

The relation between household saving and falls in house prices

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In contrast to the situation in many other countries, there were no major corrections in housing prices in Sweden during the financial crisis. House prices did fall somewhat, but have subsequently continued to rise and several analysts believe that Swedish housing is in general overvalued.¹ The level of household debt has also continued to rise at a higher rate than the growth in incomes, which has given rise to a debate on the tenability of the situation. The level of household indebtedness has increased from approximately 90 per cent of disposable income in the mid-1990s to 170 per cent in 2010. The current situation in Sweden therefore has certain similarities with the situation in the United States prior to the financial crisis. As the substantial fall in house prices that occurred in the United States led to serious economic problems, there are fears that Sweden may be facing a similar course of events.

However, an important difference between Sweden and the United States is that household saving is much higher in Sweden than it was in the United States prior to the crisis.² The situation in the United States at that time was characterised by exaggerated lending to households and exaggerated optimism about the future, factors that tend to lead to overvalued house prices in combination with a low level of saving.³ A low savings ratio can thus in itself be a sign that an imbalance is developing in the economy. On the other hand, it may be also be the case that a high savings ratio indicates that rising prices for housing are not due to unrealistic expectations or unhealthy lending practices. If a low level of household saving can be seen as an indicator of incipient imbalances it should be common that substantial corrections of house prices are preceded by periods of low saving. In this Economic Commentary we investigate this by studying the savings ratio as a warning signal of major house-price corrections in the future.

Another, but closely-related, question is whether a high level of saving can dampen the consequences of house price corrections that have already occurred. Falls in house prices are often associated with weak macroeconomic development and in such a situation a high level of saving increases the possibility of being able to temporarily keep up consumption by temporarily reducing saving. A high level of saving also reduces the risk of households having to sell their homes because of a weak income situation, which in turn could reinforce the fall in house prices. It should also reduce the risk of falls in house prices leading to a serious increase in the loan losses of the banks. We have therefore studied a sample of countries to see whether the effects of substantial falls in house prices have been milder in those countries where there was a high level of saving prior to the crisis.

1. For example the National Housing Credit Guarantee Board (2011) and the IMF (2010).

2. It is also the case that housing investment was higher in the United States than in Sweden before the crisis.

3. The exact nature of the empirical causal relationships is not entirely clear. It appears reasonable that countries where the provision of loans to buy housing is relatively strict will also be less likely to develop serious house-price bubbles, but this also means that households will be forced to save to a greater extent to finance their housing purchases.

In contrast to the situation in many other countries, there was no significant fall in housing prices in Sweden during the financial crisis and several analysts believe that Swedish housing is now overvalued. An important difference between Sweden and, for example, the United States, where house prices have fallen, is that the level of household saving is high in Sweden but was low in the United States before the crisis. A low savings ratio could thus in itself be a sign that an imbalance is developing in the economy. We have studied whether an unusually low savings ratio maybe a warning signal for an increased risk of substantial falls in house prices and have concluded that the probability of experiencing such price falls increases from 23 per cent to 43 per cent when the savings ratio is unusually low. We have also found that the real economic effects of substantial falls in house prices may be milder in those countries that have had a higher level of saving, in relation to their historical average, before the crisis.

Why are both indebtedness and saving high?

According to the life-cycle hypothesis, households save mainly in order to make it possible to smooth out consumption over time.⁴ If households begin to take more loans, this could therefore be an indication that they expect incomes to increase in the future. By taking loans they show that they wish to use these future incomes for consumption already today in order to smooth out consumption over time. However, this does not explain why a household should want to both save and increase its borrowing at the same time. But, housing purchases may also play an important role for households with regard to transferring resources to a later stage in life. If, for example, a household chooses to amortise its mortgage, this will have effects on the wealth and prosperity of the household when the times comes to retire: a future sale of the home and a change to a smaller and less expensive house or flat means that a considerable sum of money will become available at a time when the household no longer has an earned income. In this example, amortisation payments can thus be regarded as a form of pension saving. This method of saving for one's old age is, however, largely based on the future and uncertain sale of a home.⁵ It is therefore not unreasonable that many households make use of what is now a wide range of other forms of saving rather than amortising. This could be an important explanation of why we are witnessing an increase in indebtedness in parallel with a high level of financial saving.⁶ If, on the other hand, we see a decline in household saving in conjunction with an increase in indebtedness, this could be an indication of an incipient imbalance in the economy.

Is it possible to predict falls in house prices?

In theory it should not be possible to predict large falls in asset prices, including housing prices, because if it was possible investors would be able to sell these assets at an early stage, which means that no bubbles would develop. However, there are many studies that have investigated what factors have historically exhibited a certain pattern prior to major corrections. The idea is that there are certain factors that can be regarded as warning signals, although this does not mean that that we can know with certainty that a correction is approaching, much less when it will occur.

In 2009, the IMF studied data from 21 countries for the period 1985 to 2008 and concluded that a typical pattern during periods preceding large falls in housing prices is that the growth of total credit in relation to GDP is unusually high and that housing investment in relation to GDP is also unusually high at the same time as there is a substantial deterioration in the current account.⁷ When all of these three factors deviated significantly from their normal patterns at the same time, a substantial fall in house prices occurred in 56 per cent of the cases. In comparison, the unconditional probability of a substantial fall in house prices one to three years ahead was 14 per cent.

Other studies have focused on falls in asset prices without distinguishing between different types of assets (housing or equities). One example is the study conducted by Alessi and Detken (2009), who concluded that global variables are the best warning signals preceding major falls in asset prices. Throughout their sample, which consists of 18 OECD countries and covers the period 1970 to 2007, deviations in the global money supply gap and in the global private credit gap are the variables that provide the best information on approaching falls in asset prices.⁸

4. See for example Ando and Modigliani (1963) and Friedman (1957).

5. If the household enjoys living in its present home and wishes to go on living there, it also has the possibility to increase its mortgage in order to acquire greater scope for consumption. However, this scope for consumption is uncertain and depends on the actual development of house prices, which may be poorer than expected. There may also be restrictions, for example in the form of a loan ceiling, that limit the possibility to borrow more money.

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7. A deterioration in the current account is also included in Rogoff and Reinhart's (2008) analysis of phenomena that precede major bank crises.

8. The global money supply gap and the private credit gap have been calculated as follows: The money supply measured as M1 and private credit in relation to GDP are calculated for the countries included. The weighted average of these is then calculated using PPP-adjusted GDP weights. The gaps are then defined as deviations from an HP trend. For details see Alessi and Detken (2009).

As far as we know, the relation between the savings ratio and future falls in house prices has not been analysed. Indirectly, however, the IMF study mentioned above provide some support for the hypothesis that a low level of household saving increases the risk of falls in house prices in the future because a low level of saving often leads to a current account deficit, which in turn has often proved to be a precursor of substantial house-price falls. Experience in the United States in the 2000s illustrates this well. However, current account deficits may also reflect public deficits (or deficits in corporate net saving) so the link between a low level of household saving and current account deficits is not perfect.

Borio and Lowe (2004) have shown how financial imbalances such as an unusually high level of lending and high asset prices have had macroeconomic effects a couple of years ahead in the form of low resource utilisation and falling inflation. To the extent that an unusually high level of lending is associated with a low savings ratio, this thus provides a certain amount of support for the thesis that a high savings ratio can mitigate the macroeconomic consequences of major falls in house prices.

The savings ratio tends to be low before substantial falls in house prices

To investigate whether a high savings ratio reduces the risk of a fall in house prices in the future, we must first define what qualifies as a substantial fall in house prices. We have chosen to follow the method used by the IMF (2009) (which is similar to that in Bordo and Jeanne (2002)). A fall in house prices is defined as substantial if a four-quarter moving average of the annual growth in real house prices falls below -5 per cent. However, our sample contains fewer countries than the IMF's.⁹ Using this method, we identify 21 substantial falls in house prices between 1981 and 2010. Figure 1 shows the number of countries that have experienced substantial falls in house prices at different times according to this method.

In order to see whether periods preceding substantial falls in house prices tend to coincide with a low level of saving we first examined whether the savings ratio had been below or above its historical average in the respective countries during the two years before the correction of house prices took place. It was below in 55 per cent of the cases for the entire sample. If, like the IMF, we instead choose to divide the sample and only study what has happened since 1985, we find that the savings ratio was below its historical average in the years before the crisis in 2/3 of the cases.¹⁰ It thus appears that the savings ratio tends to be unusually low in periods preceding substantial falls in house prices, but that such falls can also occur in periods when the savings ratio is unusually high.

We have also highlighted this with a variation on the IMF's study¹¹ in which we have designed an alarm signal for future house-price falls based on the savings ratio. This alarm signal works in such a way that a fall in a country's savings ratio below its historical average by more than 4 percentage points signals a more substantial fall in house prices one to three years ahead. It turns out that this signal predicts substantial falls in house prices in 43 per cent of cases. This conditional probability is distinctly higher than the unconditional probability, which was 23 per cent. In other words, the probability of a substantial fall in house prices increases from 23 per cent to 43 per cent when the savings ratio is unusually low. This indicates that an unusually low savings ratio can constitute a warning signal that a housing-price bubble is developing.

We have also tested whether the reverse applies, that is whether an unusually high savings ratio reduces the likelihood of a major correction of house prices taking place one to three years ahead. The threshold value for an unusually high savings ratio was set at 4 percentage points above the historical average. The conditional probability then falls to 20 per cent (compared to an unconditional probability of 23

9. We have studied data for Sweden, Norway, Denmark, the UK, the USA, Ireland, Spain, Finland and Australia.

10. The IMF's (2009) decision to study the connections between different factors and falls in house prices from 1985 onwards is partly based on methodological considerations but also on the assessment that 1985 approximately coincides with the deregulation of the financial markets around the world and with the starting point for the period that is referred to as "The Great Moderation". However, we should also be aware that the choice of sample can have a rather considerable impact on the results and when we extend the period studied by a couple of years into the past we weaken many of the connections.

11. The IMF's (2009) study analyses data from 21 countries in the period 1970-2008, but the analysis of the ability of different variables to predict substantial falls in house prices in the future is limited to the period 1985-2008. We analyse only 10 countries, see footnote 2, but over a somewhat longer period (1981:4-2010:1).

per cent). The conclusion is that an unusually low savings ratio increases the risk of future house-price crashes while an unusually high savings ratio does not significantly reduce this risk.

The effects of substantial falls in house prices on GDP are only slightly mitigated by a high savings ratio

It may also be the case that a high savings ratio in the years preceding a fall in house prices helps to mitigate the *effects* of a major correction of house prices. Falls in house prices are often associated with periods of weak economic activity and a high level of saving may then provide some protection against significant falls in consumption as the consumers will be able to reduce their saving to keep up the level of consumption. The risk of households having to sell their homes in connection with a loss of income, which could accelerate the fall in house prices, is also smaller when there is a high level of saving. A high level of saving should also reduce the risk of falls in house prices leading to increases in the loan losses of the banks.¹² If so, it should be the level of the savings ratio that is significant. However, there are considerable natural differences between savings ratios in different countries due to their demography, social safety nets, pension systems and so on. Figure 2 therefore shows the relation between the deviation of the savings ratio from its long-term mean value (here called the “savings ratio gap”) for each country (that has been affected by a significant house-price correction) during the two years preceding a significant house-price correction and the effects on GDP growth in the following years.¹³ The effects on GDP growth are calculated as the average annual growth in the three years following a fall in house prices minus the average annual growth throughout the entire period.

The analysis provides some support for the idea that a relatively high level of saving mitigates the negative effects on GDP in our sample with the years after 1985. There is a weak positive link between subsequent GDP growth and the savings ratio gap (the correlation coefficient is 0.32), see Figure 2. However, a high savings ratio does not guarantee that the fall in GDP will be limited in the years following a major correction of house prices. There are several examples of this.¹⁴

Conclusions

The empirical analysis largely supports the hypothesis that if a country's savings ratio is low (relative to a historical average) then this is associated with an increased risk of substantial falls in house prices in the future. On the other hand, the risk does not decline significantly in the event of an unusually high savings ratio. Furthermore, there are some, although weak, indications that the real economic consequences of substantial falls in house prices tend to be less serious if the household savings ratio is relatively high. However, this conclusion should be interpreted with a great deal of caution as there are many factors, such as demography and the pension system, that affect the savings ratio and that lie outside the scope of the simple analysis conducted here. Experience from Japan (which is not included in the study) shows that a high savings ratio does not provide any guarantee against painful corrections of asset prices, but there are also several examples of this in our study. Finally, it should be emphasised that the study has been conducted on the basis of macro data and individual data that illustrates the savings behaviour and other financial circumstances of the most indebted households is needed for a more detailed study of various imbalances.¹⁵

12. The size of the house-price correction is probably also significant, but this is not investigated in this study.

13. We have also studied how the level of the savings ratio prior to a major house-price correction relates to the development of GDP following the house-price correction as it is conceivable that the level also captures the systematic effects of a persistent exaggerated provision of credit over and above various structural factors. However, we found no relation between the level of the savings ratio and the development of GDP following a house-price correction.

14. For example, in 1981 Australia had the highest savings ratio in the sample when the correction of house prices began (15.4 per cent). Average growth in the following three years was more than one percentage point lower than the historical mean value. This was a larger fall in growth than the average in Denmark in the years following the house-price crash of 1985 (zero percentage points) despite the fact that Denmark's savings ratio of -5.2 per cent was the lowest in the sample. It is clear, on the other hand, that substantial falls in house prices are costly, irrespective of the savings ratio, as the effect on GDP growth is almost always negative.

15. See, for example, the Riksbank's *Financial Stability Report 2009:1*.

Figures

Figure 1. Episodes of substantial falls in house prices

Number of countries, year

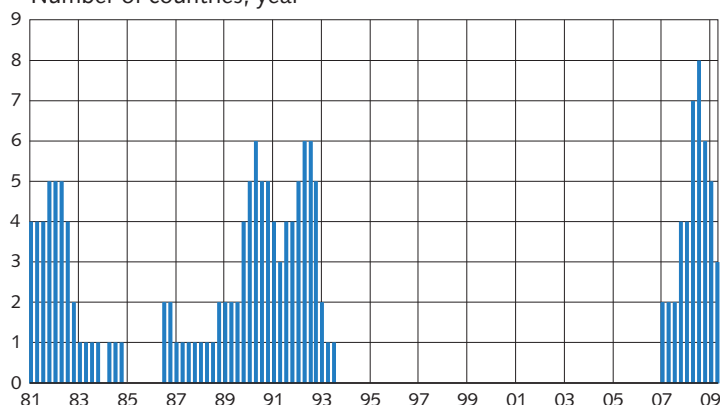
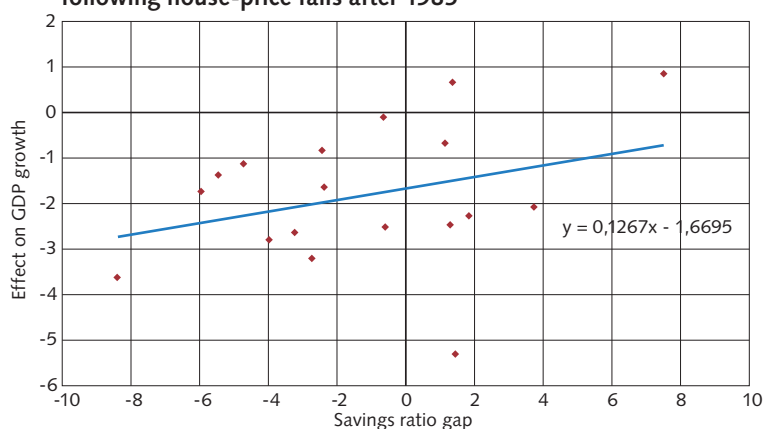



Figure 2. "Savings ratio gap" and effect on BNP growth following house-price falls after 1985



Note. The effects on GDP growth after house-price falls are calculated as the average annual growth in the three years following a fall in house prices minus the average annual growth throughout the entire period. The solid line shows an estimated linear relation between the effect on GDP growth and the "savings ratio gap" two years before the fall in house prices.

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