness of households. In our regression analysis, we find no evidence indicating that loan-to-value ratios and MEW are correlated. We interpret this as meaning that households are not so short-sighted as to vary their residential mortgages without having robust collateral in the form of housing. Furthermore, even when we defined withdrawals as the gross amounts withdrawn by MEW households without subtracting repayments, the aggregated withdrawals did not exceed 1.56% of disposable household income on the 90% confidence level during the period 2004-2006.

4.3.2 Implications for lenders

The implications for lenders are to some extent rather different than for policy makers. Lenders might be interested in the size of the market for new mortgage products, or in knowing what affects consumer decisions to withdraw or not to withdraw equity with their housing as collateral. Using the data from our survey, we can estimate the yearly market in Sweden for additional mortgage loans, i.e. loans that are not taken by households when purchasing or selling housing, to be some MSEK 36 100.[40] This figure is not unreasonable considering the size of the residential mortgage stock of some MSEK 1 305 000 (Statistics Sweden, 2006).[41] We have also estimated the size of the market for additional mortgage loans, that are used for other purposes than investments in the housing stock, to be MSEK 17 084.[42] One last observation that might be of interest for lenders is that only 19% of respondents said that "information from my primary bank" was "quite important" or "very important" in the decision to increase the household's residential mortgage.

[40] This sum does include additional loans taken with the purpose of buying a second home, so it might be an overestimation. The figure has been calculated by taking the average additional loan sum of SEK 208 901 * the share of households increasing their loans in our sample (211/534) * aggregation factor (1 313 806 households) / 3. Since the figures in our sample are for the entire 2004-2006 period we need to divide by 3. The aggregation factor is the (estimated) average number of households during 2004-2006.
[41] January 2006 figures.
[42] Calculations are the same as in the previous example, but plugging in the average MEW amount of SEK 178 048 instead of the average additional loan amount, and using the factor (117/534) instead of (211/534).

5. Conclusions

In this thesis, we have tried to write an introduction to mortgage equity withdrawal in Sweden. We have provided the reader with a rough measure of total MEW in Sweden, using approximate figures from the Swedish Riksbank. According to these figures, there has been a positive net mortgage equity withdrawal during 2001-2005, growing by the year and reaching its highest figure of MSEK 63 804 (or 4.77% of disposable income) in 2005. However, even though the measure does only include lending by mortgage institutes (and not banks), it might be on the high side due to the low amount of investments subtracted when calculating it.

Furthermore, we have assessed the mortgage equity withdrawn by households increasing their mortgage debt, by conducting a consumer survey among Swedish households with mortgage loans. The survey has given us insights into how much equity has been withdrawn adjusted for debt repayments, and for what purpose the money was withdrawn. We find that 42.9% of Swedish households aged 25-65 carrying mortgage loans has increased their mortgage loan sometime during 2004-2006, withdrawing an average amount of SEK 208 901. Netting out debt repayments and aggregating the figure, we arrive at a measure of Net additional loans in Sweden, reaching its highest value of around MSEK 20 000 in 2005 (or around 1.5% of disposable income). The measure stays significantly above zero during the three years, but is an overestimation since some investment in housing is included in the figure.

The most common uses of Net additional loans were home improvements (done by 65% of these households) and car/boat purchases (42% of households). This latter use, combined with the fact that consolidation of loans are an important reason for households to increase their mortgage debt and that approximately half of Swedish households are mortgage loan takers, can be taken as evidence for that approximately 20% of households aged 25-65 with mortgage loans either replace existing loans with mortgage loans, or use mortgage loans instead of other consumer credit.

When only looking at households having used (at least part of) the equity withdrawn for purposes other than investment in housing and aggregating the figure, we arrive at an approximation of borrowers' MEW. This figure has been negative during 2004-2006 (a net

injection of equity equal to an approximate 0.2% of disposable income). However, due to the huge standard deviations in the sample, borrowers' MEW cannot be said to be significantly below zero on a 5% confidence level. Furthermore, it cannot be predicted using typical background information (age, income group etc) whether a household with a residential mortgage is likely to engage in mortgage equity withdrawal.

Judging by our survey results, equity withdrawn by increases in withdrawers' mortgage debt has not been a phenomenon with a significant impact on consumption or the economy in general in Sweden during the period 2004-2006, especially if one wishes to rule out all forms of investments in housing. In addition, even fewer households could consider increasing their mortgage in the coming three years. We can therefore also say that our results are in line with previous findings indicating that MEW primarily occurs through housing transactions, since we have found borrowers' MEW in Sweden to be insignificant.

Lastly, we conclude that measuring MEW in Sweden is not entirely straightforward. A macroeconomic approach is somewhat unreliable due to lack of complete, reliable data, and using a consumer approach in order to arrive at a complete measurement of MEW in the economy would demand a larger survey than the one we have performed. Hence, our results should be viewed as an estimation of the phenomenon, and we wish to have shed at least some light on the behavior of mortgage loan takers in Sweden.

6. Assessing our results

As stated in section 5 above, measuring MEW is a complex business. We have provided the reader with an introduction to the subject and presented this in a Swedish context. Our results are however in need of comment, as to whether they are reliable and whether further conclusions can (or should) be drawn from them. Below, we discuss some of these issues and suggest some implications for future research.

6.1 Measuring MEW on a macroeconomic level

We have looked at Swedish MEW on an aggregated level as well as on a household level. When looking at the aggregate level, we have briefly analyzed a measure used internally by the Swedish Riksbank. This measure is however in need of comment.

First of all, it should be noted that it is not the authors' intention to provide a reliable macroeconomic measure of MEW in Sweden. Our overall intention is to introduce the reader to MEW in Sweden, the aggregate measure being just one way of doing that. We believe our consumer survey to be our most important contribution to the understanding of MEW in Sweden, or more specifically borrowers' MEW. From this perspective, the Riksbank's measure, MEW_{rb}, should be used as reference when making comparisons, rather than as a fine-tuned MEW measure taking every detail into account.

This being said, there are a number of possible flaws to the MEW_{rb} measure. As said in section 2, a number of important components are being left out when calculating the measure; transfers of housing, sales to other sectors and home improvements to mention a few. As these are elaborated on in section 2, we will not dig too deep into them here. However, one point needs to be made: MEW_{rb} might OVERestimate as well as UNDERestimate Swedish MEW, but it will not underestimate it by more than, say, 15% (since this roughly corresponds to the share of mortgage loans in Sweden provided by banks). In fact, the measure will probably overestimate MEW and as such it might be of use when deciding whether or not MEW is a "threat" to the Swedish economy.

6.2 Survey issues

Conducting a consumer survey is not a straightforward matter. One needs to approach, in a statistically relevant way, a large enough number of interview persons with relevant questions, and interpret the results without jumping to conclusions. There are a number of issues relating to this process, some of which are treated in the below subsections.

6.2.1 Is this the right approach?

The overall question regarding the survey is of course: Is it at all possible to measure MEW in Sweden by using a survey? We have given it a try, but with a limited budget follows a limited scope. Given the scope and a maximum number of questions, we have tried to assess the amount of Swedish MEW resulting from increased borrowing. We have limited our investigations to borrowers' MEW, since we argue that increased mortgage borrowing is the most interesting source of MEW. This means we leave out effects from sales, which makes our results hard to compare with the aggregate measure. We also leave out over-mortgaging, which is based on increased borrowing but largely attached to the sale of a house. We try to assess these issues by giving guidelines on how to compare the two measures, and argue that Net Additional Lending might be the measure most comparable to the Riksbank's aggregate measure of MEW. There is no guarantee for this actually being the case. Needless to say, neither are there any guarantees that we fully capture borrowers' MEW through our survey. There are a number of reasons why this is the case:

- First of all, the sample is quite small compared to other surveys, with around 500 respondents. In the Survey of English Housing, for instance, 15 000 households were interviewed.
- Our sample is most probably biased: There is the bias from using a web-based survey which limits the target group to Internet-enabled households, a possible bias from households not wanting to share with us what they have done with their mortgage loans (it might be a little embarrassing to admit that the loan intended for home improvements was instead used for buying a car).
- We look at the period 2004 – 2006. The reason for not examining a longer time period was partly lack of funds to conduct a larger survey, which of course leads to an insufficient data set with regards to analyses over time. At the same time, when asking

households about historical data we take the risk of households not exactly remembering how much was withdrawn each year, probably yielding more inaccurate figures the further back in time we look. Furthermore, 2006 had not yet come to an end when the survey was conducted, which might lead to an underestimation of the 2006 figures.

- There are home improvements left! We define borrowers' mortgage equity withdrawals ($MEW_{B,t}$) without subtracting those households that have stated home improvements, weekend houses and housing for one's children as their primary use. This means that we overestimate $MEW_{B,t}$ withdrawals. As an example, not including households citing home improvements etc. as their primary use brings the average additional loan amount down from SEK 178 048 to SEK 172 059. Since the number of $MEW_{B,t}$ households decreases from 117 to 93 with this new, narrower, definition of MEW, the estimated aggregate amount withdrawn during 2004-2006 decreases from GSEK 47.6 to GSEK 36.6. This is a significant difference but one that does not affect the conclusions drawn.

6.2.2 Problems with aggregating data

In order to compare our survey results with the Riksbank's macroeconomic measure of MEW, we aggregate the survey figures by using an estimated number of households. This obviously is not an exact science and the process is subject to a number of problems:

- As stated in section 3 we only look at households aged 25-65. This leaves out a number of households and leads to our $MEW_{B,t}$ measure being biased. We know, for example, that younger households have a larger share of their wealth in real assets (such as housing) and that they probably have a higher propensity to consume out of this wealth than older households (Berg, 2006).
- We do not know exactly how many persons that have a residential mortgage in Sweden. To estimate this, we have used ratios from a previous survey by Nordea, which might lead to minor errors in the calculations.
- The standard deviations in the sample are large, especially when looking at the net measures. When examining the data closely, one finds a number of outliers such as a

one-time amortization of SEK 1 100 000. One way of dealing with the standard deviations could be excluding some of these outliers.

Aggregating data is hence not at all straightforward, but we argue that it is justified nevertheless given that we want to find out, at least approximately, how much money our survey results imply as being withdrawn from the Swedish housing sector every year.

Furthermore, there is the problem of whether or not to subtract the repayments of loans. We do this in a number of ways and arrive at different measures, which might be confusing for the reader. Subtracting repayments is a daring step to take, since doing so probably would require asking our interviewees about their housing affairs too in order to arrive at a correct net figure. Consider, for example, someone inheriting a house, selling it and using the proceeds to pay off his mortgage debt. This will be registered in our sample as a large mortgage repayment, but as a whole such a transaction might in fact be a withdrawal of mortgage equity! Hence, it is not obvious that repayments should be subtracted, which is why we provide the reader with a number of measures.

6.3 Topics for further research

We have made the first (to our knowledge) attempt to ask Swedish households about mortgage equity withdrawal. It is indeed an interesting subject, and others are hopefully tempted to follow suit. What, then, should they do differently? If we were to give advice for such a research project, we would recommend the following:

First, we would construct a more exact macroeconomic measure, which probably would be quite possible due to the rough nature of the Riksbank's MEW measure. Doing so would demand digging deeper into the Swedish national accounts, but it would add important knowledge at a relatively low cost.

If one, however, wishes to have another go at a consumer survey on MEW in Sweden, we believe we have learnt some valuable lessons through the survey presented here. First of all, we would use a larger sample in order to arrive at better confidence intervals. This is of course

subject to budget restrictions, but still the most important issue if one wants to perform quantitative analyses.

Second, we would ask not only about additional borrowing, but also about sales of houses. This would imply targeting households in general – i.e. not only mortgage takers – again demanding a larger sample. However, the benefits from doing so would probably outweigh the costs, since it would be possible in that case to seize MEW by its horns, decomposing it into its six components and analyzing these separately.

Third, we would rephrase some of our questions. We would ask more specifically about how much of the money withdrawn was used for purposes other than investments in housing, in order to "cleanse" the final data from all forms of investment in housing. No matter how we choose to look at our data, some home improvements will always remain and it would be hard, if not impossible, to filter out the exact amounts used for consumption by using our data.

Last, we would also ask whether people are aware of the possibility to use mortgage loans for consumption. In order for MEW to become an threat to the Swedish economy, many more people need to be aware of the possibility to withdraw equity. The level of awareness is therefore an important factor, and might be worth investigating further.

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8. Appendices

8.1 Glossary of terms

Term	Explanation
(Co-operative) tenant-owned apartment	A form of housing in Sweden where apartments are jointly owned by a co-operative in which the individual household owns a share corresponding to the size of the huosehold's apartment (Sw. bostadsrätt)
Equity Release Scheme	Products typically designed for older home owners who are asset rich but income poor, to allow them to release equity from their homes
HEW, Housing/Home Equity Withdrawals	See MEW
Last-Time Sales	Sales of property by someone leaving the owner occupied market for the last time
MEW, Mortgage Equity Withdrawals	Gross withdrawals from the housing market less gross injections into the housing market
Net Additional Lending	Additional lending (i.e. increased mortgage loans) minus repayments of mortgage debt
Net MEW	See MEW
Over-mortgaging	Increasing a mortgage when moving by more than the difference in the price of the old and new houses
Quasi-consumer credit	MEW most close substitute for other types of unsecured credit
Remortgaging	Changing a mortgage without moving house
Trading Down	Moving to a cheaper property
Under-mortgaging	Reducing a mortgage by more than the difference between old and new house prices OR increasing a mortgage by less than the difference between old and new house prices

8.2 Bank of England data sources for computing UK MEW

Series	Code	Source
Net lending secured on dwellings Statistics (Table A5.10)	VTVG.Q (1)	BoE: Monetary and Financial
Capital grants to personal sector	ADCE.Q	ONS
Capital grants to housing associations	GTDI.Q	ONS
Household investment in dwellings	DLWK.Q (2)	ONS: Blue Book (Table SUP1)
Household net purchases of land (Table A41)	NSSY.Q (2)	ONS: UK Economic Accounts
Household costs associated with the transfer of ownership of non-produced assets	DLXV.Q (2)	ONS: Blue Book (Table SUP1)

Source: http://www.bankofengland.co.uk/statistics/mew/mew_notes.htm

8.3 Consumer Survey questions: Mortgage Equity Withdrawal, November 2006, Temo/Synovate/SSE

Background questions: Year of birth, sex, zip/postal code

1. How many persons does the household constitute of, i.e. how many persons live and dine together?
1 person || 2 persons || 3 persons || 4 persons || 5 persons || 6 persons || 7 persons || 8 persons || 9 persons or more

2. Approximately how large is your household's total income before deduction of taxes? Include in the figure welfare transfers, interest income, and equivalents.
Less than 100.000 kr. || 100.000-199.999 kr. || 200.000-299.999 kr. || 300.000-399.999 kr 400.000-499.999 kr. || 500.000-599.999 kr. || 600.000-699.999 kr. || 700.000-799.999 kr. || 800.000-899.999 kr. || 900.000 kr. or more || Don't know/don't wish to answer

3. Education[43]
Folk high school, compulsory school and equivalents ||
2 years in upper secondary school and equivalents ||
3-4 years in upper secondary school and equivalents ||
University, University College

4. Civil status
Married || Living with partner || Single || Living at parents' || Other

5. Region H
Stockholm/Gothenburg/Malmö || Other city || Countryside

6. Region A
Götaland || Svealand || Norrland

7. Region Z
Norrland (Northern Sweden) || Mellansverige (Central Sweden) || Stockholm || Province of Småland including islands || Västsverige (Western Sweden) || Sydsverige (Southern Sweden)

8. What category does your housing belong to?[44]
Tenant-owned apartment || Rented apartment || Single-family house || Rented house || Owner occupied farm/country estate || Other (sub-rented apartment and others)

9. Do you have a mortgage loan?
Yes || No || Don't know

[43] The translations here are based on the translations used by Swedish National Agency for Education (2006).
[44] The translations here are based on the translations used by Swedish residential mortgage provider SBAB (2006).

10. Approximately how large is your household's mortgage loan?
100 000 kr or less || 101 000 - 250 000 || 251 000 - 500 000 || 501 000 - 750 000 ||
751 000 - 1 000 000 || 1 001 000 - 1 250 000 || 1 251 000 - 1 500 000 ||
1 501 000 - 1 750 000 || 1 751 000 - 2 000 000 || 2 001 000 - 2 250 000 ||
2 251 000 - 2 500 000 || 2 501 000 - 3 000 000 || More than 3 000 000 || Don't know

11. If you estimate the market value of your residence, ie. what your residence would approximately sell for, and compare that to the size of your household's mortgage loan(s)—how large, in percent, are your total loans compared to the market value of your residence?
(For example, if your residence is worth approximately 500.000 kronor, and you have loans of some 250.000 kr, then your loans are approximately 50% of the market value.)
The total of my mortgage loan(s) is...
Close to 100% of the market value || Around 90% || Around 80% || Around 70% ||
Around 60% || Around 50% / half of the market value || Around 40% || Around 30% ||
Around 20% || Around 10% of the market value || Close to 0% || Don't know

12. Apart from the mortgage loan taken when you bought your home, have you or any other member of the household taken on any additional mortgage with the home as collateral, during the past three years (2004, 2005, 2006)?
Yes || No || Don't know

13. What was this additional mortgage used for?
(If the household has taken on additional mortgage on several occasions, use the last mortgage addition as a basis when answering the question.)
Please indicate all uses for this additional mortgage.
Improvements to the home (eg. kitchen or bathroom improvements) ||
New furniture/goods for the home ||
Purchase of car/boat ||
Purchase of capital goods (tv, stereo etc) ||
Consumption (clothing, food etc) ||
Holiday in Sweden || Holiday abroad ||
Weekend house/second home in Sweden ||
Weekend house/second home abroad ||
Longer trip (eg. trip around-the-globe) ||
Investments in securities (eg. stock, funds) ||
Paid off other debt (non-housing loans) ||
A year off from school/work ||
Buy housing for my children ||
Other gift or loan to my children ||
Other use(s), please specify ||

14. What was the primary use for this additional mortgage loan?
(If the household has taken on additional mortgage on several occasions, use the last mortgage addition as a basis when answering the question.)
Please indicate the primary use for this additional loan.

[answer alternatives generated on basis of answer to question 13]

15. How important were the following factors for the decision to increase the household's mortgage loan?
(Give your answers on a scale of 1-5, where 5=Very important, 4=Quite important, 3=Neither important nor unimportant, 2=Not so important, 1=Not at all important)
Information from my primary bank | |
Higher income | |
My bank allowed a higher loan-to-value ratio than before | |
Increased market value of residence | |
More advantageous loan repayment requirements than before | |
I wanted to consolidate my other loans (eg. car loans) | |
Generally lower interest rates | |

16. You said earlier that you or some other member of the household took on additional mortgage with your home as collateral during the past three years (2004, 2005, 2006), not counting the mortgage loan taken when the property was bought.

Did the household's mortgage loans increase during 2004?
Yes | | No | | Don't know

Did the household's mortgage loans increase during 2005?
Yes | | No | | Don't know

Did the household's mortgage loans increase during 2006?
Yes | | No | | Don't know

17. By how much did the household's residential mortgage increase during 2006?
(Try to approximate the increase in residential mortgage. It is very important for this survey that you answer this question. Indicate the approximate value in kronor with no decimals, using integers.)
[answer alternatives generated on basis of answer to question 16, example below]

18. Did you or any other member of the household amortize the household's residential mortgage in 2004?
Yes | | No | | Don't know

Did you or any other member of the household amortize the household's residential mortgage in 2005?
Yes | | No | | Don't know

Did you or any other member of the household amortize the household's residential mortgage in 2006?
Yes | | No | | Don't know

19. How much did you or any other member of the household amortize the residential mortgage during 2006?
Try to approximate the amortization of the residential mortgage. It is very important for this survey that you answer this question. Indicate the approximate value in kronor with no decimals, using integers (whole numbers).
[answer alternatives generated on basis of answer to question 18, example below]

20. Are you considering taking a new mortgage loan or increasing your existing mortgage loans in the next three years (2007, 2008, 2009)?
(If you believe you will buy a new home during the next three years, think of a situation where you increase your mortgage after the initial mortgage loan has been taken.)
Yes || No || Don't know

21. What do you think the increased mortgage might be used for?
(Please indicate all uses for this additional mortgage.)
Improvements to the home (eg. kitchen or bathroom improvements) ||
New furniture/goods for the home ||
Purchase of car/boat ||
Purchase of capital goods (tv, stereo etc) ||
Consumption (clothing, food etc) ||
Holiday in Sweden ||
Holiday abroad ||
Weekend house/second home in Sweden ||
Weekend house/second home abroad ||
Longer trip (eg. trip around-the-globe) ||
Investments in securities (eg. stock, funds) ||
Paid off other debt (non-housing loans) ||
A year off from school/work ||
Buy housing for my children ||
Other gift or loan to my children ||
Other use(s), please specify ||

22. How do you think the market value of your home will change in the coming year compared to the year 2006? Do you think it will…
Increase a lot || Increase somewhat || Not change || Decrease somewhat || Decrease a lot

23. How do you think the interest rate level in Sweden will change during the coming year compared to the year 2006? Do you think it will…
Increase a lot || Increase somewhat || Not change || Decrease somewhat || Decrease a lot

24. What do you think your household's financial situation will be like compared to the year 2006? Will it be…
A lot better || Slightly better || Unchanged || Slightly worse || A lot worse

25. You will be presented with a number of claims regarding residential mortgage. For each one of these claims we would like you to indicate to what extent you agree or disagree with that claim.
(Give your answer on a scale of 1-5, where 1=Strongly disagree, 2=Disagree partially, 3=Neither agree nor disagree, 4=Agree partially, 5=Strongly agree)
I have calculated how large an interest rate increase the household can manage
I view the home as contributing to my sense of financial security in the future
I believe a lot of households have borrowed too much money

26. Which is your main bank?
Föreningssparbanken/Swedbank || GE Money Bank || Handelsbanken || Ikanobanken || ICA Bank || Länsförsäkringar || Nordea || Resursbanken || SBAB || SEB || Skandiabanken || Smålandsbanken || Stadshypotek Bank || Östgöta Enskilda Bank || Other bank || Don't know