SPECIAL ANALYSIS

Macroeconomic effects of a decline in housing prices in Sweden

Swedish housing prices have climbed strongly since the mid-1990s, and housing now makes up almost half of gross household wealth. The rise in prices has coincided with a rise in household debt, sparking debate about both the presence of financial imbalances in the Swedish economy and the macroeconomic effects that a correction of these imbalances would have. The following attempts to estimate the possible macroeconomic effects of a decline in housing prices. The NIER's overall conclusion is that a 20 per cent drop in housing prices would have only a moderate impact on the economy. The effects would, however, be greater if falling housing prices coincided with a global economic downturn.[30]

Real housing prices have risen by around 130 per cent since the mid-1990s (see Diagram 119), and housing now accounts for around 45 per cent of households' gross wealth.[31] The dip in prices in connection with the financial crisis of 2008−2009 was short-lived. The rise in housing prices can be explained largely by structural factors: slow growth in the supply of housing, falling real interest rates, lower housing-related taxes and favourable growth in household incomes.[32]

Housing prices have accelerated in the past year, especially for tenant-owned apartments (see Diagram 120). It may be that this increase in prices is only temporary, and that the risk of a decline in housing prices in the coming years has therefore grown.

There is often a correlation between housing prices and consumption at an aggregate level in both Sweden and other developed countries (see Diagram 121).[33] This correlation does not, however, give any guidance on the causal relationship between the variables, and several different explanations for this relation-

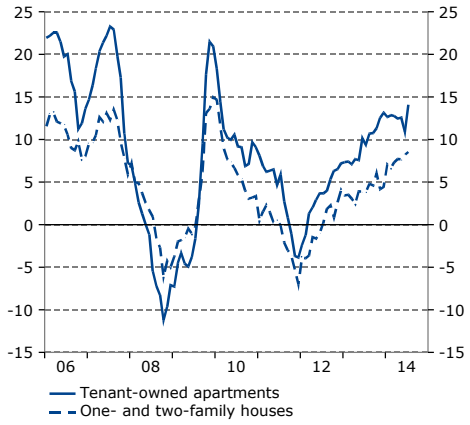
Diagram 119 Real housing prices

Index 1986=100

Note. Real housing prices are calculated as the real estate price index for one- and two-dwelling buildings for permanent living deflated by seasonally adjusted CPIF. Before 1987 CPIF is linked using CPI excl. mortgage interest costs.
Source: Statistics Sweden.

Diagram 120 HOX price index, tenant-owned apartments and one- and two-family houses

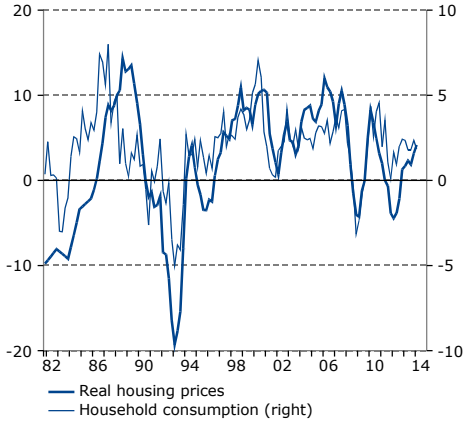
Annual percentage change



Sources: Valueguard and NIER.

Diagram 121 Real housing prices and household consumption

Annual percentage change



Source: Statistics Sweden.

[30] This special analysis is a summary of "Makroekonomiska effekter av ett bostadsprisfall i Sverige" [Macroeconomic effects of a decline in housing prices in Sweden], *Specialstudie* 41, Swedish National Institute of Economic Research, 2014.

[31] Housing wealth is defined as the estimated market value of houses, holiday homes and shares in housing cooperatives (tenant-owned apartments).

[32] See, for example, Claussen, C.A. et al., "A macroeconomic analysis of house prices in Sweden", in *The Riksbank's inquiry into the risks in the Swedish housing market,* Sveriges Riksbank, 2011, pp. 67–96, and Hansen, S. "Förklaringar till utvecklingen av hushållens skuldsättning sedan mitten av 1990-talet" [Explanations for the rise in household indebtedness since the mid-1990s], October 2013, Finansinspektionen.

[33] See, for example, Case, K. et al., "Comparing Wealth Effects: The Stock Market versus the Housing Market", *Advances in Macroeconomics* 5, 2005, pp. 1–32.

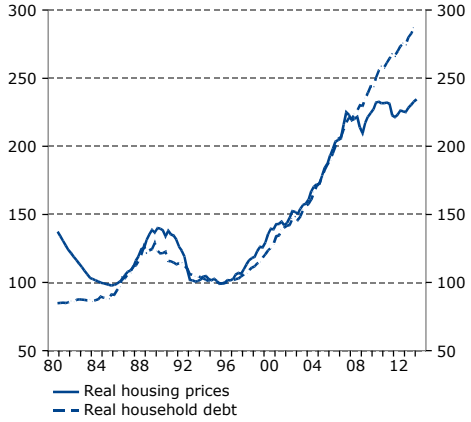
ship can be found in the economic literature. In recent years, "balance sheet effects" have been mooted as an explanation of the impact of housing price deflation on consumption.[34] One key element of this argument is that household debt is pivotal in understanding the consumption effects of falling housing prices. Lower housing prices lead to an increase in household indebtedness. Households wishing to avoid this will do so mainly by spending less so that they can save more and repay their loans.

As housing prices in Sweden have climbed since the mid-1990s, so has household indebtedness (see Diagram 122).[35] This has prompted debate about both the presence of financial imbalances and the macroeconomic effects that a correction of these imbalances would have. The Riksbank, for example, has expressed concern that developments in housing prices and household debt could eventually lead to an unfavourable macroeconomic situation and jeopardise the achievement of monetary policy objectives.[36] According to the Riksbank, such a scenario would arise where a fall in housing prices (and so household wealth) causes households to consume less in favour of saving and repaying debts. This would lead to an economic downturn and excessively low inflation.

Against this background, it is important to quantify the extent to which household consumption would be affected by a drop in housing prices.

Diagram 122 Real housing prices and real household debt

Index 1986=100



Note. Nominal series are deflated using seasonally adjusted CPIF.

Source: Statistics Sweden.

FALLING HOUSING PRICES IMPACT BOTH HOUSEHOLD CONSUMPTION AND UNEMPLOYMENT

The present analysis looks at the macroeconomic effects of a decline in housing prices with the emphasis on household consumption and unemployment. A Bayesian VAR model[37] is used

[34] See discussion of this and other explanatory models in the study cited in footnote 30.

[35] It should be noted, however, that real debt ought to grow more quickly than real housing prices in the long term, as the housing stock (number of homes) will increase over time.

[36] See, for example, the article "Financial imbalances in the monetary policy assessment" in *Monetary Policy Report*, July 2013, Sveriges Riksbank. See also the articles by Lars E.O. Svensson and Per Jansson in *Ekonomisk Debatt*, No. 3, 2014, for a presentation of different standpoints on these issues.

[37] The model is described in Villani, M., "Inference in Vector Autoregressive Models with an Informative Prior on the Steady State", *Journal of Applied Econometrics*, 24, 2009, pp. 630-650. The model specification used includes KIX16-weighted GDP (seasonally adjusted), the spread between US junk bonds and US Treasuries, the unemployment rate in the 15-74 age group (seasonally adjusted), household consumption (seasonally adjusted), real housing prices (deflated by seasonally adjusted CPIF inflation), three-month mortgage rates (list price) and a financial uncertainty index. The model is estimated on data from the first quarter of 1989 through to the fourth quarter of 2013.

to create four different scenarios where the impact of housing prices on consumption and unemployment are analysed.[38]

Scenario 1: Short-term decline in housing prices

In the first scenario, housing prices are assumed to fall by 5 percentage points for four successive quarters to a good 20 per cent below the base scenario, and then follow the historical pattern. The impact on household consumption is greatest after five quarters, when it is 1.8 percentage points lower than in the base scenario, and it takes 18 quarters for consumption to return to the trend level (see Diagram 123). Unemployment peaks at 1.5 percentage points higher than in the base scenario after eight quarters, and is still 1.2 percentage points higher after three years (see Diagram 124).

Scenario 2: Short-term decline in housing prices combined with weaker domestic financial conditions

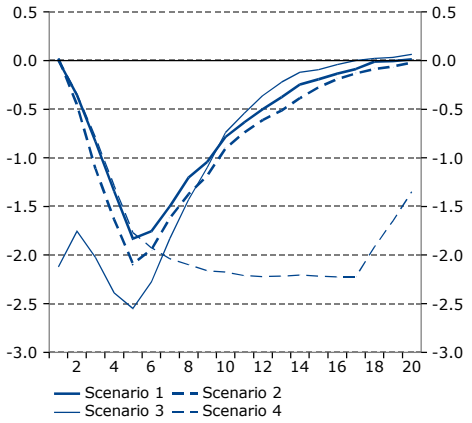
Another conceivable scenario is where a drop in housing prices coincides with a deterioration in domestic financial conditions. Besides the previous assumption of a short-term decline in housing prices, it is now also assumed that the Swedish financial sector's position weakens to approximately the same degree as in autumn 2008.[39] Not unexpectedly, the weaker state of the domestic financial sector leads to more negative economic developments. Household consumption is 2 percentage points below the base scenario after five quarters, and only returns to the trend level after 20 quarters. Unemployment peaks at 1.8 percentage points higher than in the base scenario, and is still 1.6 percentage points higher after three years (see Diagram 124).

Scenario 3: Short-term decline in housing prices combined with international shocks

The third scenario aims to shed light on the effects of a decline in housing prices together with a major global economic downturn and turmoil in global financial markets. As well as a short-term fall in housing prices, it is assumed that there is a decline in

Diagram 123 Household consumption

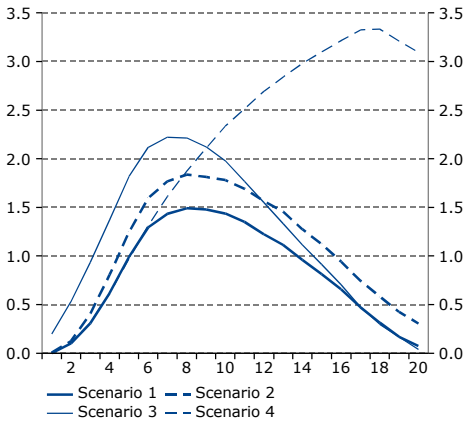
Difference from base scenario, percentage points



Note. Quarters are on the X axis. Housing prices start falling in the first quarter in the graph.
Source: NIER.

Diagram 124 Unemployment

Difference from base scenario, percentage points



Note. Quarters are on the X axis. Housing prices start falling in the first quarter in the graph.
Source: NIER.

[38] To take account of there currently being limited scope to lower the repo rate, all the scenarios assume that mortgage rates do not fall below 1.5 per cent.

[39] A domestic financial uncertainty index is included in the model with the aim of providing a summary measure of the health of the financial sector. It has three components: a short real interest rate, a short interbank spread and movements on the Stockholm Stock Exchange (sign reversed). These three components are given equal weights in the estimation of the index. In scenario 2, it is assumed that the domestic financial uncertainty index climbs 15 points in the first quarter and by a further 15 points in the second.

global GDP and increased financial uncertainty,[40] to approximately the same degree as during the financial crisis.[41] In this case, household consumption falls as far as 2.6 percentage points below the base scenario after five quarters. Even in the first quarter the impact on consumption is considerable at 2.1 percentage points, and consumption only returns to the trend level after 17 quarters (see Diagram 123). Unemployment is 2.2 percentage points higher after seven quarters and is still 1.5 percentage points higher than in the base scenario after three years.

Scenario 4: Prolonged decline in housing prices

A fourth possible scenario is where the decline in housing prices is more protracted, as was the case in the 1990s crisis (see Diagram 119). The scenario has been constructed by assuming that housing prices fall by 20 percentage points in the first year and are then unchanged for three years. Unsurprisingly, this more prolonged decline has longer-lasting effects on household consumption, which hits a low of 2.2 percentage points below the base scenario after 17 quarters. There is an even greater impact on unemployment, which peaks 3.3 percentage points above the base scenario after 18 quarters.

Effects on GDP and investment

The impact of a decline in housing prices on investment and GDP has also been analysed. The effects on investment are significant, but arrive later than those on household consumption. The effects on GDP growth are also negative, but not statistically significant. This can probably be explained largely by both the 1990s crisis and the financial crisis coinciding with a weakening of the krona. This contributed to a rapid recovery in net exports, which softened the impact on GDP growth.

THE EFFECTS MAY BE UNDERESTIMATED – OR OVERESTIMATED

Although the model's results are robust for various specifications, there is reason to be cautious when interpreting them. First, one key assumption is that the impact of lower housing prices on consumption is approximately linear. In other words, if prices fall by 5 percentage points rather than 1 percentage point, the impact on consumption will be five times as great.

[40] The increase in financial uncertainty is approximated by an increase in the spread between US junk bonds and US Treasuries.

[41] Approximated by a drop in global GDP of 2 percentage points and an increase in the spread between US junk bonds and US Treasuries of 7 percentage points in the first quarter.

Such an assumption is considered reasonable for a decline in housing prices of the magnitude analysed here, but if prices fall sharply enough to disrupt the functioning of financial markets, the model's predictions will probably underestimate the actual impact.

Second, it is important to bear in mind that the model is estimated over a period when in some ways the economy probably worked somewhat differently to today. The model is based on a period when a weak housing market coincided with a deterioration in the krona and an increase in net exports. Future falls in housing prices need not necessarily be associated with a similar situation, and the effects may therefore be greater than the model's results indicate.

On the other hand, there are factors that suggest that the effects on consumption and unemployment could be smaller than the model's results indicate. Household saving is higher, and public finances stronger, than in the period on which the model is based, which could spell less negative macroeconomic effects.

THE OVERALL CONCLUSION IS THAT A DECLINE IN HOUSING PRICES WOULD HAVE A MODERATE IMPACT ON THE ECONOMY

The model's results indicate that household consumption would be affected negatively by a drop in housing prices, and unemployment would rise. The effect is not negligible, and increases if the downturn in the housing market coincides with other shocks. The decline in housing prices assumed in the model scenarios could be explained as a correction of expectations (bubble bursting), but also as an adjustment to changes in the fundamental determinants of housing prices. Given the magnitude of the macroeconomic effects in the model exercises above, there may therefore be reason for decision makers to analyse carefully how different policy changes could affect these fundamental determinants and, thereby, housing prices. The NIER's overall conclusion, however, is that the effects of a drop in domestic housing prices of the size analysed here, with or without additional shocks, need not have greater macroeconomic consequences than in a normal economic downturn.[42] Compared with the time period used to estimate the model, public finances are currently strong. The limited scope for monetary policy stimuli can therefore be supplemented with more expansionary fiscal policy than normal to counter a downturn in demand. House-

[42] For example, household consumption fell, and unemployment increased, significantly further in both the 1990s crisis and the financial crisis than is estimated here.

hold saving is also high, which could soften the effects on consumption and, thereby, unemployment.