

Dealing with Household Debt

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Abstract

Does household debt amplify downturns and weaken recoveries? Based on an analysis of advanced economies over the past three decades, we find that housing busts and recessions preceded by larger run-ups in household debt tend to be more severe and protracted. These patterns are consistent with the predictions of recent theoretical models. Based on case studies, we find that government policies can help prevent prolonged contractions in economic activity by addressing the problem of excessive household debt. In particular, bold household debt restructuring programs such as those implemented in the United States in the 1930s and in Iceland today can significantly reduce debt repayment burdens and the number of household defaults and foreclosures. Such policies can therefore help avert self-reinforcing cycles of household defaults, further house price declines, and additional contractions in output.

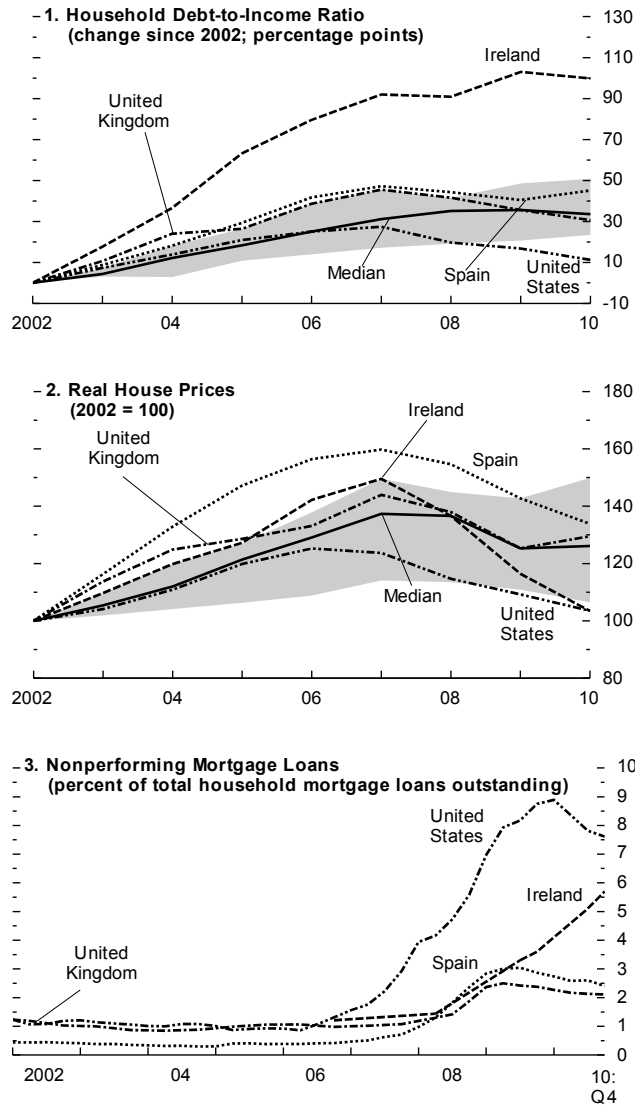
Household debt soared in the years leading up to the Great Recession. In advanced economies, during the five years preceding 2007, the ratio of household debt to income rose by an average of 39 percentage points, to 138 percent. In Denmark, Iceland, Ireland, the Netherlands, and Norway, debt peaked at more than 200 percent of household income. A surge in household debt to historic highs also occurred in emerging market economies such as Estonia, Hungary, Latvia, and Lithuania. The concurrent boom in both house prices and the stock market meant that household debt relative to assets held broadly stable, which masked households' growing exposure to a sharp fall in asset prices (Figure 1).

When house prices declined, ushering in the global financial crisis, many households saw their wealth shrink relative to their debt, and, with less income and more unemployment, found it harder to meet mortgage payments. By the end of 2011, real house prices had fallen from their peak by about 41 percent in Ireland, 29 percent in Iceland, 23 percent in Spain and the United States, and 21 percent in Denmark. Household defaults, underwater mortgages (where the loan balance exceeds the house value), foreclosures, and fire sales are now endemic to a number of economies. Household deleveraging by paying off debts or defaulting on them has begun in some countries. It has been most pronounced in the United States, where about two-thirds of the debt reduction reflects defaults (McKinsey, 2012).

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Figure 1 Household Debt, House Prices, and Nonperforming Mortgage Loans, 2002–10

Household debt and house prices soared in the years leading up to the Great Recession. When house prices declined, ushering in the global financial crisis, household nonperforming mortgage loans rose sharply in a number of economies.



Sources: Eurostat; Haver Analytics; Federal Reserve Bank of New York; Reserve Bank of Australia; Bank of Spain; U.K. Council of Mortgage Lenders; Central Bank of Ireland; Chapter 3 of April 2011 *Global Financial Stability Report*, and IMF staff calculations.

Note: The shaded areas in panels 1 and 2 denote the interquartile range of the change in the household debt-to-income ratio since 2002 and the real house price index, respectively. Nonperforming loans are loans more than 90 days in arrears.

What does this imply for economic performance? Some studies suggest that many economies' total gross debt levels are excessive and need to decline.¹ For example, two influential reports by McKinsey (2010, 2012) emphasize that to “clear the way” for economic growth, advanced economies need to reverse the recent surge in total gross debt. Yet others suggest that the recent rise in debt is not necessarily a reason for concern. For

example, Fatás (2012) argues that the McKinsey reports' focus on gross debt is "very misleading," since what matters for countries is net wealth and not gross debt.² A high level of private sector debt as a share of the economy is also often interpreted as a sign of financial development, which in turn is beneficial for long-term growth (see, for example, Rajan and Zingales, 1998). Similarly, Krugman (2011) notes that because gross debt is "(mostly) money we owe to ourselves," it is not immediately obvious why it should matter. However, Krugman also cautions that gross debt can become a problem. Overall, there is no accepted wisdom about whether and how gross debt may restrain economic activity.

This chapter contributes to the debate over gross debt by focusing on the household sector. Previous studies have focused more on deleveraging by other sectors.³ In particular, we address the following questions:

- What is the relationship between household debt and the depth of economic downturns? Are busts that are preceded by larger run-ups in gross household debt typically more severe?
- Why might gross household debt be a problem? What are the theoretical mechanisms by which gross household debt and deleveraging may restrain economic activity?⁴
- What can governments do to support growth when household debt becomes a problem? In particular, what policies have been effective in reducing the extent of household debt overhang and in averting unnecessary household defaults, foreclosures, and fire sales? How effective have recent initiatives been?⁵

To address these questions, we first conduct a statistical analysis of the relationship between household debt and the depth of economic downturns. Our purpose is to provide *prima facie* evidence rather than to establish causality. We focus on housing busts, given the important role of the housing market in triggering the Great Recession, but also consider recessions more generally. We then review the theoretical reasons why household debt might constrain economic activity. Finally, we use selected case studies to investigate which government policies have been effective in dealing with excessive household debt. The episodes considered are the United States in the 1930s and today, Hungary and Iceland today, Colombia in 1999, and the Scandinavian countries in the early 1990s. In each case, there was a housing bust preceded by or coinciding with a substantial increase in household debt, but the policy responses were very different.

² To illustrate this point, Fatás (2012) refers to Japan, where the gross-debt-to-GDP ratio is exceptionally high but where, reflecting years of current account surpluses, the economy is a net *creditor* to the rest of the world. Similarly, the elevated Japanese gross government debt stock corresponds to large private sector assets.

³ For example, see IMF (2010), which assesses the implications of sovereign deleveraging (fiscal consolidation). Since deleveraging by various sectors—household, bank, corporate, and sovereign—will have different implications for economic activity, each is worth studying in its own right.

⁴ A related question is what level of household debt is optimal, but such an assessment is beyond the scope of this chapter.

⁵ We do not investigate which policies can help prevent the excessive buildup of household debt before the bust, an issue that is addressed in other studies. These two sets of policies are not mutually exclusive. For example, policies that prevent an excessive buildup in household debt during a boom can alleviate the

These are the chapter's main findings:

- Housing busts preceded by larger run-ups in gross household debt are associated with significantly larger contractions in economic activity. The declines in household consumption and real GDP are substantially larger, unemployment rises more, and the reduction in economic activity persists for at least five years. A similar pattern holds for recessions more generally: recessions preceded by larger increases in household debt are more severe.
- The larger declines in economic activity are not simply a reflection of the larger drops in house prices and the associated destruction of household wealth. It seems to be the *combination* of house price declines and prebust leverage that explains the severity of the contraction. In particular, household consumption falls by more than four times the amount that can be explained by the fall in house prices in high-debt economies. Nor is the larger contraction simply driven by financial crises. The relationship between household debt and the contraction in consumption also holds for economies that did not experience a banking crisis around the time of the housing bust.
- Macroeconomic policies are a crucial element of forestalling excessive contractions in economic activity during episodes of household deleveraging. For example, monetary easing in economies in which mortgages typically have variable interest rates, as in the Scandinavian countries, can quickly reduce mortgage payments and avert household defaults. Similarly, fiscal transfers to households through social safety nets can boost households' incomes and improve their ability to service debt, as in the Scandinavian countries. Such automatic transfers can further help prevent self-reinforcing cycles of rising defaults, declining house prices, and lower aggregate demand. Macroeconomic stimulus, however, has its limits. The zero lower bound on nominal interest rates can prevent sufficient rate cuts, and high government debt may constrain the scope for deficit-financed transfers.
- Government policies targeted at reducing the level of household debt relative to household assets and debt service relative to household repayment capacity can—at a limited fiscal cost—substantially mitigate the negative effects of household deleveraging on economic activity. In particular, bold and well-designed household debt restructuring programs, such as those implemented in the United States in the 1930s and in Iceland today, can significantly reduce the number of household defaults and foreclosures. In so doing, these programs help prevent self-reinforcing cycles of declining house prices and lower aggregate demand.

The first section of this chapter conducts a statistical analysis to shed light on the relationship between the rise in household debt during a boom and the severity of the subsequent bust. It also reviews the theoretical literature to identify the channels through which shifts in household gross debt can have a negative effect on economic activity. The second section provides case studies of government policies aimed at mitigating the negative effects of household debt during housing busts. The last section discusses the implications of our findings for economies facing household deleveraging.

This section sheds light on the role of gross household debt in amplifying slumps by analyzing the experience of advanced economies over the past three decades. We also review the theoretical reasons gross household debt can deepen and prolong economic contractions.

A. Stylized Facts: Household Debt and Housing Busts

Are housing busts more severe when they are preceded by large increases in gross household debt? To answer this question, we provide some stylized facts about what happens when a housing bust occurs in two groups of economies. The first has a housing boom but no increase in household debt. The other has a housing boom and a large increase in household debt. We focus on housing busts, given how prevalent they were in advanced economies during the Great Recession.⁶ But we also report results for recessions in general, whether or not they are associated with a housing bust. We start by summarizing how different economies fared during the Great Recession depending on the size of their household debt buildup. We then use a more refined statistical approach to consider the broader historical experience with housing busts and recessions and to distinguish the role of household debt from the roles of financial crises and house price declines.

A.1 The Great Recession

The Great Recession was particularly severe in economies that had a larger buildup in household debt prior to the crisis. As Figure 2 shows, the consumption loss in 2010 relative to the precrisis trend was greater for economies that had a larger rise in the gross household debt-to-income ratio during 2002–06.⁷ The consumption loss in 2010 is the gap between the (log) level of real household consumption in 2010 and the projection of where real household consumption would have been that year based on the precrisis trend. The precrisis trend is, in turn, defined as the extrapolation of the (log) level of real household consumption based on a linear trend estimated from 1996 to 2004, following the methodology of IMF (2009). The estimation of the precrisis trend ends several years before the crisis so that it is not contaminated by the possibility of an unsustainable boom during the run-up to the crisis or a precrisis slowdown. The slope of the regression line is -0.26 , implying that for each additional 10 percentage point rise in household debt prior to the crisis, the consumption loss was larger by 2.6 percentage points, a substantial (and statistically significant) relationship.⁸

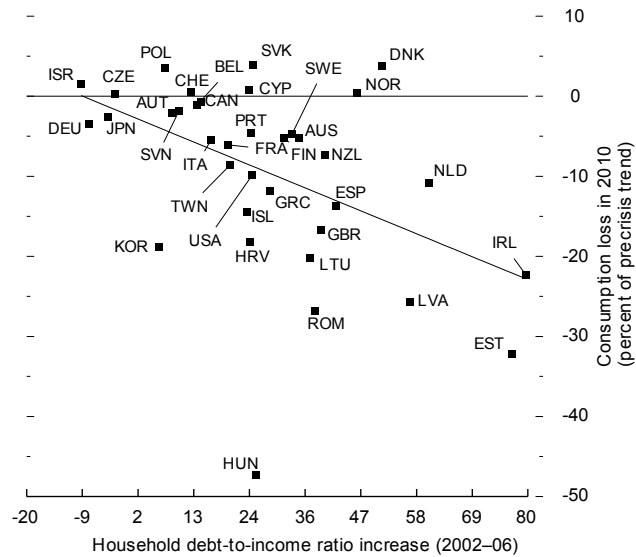
⁶ Housing-related debt (mortgages) comprises about 70 percent of gross household debt in advanced economies. The remainder consists mainly of credit card debt and auto loans.

⁷ See Appendix 1 for data sources. Glick and Lansing (2010) report a similar finding for a smaller cross-section of advanced economies.

⁸ The sharper fall in consumption in high-debt growth economies does not simply reflect the occurrence of banking crises. The relationship between household debt accumulation and the depth of the Great Recession remains similar and statistically significant after excluding the 18 economies that experienced a banking crisis at some point during 2007–11, based on the banking crises identified by Laeven and Valencia (2010). The sharper contraction in consumption also does not reflect simply a bigger precrisis consumption boom. The

Figure 2. The Great Recession: Consumption Loss versus Precrisis Rise in Household Debt (Percent)

The Great Recession was particularly severe in economies that experienced a larger run-up in household debt prior to the crisis.



Sources: Eurostat; Haver Analytics; and IMF staff calculations.

Note: The consumption loss in 2010 is the gap between the (log) level of real household consumption in 2010 and the projection of where real household consumption would have been that year based on the precrisis trend. The precrisis trend is defined as the extrapolation of the (log) level of real household consumption based on a linear trend estimated from 1996 to 2004. AUS: Australia; AUT: Austria; BEL: Belgium; CAN: Canada; CHE: Switzerland; CYP: Cyprus; CZE: Czech Republic; DEU: Germany; DNK: Denmark; ESP: Spain; EST: Estonia; FIN: Finland; FRA: France; GBR: United Kingdom; GRC: Greece; HRV: Croatia; HUN: Hungary; IRL: Ireland; ISL: Iceland; ISR: Israel; ITA: Italy; JPN: Japan; KOR: Korea; LTU: Lithuania; LVA: Latvia; NLD: Netherlands; NOR: Norway; NZL: New Zealand; POL: Poland; PRT: Portugal; ROM: Romania; SVK: Slovak Republic; SVN: Slovenia; SWE: Sweden; TWN: Taiwan Province of China; USA: United States.

A.2 Historical Experience

Is the Great Recession part of a broader historical pattern—specifically, are busts that are preceded by larger run-ups in gross household debt usually more severe? To answer this question, we use statistical techniques to relate the buildup in household debt during the boom to the nature of economic activity during the bust. Given the data available on gross household debt, we focus on a sample of 24 Organization for Economic Cooperation and Development (OECD) economies and Taiwan Province of China during 1980–2011. First, we identify housing busts based on the turning points (peaks) in nominal house prices compiled by Claessens, Kose, and Terrones (2010).⁹ For our sample of 25 economies, this yields 99 housing busts. Next, we divide the housing busts into two groups: those that involved a large run-up in the household debt-to-income ratio during the three years leading up to the bust and those that did not.¹⁰ We refer to the two groups as “high-debt” and “low-debt”

⁹ Claessens, Kose, and Terrones (2010) identify turning points in nominal house prices using the Harding and Pagan (2002) algorithm.

¹⁰ For our baseline specification, we define a “large” increase in debt as an increase above the median of all busts, but, as the robustness analysis in Appendix 2 reports, the results do not depend on this precise threshold.

busts, respectively. Other measures of leverage (such as debt-to-assets and debt-to-net-worth ratios) are not widely available for our multicountry sample. Finally, we regress measures of economic activity on the housing bust dummies for the two groups using a methodology similar to that of Cerra and Saxena (2008), among others. Given our focus on the household sector, we start by considering the behavior of household consumption and then report results for GDP and its components, unemployment, and house prices.

Specifically, we regress changes in the log of real household consumption on its lagged values (to capture the normal fluctuations of consumption) as well as on contemporaneous and lagged values of the housing bust dummies. Including lags allows household consumption to respond with a delay to housing busts.¹¹ To test whether the severity of housing busts differs between the two groups, we interact the housing bust dummy with a dummy variable that indicates whether the bust was in the high-debt group or the low-debt group. The specification also includes a full set of time fixed effects to account for common shocks, such as shifts in oil prices, and economy-specific fixed effects to account for differences in the economies' normal growth rates. The estimated responses are cumulated to recover the evolution of the level of household consumption following a housing bust. The figures that follow indicate the estimated response of consumption and 1 standard error band around the estimated response.

The regression results suggest that housing busts preceded by larger run-ups in household debt tend to be followed by more severe and longer-lasting declines in household consumption. Panel 1 of Figure 3 shows that the decline in real household consumption is 4.3 percent after five years for the high-debt group and only 0.4 percent for the low-debt group. The difference between the two samples is 3.9 percentage points and is statistically significant at the 1 percent level, as reported in Appendix 2. These results survive a variety of robustness tests, including different estimation approaches (such as generalized method of moments), alternative specifications (changing the lag length), and dropping outliers (as identified by Cook's distance). (See Appendix 2 on the robustness checks.)

Housing busts preceded by larger run-ups in household leverage result in more contraction of general economic activity. Figure 3 shows that real GDP typically falls more and unemployment rises more for the high-debt busts. Net exports typically make a more positive contribution to GDP—partially offsetting the fall in domestic demand—but this reflects a greater decline in imports rather than a boom in exports.¹²

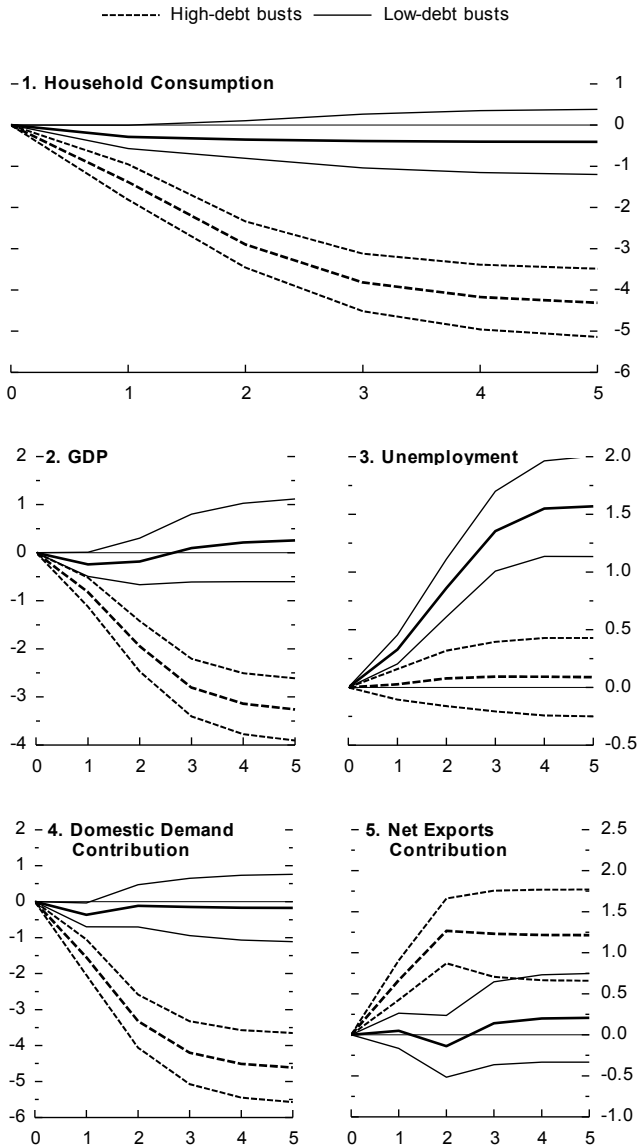
rose by 17 percentage points during the period leading up to the U.K. housing bust of 1989 and by 68 percentage points before the Irish housing bust of 2006.

¹¹ Appendix 2 provides further details on the estimation methodology.

¹² Estimation results for investment also show a larger fall for the high-debt busts. Estimation results for

Figure 3 Economic Activity during Housing Busts

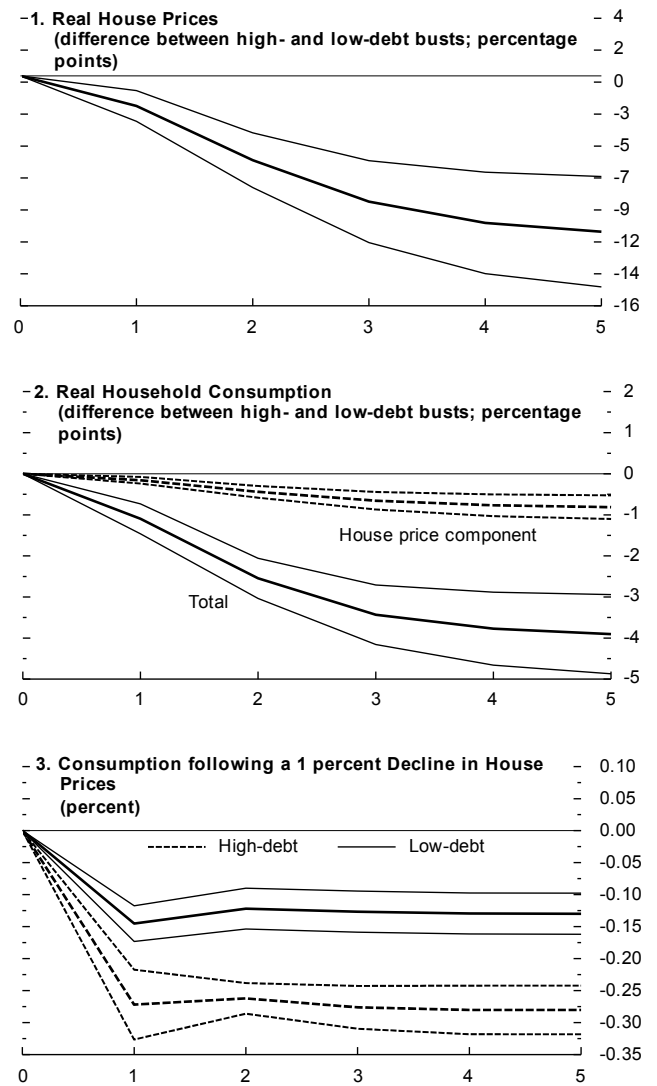
Real household spending and GDP fall more during housing busts preceded by a larger run-up in household debt, and the unemployment rate rises more. There is a greater fall in domestic demand, which is partly offset by a rise in net exports.



Source: IMF staff calculations.
 Note: X-axis units are years, where $t = 0$ denotes the year of the housing bust. Dashed lines indicate 1 standard error bands. High- and low-debt busts are defined, respectively, as above and below the median increase in the household debt-to-income ratio during the three years preceding the bust. The unemployment rate and the contributions to GDP are in percentage points; all other variables are in percent.

Figure 4 Housing Wealth and Household Consumption

House prices fall more during housing busts preceded by a larger run-up in debt, but this alone cannot explain the sharper decline in consumption in the wake of such busts. The larger fall in house prices explains about a quarter of the greater decline in consumption based on a standard elasticity of consumption with respect to housing wealth. Also, a 1 percent decline in real house prices is typically associated with a larger decline in real household consumption when it is preceded by a larger run-up in household debt.



Source: IMF staff calculations.
 Note: X-axis units are years, where $t = 0$ denotes the year of the housing bust. Dashed lines indicate 1 standard error bands. House price component is defined as the fall in real house prices multiplied by a benchmark elasticity of consumption relative to real housing wealth, based on existing studies (0.075). High- and low-debt are defined, respectively, as above and below the median increase in the household debt-to-income ratio during the three years preceding the full in house price.

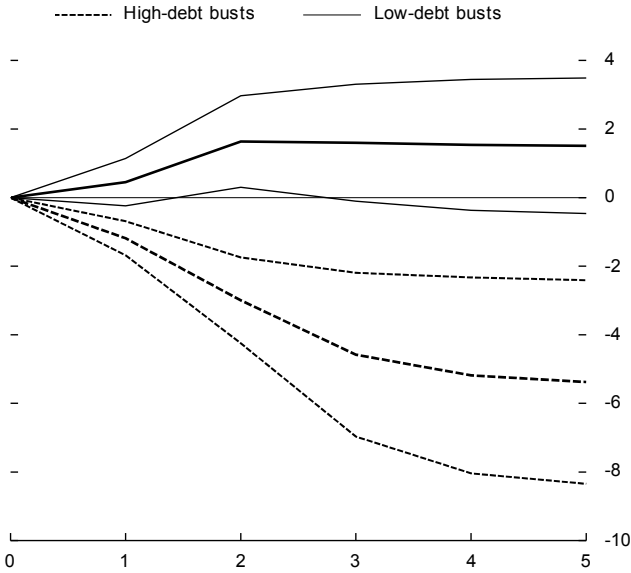
A logical question is whether the larger decline in household spending simply reflects larger declines in house prices. Panel 1 of Figure 4 shows that real house prices do indeed fall significantly more after highly leveraged busts. The fall in real house prices is 10.8 percentage points larger in the high-debt busts than in the low-debt busts, and the difference between the two samples is significant at the 1 percent level. However, this larger fall in house prices cannot plausibly explain the greater decline in household consumption. Real consumption declines by more than 3.9 percentage points more in the high-debt busts, implying an elasticity of about 0.4, well above the range of housing wealth consumption elasticities in the literature (0.05–0.1). Based on this literature, the fall in house prices therefore explains at most one-quarter of the decline in household consumption. To further establish that the decline in consumption reflects more than just house price declines, we repeat the analysis while replacing the housing bust dummy variable with the decrease in house prices (in percent). The results suggest that for the same fall in real house prices (1 percent), real household consumption falls by about twice as much during high-debt busts as during low-debt busts. Therefore, it seems to be the *combination* of house price declines and the prebust leverage that explains the severity of the contraction of household consumption.

Moreover, household deleveraging tends to be more pronounced following busts preceded by a larger run-up in household debt. In particular, the household debt-to-income ratio declines by 5.4 percentage points following a high-debt housing bust (Figure 5). The decline is statistically significant. In contrast, there is no decline in the debt-to-income ratio following low-debt housing busts. Instead, there is a small and statistically insignificant increase. This finding suggests that part of the stronger contraction in economic activity following high-debt housing busts reflects a more intense household deleveraging process.

It is important to establish whether the results are driven by financial crises. The contractionary effects of such crises have already been investigated by previous studies (Cerra and Saxena, 2008; IMF(2009), and Reinhart and Rogoff, 2009, among others). We find that the results are not driven by the global financial crisis—similar results apply when the sample ends in 2006, as reported in Appendix 2. Moreover, we find similar results when we repeat the analysis but focus only on housing busts that were not preceded or followed by a systemic banking crisis, as identified by Laeven and Valencia (2010), within a two-year window on either side of the housing bust. For this limited set of housing busts, those preceded by a larger accumulation of household debt are followed by deeper and more prolonged downturns (Figure 6). So the results are not simply a reflection of banking crises.

Figure 5 Household Debt during Housing Busts
(Percentage points)

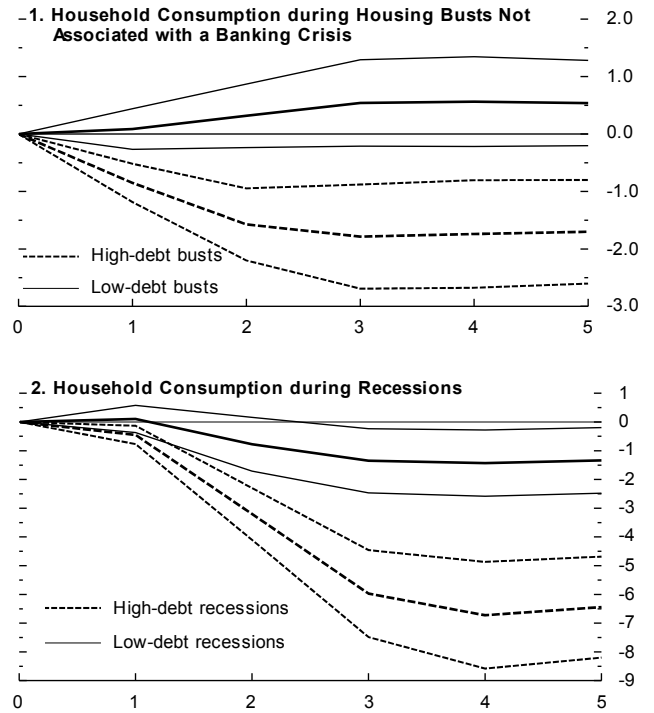
The reduction in household debt (deleveraging) is more pronounced during housing busts preceded by a larger buildup in indebtedness.



Source: IMF staff calculations.
Note: X-axis units are years, where $t = 0$ denotes the year of the housing bust. Dashed lines indicate 1 standard error bands. High- and low-debt busts are defined, respectively, as above and below the median increase in the household debt-to-income ratio during the three years preceding the bust.

Figure 6 Household Consumption
(Percent)

The finding that consumption falls more during housing busts preceded by a larger run-up in household debt is not driven by banking crises. It holds for a subset of housing busts not followed by a systemic banking crisis within a two-year window. In addition, recessions are generally deeper if they are preceded by a larger run-up in household debt.



Source: IMF staff calculations.
Note: In panel 1, X-axis units are years, where $t = 0$ denotes the year of the housing bust. Housing busts associated with a systemic banking crisis within a two-year window of the bust are not considered in the analysis. Systemic banking crisis indicators are from the updated Laeven and Valencia (2010) database. Dashed lines indicate 1 standard error bands. High- and low-debt busts are defined, respectively, as above and below the median increase in the household debt-to-income ratio during the three years preceding the housing bust. In panel 2, X-axis units are years, where $t = 0$ denotes the year of the recession. Dashed lines indicate 1 standard error bands. High- and low-debt recessions are defined, respectively, as above and below the median increase in the household debt-to-income ratio during the three years preceding the recession.

Finally, it is worth investigating whether high household debt also exacerbates the effects of other adverse shocks. We therefore repeat the analysis but replace the housing bust dummies with recession dummies. We construct the recession dummies based on the list of recession dates provided by Howard, Martin, and Wilson (2011). Figure 6 also shows that recessions preceded by a larger run-up in household debt do indeed tend to be more severe and protracted.

Overall, this analysis suggests that when households accumulate more debt during a boom, the subsequent bust features a more severe contraction in economic activity. These findings for OECD economies are consistent with those of Mian, Rao, and Sufi (2011) for the United States. These authors use detailed U.S. county-level data for the Great Recession to identify the causal effect of household debt. They conclude that the greater decline in consumption after 2007 in U.S. counties that accumulated more debt during 2002–06 is too large to be explained by the larger fall in house prices in those counties.¹³ This is consistent with the cross-country evidence in Figure 4. They also find evidence of more rapid household deleveraging in high-debt U.S. counties, which underscores the role of deleveraging and is consistent with the cross-country evidence in Figure 5. In related work, Mian and Sufi (2011) show that a higher level of household debt in 2007 is associated with sharper declines in spending on consumer durables, residential investment, and employment (Figure 7). Based on their findings, they conclude that the decline in aggregate demand driven by household balance sheet weakness explains the majority of the job losses in the United States during the Great Recession (Mian and Sufi, 2012).

The findings are also broadly consistent with the more general finding in the literature that recessions preceded by economy-wide credit booms—which may or may not coincide with household credit booms—tend to be deeper and more protracted than other recessions (see, for example, Claessens, Kose, and Terrones, 2010; and Jordà, Schularick, and Taylor, 2011). This conclusion is also consistent with evidence that consumption volatility is positively correlated with household debt (Isaksen and others, 2011).

¹³ In particular, by comparing house price declines with consumption declines in counties with high and low levels of household debt, they obtain an *implicit* elasticity of consumption relative to house prices of 0.3 to 0.7,

Figure 7 Economic Activity during the Great Recession in the United States

(Index; 2005:Q4 = 100)

Mian and Sufi (2011) find that in U.S. counties where households accumulated more debt before the Great Recession there was deeper and more prolonged contraction in household consumption, investment, and employment.



Source: Mian and Sufi (2011).
 Note: Shaded area indicates U.S. recession based on National Bureau of Economic Research dates.

B. Why Does household Debt Matter?

We have found evidence that downturns are more severe when they are preceded by larger increases in household debt. This subsection discusses how the pattern fits with the predictions of theoretical models. A natural starting point is to consider a closed economy with no government debt. In such an economy, net private

would simply represent “money we owe to ourselves” (Krugman, 2011) with no obvious macroeconomic implications. Nevertheless, even when changes in gross household debt imply little change in economy-wide net debt, they can influence macroeconomic performance by amplifying the effects of shocks. In particular, a number of theoretical models predict that buildups in household debt drive deep and prolonged downturns.¹⁴

We now discuss the main channels through which household debt can amplify downturns and weaken recoveries. We also highlight the policy implications. In particular, we explain the circumstances under which government intervention can improve on a purely market-driven outcome.

B.1 Differences between borrowers and lenders

The accumulation of household debt amplifies slumps in a number of recent models that differentiate between borrowers and lenders and feature liquidity constraints. A key feature of these models is the idea that the distribution of debt within an economy matters (Eggertsson and Krugman, 2010; Guerrieri and Lorenzoni, 2011; Hall, 2011).¹⁵ As Tobin (1980) argues, “the population is not distributed between debtors and creditors randomly. Debtors have borrowed for good reasons, most of which indicate a high marginal propensity to spend from wealth or from current income or from any other liquid resources they can command.”¹⁶ Indeed, household debt increased more at the lower ends of the income and wealth distribution during the 2000s in the United States (Kumhof and Rancière, 2010).

A shock to the borrowing capacity of debtors with a high marginal propensity to consume that forces them to reduce their debt could then lead to a decline in aggregate activity. Deleveraging could stem from a realization that house prices were overvalued (as in Buiter, 2010; and Eggertsson and Krugman, 2010), a tightening in credit standards (Guerrieri and Lorenzoni, 2011), a sharp revision in income expectations, or an increase in economic uncertainty (Fisher, 1933; Minsky, 1986). Here, a sufficiently large fall in the interest rate could induce creditor households to spend more, thus offsetting the decline in spending by the debtors. But, as these models show, the presence of the zero lower bound on nominal interest rates or other price rigidities can prevent these creditor households from picking up the slack. This feature is particularly relevant today because policy rates are near zero in many advanced economies.

¹⁴ In an open economy, gross household debt can have additional effects. In particular, a reduction in household debt could signal a transfer of resources from domestic to foreign households, implying even larger macroeconomic effects than in a closed economy.

¹⁵ In an earlier theoretical sketch, King (1994) discusses how differences in the marginal propensity to consume between borrowing and lending households can generate an aggregate downturn when household leverage is high.

¹⁶ Differences in the propensity to consume can arise for a number of reasons. Life-cycle motives have been emphasized as a source of differences in saving behavior across cohorts (see Modigliani, 1986, among others). Others have focused on the role of time preferences, introducing a class of relatively impatient agents (see Iacoviello, 2005; and Eggertsson and Krugman, 2010). Dynan, Skinner, and Zeldes (2004) find a strong positive

Consumption may be further depressed following shocks in the presence of uncertainty, given the need for precautionary saving (Guerrieri and Lorenzoni, 2011; Carroll, Slacalek, and Sommer, 2011). The cut in household consumption would then be particularly abrupt, “undershooting” its long-term level (as it appears to have done in the United States today; see Glick and Lansing, 2009). Such a sharp contraction in aggregate consumption would provide a rationale for temporarily pursuing expansionary macroeconomic policies, including fiscal stimulus targeted at financially constrained households (Eggertsson and Krugman, 2010; Carroll, Slacalek, and Sommer, 2011), and household debt restructuring (Rogoff, 2011).

B.2 Negative price effects from fire sales

A further negative effect on economic activity of high household debt in the presence of a shock, postulated by numerous models, comes from the forced sale of durable goods (Shleifer and Vishny, 1992; Mayer, 1995; Krishnamurthy, 2010; Lorenzoni, 2008). For example, a rise in unemployment reduces households’ ability to service their debt, implying a rise in household defaults, foreclosures, and creditors selling foreclosed properties at distressed, or fire-sale, prices. Estimates suggest that a single foreclosure lowers the price of a neighboring property by about 1 percent, but that the effects can be much larger when there is a wave of foreclosures, with estimates of price declines reaching almost 30 percent (Campbell, Giglio, and Pathak, 2011). The associated negative price effects in turn reduce economic activity through a number of self-reinforcing contractionary spirals. These include negative wealth effects, a reduction in collateral value, a negative impact on bank balance sheets, and a credit crunch. As Shleifer and Vishny (2010) explain, fire sales undermine the ability of financial institutions and firms to lend and borrow by reducing their net worth, and this reduction in credit supply can reduce productivity-enhancing investment. Such externalities—banks and households ignoring the social cost of defaults and fire sales—may justify policy intervention aimed at stopping household defaults, foreclosures, and fire sales.

The case of the United States today illustrates the risk of house prices “undershooting” their equilibrium values during a housing bust on the back of fire sales. The IMF staff notes that “distress sales are the main driving force behind the recent declines in house prices—in fact, excluding distress sales, house prices had stopped falling” and that “there is a risk of house price undershooting” (IMF, 2011c, p. 20).¹⁷

B.3 Inefficiencies and deadweight losses from debt overhang and foreclosures

A further problem is that household debt overhang can give rise to various inefficiencies. In the case of firms, debt overhang is a situation in which existing debt is so great that it constrains the ability to raise funds to finance profitable investment projects (Myers, 1977). Similarly, homeowners with debt overhang may invest little in their property. They may, for example, forgo investments that improve the net present value of their

¹⁷ As of end-2011, U.S. house prices were at or below the levels implied by regression-based estimates and

homes, such as home improvements and maintenance expenditures. This effect could be large. Based on detailed household-level U.S. data, Melzer (2010) finds that homeowners with debt overhang (negative equity) spend 30 percent less on home improvements and maintenance than homeowners without debt overhang, other things equal. While privately renegotiating the debt contract between the borrower and the lender could alleviate such debt overhang problems, renegotiation is often costly and difficult to achieve outside bankruptcy because of free-rider problems or contract complications (Foote and others, 2010).

Foreclosures and bankruptcy can be an inefficient way of resolving households' inability to service their mortgage debt, giving rise to significant "deadweight losses" (BGFRS, 2012). These deadweight losses stem from the neglect and deterioration of properties that sit vacant for months and their negative effect on neighborhoods' social cohesion and crime (Immergluck and Smith, 2005, 2006). Deadweight losses are also due to the delays associated with the resolution of a large number of bankruptcies through the court system.

Overall, debt overhang and the deadweight losses of foreclosures can further depress the recovery of housing prices and economic activity. These problems make a case for government involvement to lower the cost of restructuring debt, facilitate the writing down of household debt, and help prevent foreclosures (Philippon, 2009).

II. Dealing with Household Debt: Case Studies

Having established that household debt can amplify slumps and weaken recoveries, we now investigate how governments have responded during episodes of household deleveraging. We start by reviewing four broad policy approaches that can, in principle, allow government intervention to improve on a purely market-driven outcome. These approaches are not mutually exclusive and can be complementary. Each has benefits and limitations. The approach a government decides to use is likely to reflect institutional and political features of the economy, the available policy room, and the size of the household debt problem.

- *Temporary macroeconomic policy stimulus:* As discussed above, household deleveraging following a balance sheet shock can imply an abrupt contraction in household consumption to well below the long-term level (overshooting). The costs of the associated contraction in economic activity can be mitigated by an offsetting temporary macroeconomic policy stimulus. In an economy with credit-constrained households, this provides a rationale for temporarily pursuing an expansionary fiscal policy, including through government spending targeted at financially constrained households (Eggertsson and Krugman, 2010; Carroll, Slacalek, and Sommer, 2011).¹⁸ For example, simulations of policy models developed at six policy institutions suggest that, in the current environment, a temporary (two-year) transfer of 1 percent of GDP to financially constrained households would raise GDP by 1.3 percent and 1.1

¹⁸ The presence of financially constrained households with a high marginal propensity to consume out of disposable income increases the effectiveness of fiscal policy changes—it renders the economy non-Ricardian—in a wide range of models (see Coenen and others, 2012, for a discussion). The presence of the

percent in the United States and the European Union, respectively (Coenen and others, 2012).¹⁹ Financing the temporary transfer by a lump-sum tax on all households rather than by issuing government debt would imply a “balanced-budget” boost to GDP of 0.8 and 0.9 percent, respectively. Monetary stimulus can also provide relief to indebted households by easing the debt service burden, especially in countries where mortgages have variable rates, such as Spain and the United Kingdom. In the United States, the macroeconomic policy response since the start of the Great Recession has been forceful, going much beyond that of several other countries. It included efforts by the Federal Reserve to lower long-term interest rates, particularly in the key mortgage-backed security segment relevant for the housing market. Macroeconomic stimulus, however, has its limits. High government debt may constrain the available fiscal room for a deficit-financed transfer, and the zero lower bound on nominal interest rates can prevent real interest rates from adjusting enough to allow creditor households to pick up the economic slack caused by lower consumption by borrowers.

- *Automatic support to households through the social safety net:* A social safety net can automatically provide targeted transfers to households with distressed balance sheets and a high marginal propensity to consume, without the need for additional policy deliberation. For example, unemployment insurance can support people’s ability to service their debt after becoming unemployed, thus reducing the risk of household deleveraging through default and the associated negative externalities.²⁰ However, as in the case of discretionary fiscal stimulus, allowing automatic stabilizers to operate fully requires fiscal room.²¹
- *Assistance to the financial sector:* When the problem of household sector debt is so severe that arrears and defaults threaten to disrupt the operation of the banking sector, government intervention may be warranted. Household defaults can undermine the ability of financial institutions and firms to lend and borrow by reducing their net worth, and this reduction in credit supply can reduce productive investment (Shleifer and Vishny, 2010). A number of policies can prevent such a tightening in credit availability, including recapitalizations and government purchases of distressed assets.²² Such support mitigates the effects of household balance sheet distress on the financial sector. The U.S. Troubled Asset Relief Program established in 2008 was based, in part, on such considerations. Similarly, in Ireland, the National Asset Management Agency was created in 2009 to take over distressed loans from the banking

¹⁹ The six policy institutions are the U.S. Federal Reserve Board, the European Central Bank, the European Commission, the OECD, the Bank of Canada, and the IMF. The simulations assume that policy interest rates are constrained by the zero lower bound—a key feature of major advanced economies today—and that the central bank does not tighten monetary policy in response to the fiscal expansion. See Coenen and others (2012) for further details.

²⁰ The generosity and duration of the associated welfare payments differ by country. In Sweden, for example, workers are eligible for unemployment insurance for up to 450 days, although at declining replacement rates after 200 days. By contrast, in the United States, unemployment insurance is normally limited to 26 weeks, and extended benefits are provided during periods of high unemployment. The maximum duration of unemployment insurance was extended to 99 weeks (693 days) in February 2009, and this extension was renewed in February 2012.

²¹ Furthermore, to provide targeted support in a timely manner, the safety net needs to be in place before household debt becomes problematic.

sector. Moreover, assistance to the financial sector can enable banks to engage in voluntary debt restructuring with households. However, strong capital buffers may be insufficient to encourage banks to restructure household debt on a large scale, as is evident in the United States today. In addition, this approach does not prevent unnecessary household defaults, defined as those that occur as a result of temporary liquidity problems. Moreover, financial support to lenders facing widespread defaults by their debtors must be designed carefully to avoid moral hazard—indirectly encouraging risky lending practices in the future.

- *Support for household debt restructuring:* Finally, the government may choose to tackle the problem of household debt directly by setting up frameworks for voluntary out-of-court household debt restructuring—including write-downs—or by initiating government-sponsored debt restructuring programs. Such programs can help restore the ability of borrowers to service their debt, thus preventing the contractionary effects of unnecessary foreclosures and excessive asset price declines. To the extent that the programs involve a transfer to financially constrained households from less financially constrained agents, they can also boost GDP in a way comparable to the balanced-budget fiscal transfer discussed above. Such programs can also have a limited fiscal cost. For example, as we see later on, they may involve the government buying distressed mortgages from banks, restructuring them to make them more affordable, and later reselling them, with the revenue offsetting the initial cost. They also sometimes focus on facilitating case-by-case restructuring by improving the institutional and legal framework for debt renegotiation between the lender and the borrower, which implies no fiscal cost. However, the success of these programs depends on a combination of careful design and implementation.²³ In particular, such programs must address the risk of moral hazard when debtors are offered the opportunity to avoid complying with their loan's original terms.

It is worth recognizing that any government intervention will introduce distortions and lead to some redistribution of resources within the economy and over time. The question is whether the benefits of intervention exceed the costs. Moreover, if intervention has a budgetary impact, the extent of intervention should be constrained by the degree of available fiscal room. The various approaches discussed above differ in the extent of redistribution involved and the associated winners and losers. For example, the presence and generosity of a social safety net reflect a society's preferences regarding redistribution and inequality. Government support for the banking sector and household debt restructuring programs may involve clearer winners than, say, monetary policy stimulus or an income tax cut. The social friction that such redistribution may cause could limit its political feasibility. Mian, Sufi, and Trebbi (2012) discuss the political tug-of-war between creditors and debtors and find that political systems tend to become more polarized in the wake of financial crises. They also argue that collective action problems—struggling mortgage holders may be less well politically organized than banks—can hamper efforts to implement household debt restructuring. Moreover, all policies that respond to the consequences of excessive household debt need to be carefully designed to minimize the potential for moral hazard and excessive risk taking by both borrowers and lenders in the future.

To examine in practice how such policies can mitigate the problems associated with household debt, we

investigate the effectiveness of government action during several episodes of household deleveraging. We focus on policies that support household debt restructuring directly because of the large amount of existing literature on the other policy approaches. For example, there is a large literature on the determinants and effects of fiscal and monetary policy. There are also a number of studies on the international experience with financial sector policies.

The episodes we consider are the United States in the 1930s and today, Hungary and Iceland today, Colombia in 1999, and three Scandinavian countries (Finland, Norway, Sweden) in the 1990s. In each of these cases, there was a housing bust preceded by or coinciding with a substantial increase in household debt, but the policy response was different.²⁴ We start by summarizing the factors that led to the buildup in household debt and what triggered household deleveraging. We then discuss the government response, focusing on policies that directly address the negative effect of household debt on economic activity. Finally, we summarize the lessons to be learned from the case studies.²⁵

A. Factors underlying the buildup in household Debt

In each of these episodes, a loosening of credit constraints allowed households to increase their debt. This increase in credit availability was associated with financial innovation and liberalization and declining lending standards. A wave of household optimism about future income and wealth prospects also played a role and, together with the greater credit availability, helped stoke the housing and stock market booms.

The United States in the 1920s—the “roaring twenties”—illustrates the role of rising credit availability and consumer optimism in driving household debt. Technological innovation brought new consumer products such as automobiles and radios into widespread use. Financial innovation made it easier for households to obtain credit to buy such consumer durables and to obtain mortgage loans. Installment plans for the purchase of major consumer durables became particularly widespread (Olney, 1999). General Motors led the way with

²⁴ We do not discuss the real estate bust in Japan in the 1990s because household leverage relative to both safe and liquid assets was low at the time and household deleveraging was not a key feature of the episode. As Nakagawa and Yasui (2009) explain: “The finances of Japanese households were not severely damaged by the mid-1990s bursting of the bubble. Banks, however, with their large accumulation of household deposits on the liability side of their balance sheets, were victims of their large holdings of defaulted corporate loans and the resulting capital deterioration during the bust; in response, banks tightened credit significantly during this period” (p. 82).

²⁵ Other economies today have also implemented measures to address household indebtedness directly. For example, in the United Kingdom, the Homeowners Mortgage Support Scheme aimed to ease homeowners’ debt service temporarily with a government guarantee of deferred interest payments, the Mortgage Rescue Scheme attempted to protect the most vulnerable from foreclosure, while the expansion of the Support for Mortgage Interest provided more households with help in meeting their interest payments. Reforms currently being implemented in Ireland include modernizing the bankruptcy regime by making it less onerous and facilitating voluntary out-of-court arrangements between borrowers and lenders of both secured and unsecured debt. In

the establishment of the General Motors Acceptance Corporation in 1919 to make loans for the purchase of its automobiles. By 1927, two-thirds of new cars and household appliances were purchased on installment. Consumer debt doubled from 4.5 percent of personal income in 1920 to 9 percent of personal income in 1929. Over the same period, mortgage debt rose from 11 percent of gross national product to 28 percent, partly on the back of new forms of lending such as high-leverage home mortgage loans and early forms of securitization (Snowden, 2010). Reflecting the economic expansion and optimism that house values would continue rising, asset prices boomed.²⁶ Real house prices rose by 19 percent from 1921 to 1925,²⁷ while the stock market rose by 265 percent from 1921 to 1929.

Rising credit availability due to financial liberalization and declining lending standards also helped drive up household debt in the more recent cases we consider. In the Scandinavian countries, extensive price and quantity restrictions on financial products ended during the 1980s. Colombia implemented a wave of capital account and financial liberalization in the early 1990s. This rapid deregulation substantially encouraged competition for customers, which, in combination with strong tax incentives to invest in housing and optimism regarding asset values, led to a household debt boom in these economies.²⁸ Similarly, following Iceland's privatization and liberalization of the banking system in 2003, household borrowing constraints were eased substantially.²⁹ It became possible, for the first time, to refinance mortgages and withdraw equity. Loan-to-value (LTV) ratios were raised as high as 90 percent by the state-owned Housing Financing Fund, and even further by the newly private banks as they competed for market share. In Hungary, pent-up demand combined with EU membership prospects triggered a credit boom as outstanding household debt grew from a mere 7 percent of GDP in 1999 to 33 percent in 2007. The first part of this credit boom episode was also characterized by a house price rally, driven by generous housing subsidies. In the United States in the 2000s, an expansion of credit supply to households that had previously been unable to obtain loans included increased recourse to private-label securitization and the emergence of so-called exotic mortgages, such as interest-only loans, negative amortization loans, and "NINJA" (no income, no job, no assets) loans.

B. Factors that triggered household Deleveraging

²⁶ Regarding the reasons for this optimism, Harriss (1951) explains that "In the twenties, as in every period of favorable economic conditions, mortgage debt was entered into by individuals with confidence that the burden could be supported without undue difficulty ... over long periods the value of land and improvements had often risen enough to support the widely held belief that the borrower's equity would grow through the years, even though it was small to begin with" (p. 7).

²⁷ In certain areas, such as Manhattan and Florida, the increase was much higher (30 to 40 percent).

²⁸ In Finland the ratio of household debt to disposable income rose from 50 percent in 1980 to 90 percent in 1989; in Sweden it rose from 95 percent to 130 percent. In Colombia bank credit to the private sector rose from 32 percent of GDP in 1991 to 40 percent in 1997.

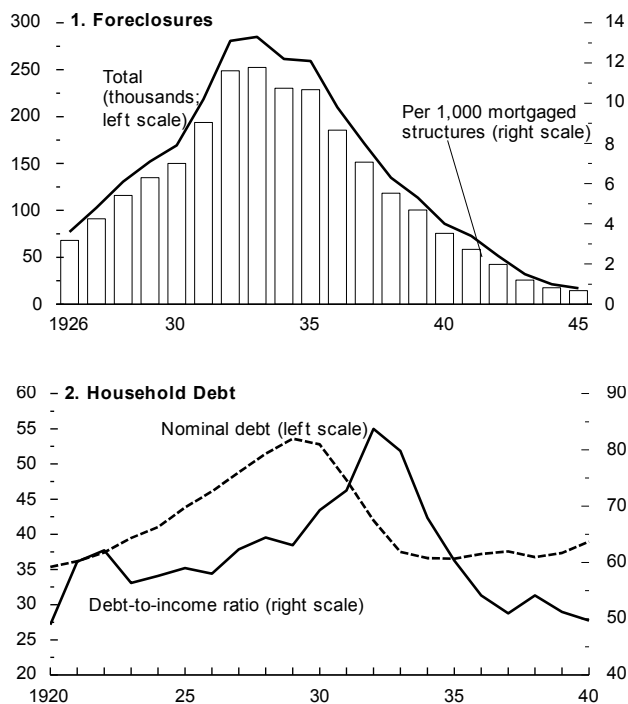
²⁹ Financial markets in Iceland were highly regulated until the 1980s. Liberalization began in the 1980s and accelerated during the 1990s, not least because of obligations and opportunities created by the decision to join

The collapse of the asset price boom, and the associated collapse in household wealth, triggered household deleveraging in all of the historical episodes we consider. The U.S. housing price boom of the 1920s ended in 1925, when house prices peaked. Foreclosure rates rose steadily thereafter (Figure 8), from 3 foreclosures per 1,000 mortgaged properties in 1926 to 13 per 1,000 by 1933. Another shock to household wealth came with the stock market crash of October 1929, which ushered in the Great Depression. A housing bust also occurred in the Scandinavian countries in the late 1980s and in Colombia in the mid-1990s. Similarly, the end of a house price boom and a collapse in stock prices severely dented household wealth in Iceland and the United States at the start of the Great Recession. In all these cases, household deleveraging started soon after the collapse in asset prices. In addition, a tightening of available credit associated with banking crises triggered household deleveraging during all these episodes. The distress in household balance sheets due to the collapse of their wealth spread quickly to financial intermediaries' balance sheets, resulting in tighter lending standards and forcing further household deleveraging.

The experience of Iceland in 2008 provides a particularly grim illustration of how a collapse in asset prices and economic prospects, combined with a massive banking crisis, leads to household overindebtedness and a need for deleveraging. Iceland's three largest banks fell within one week in October 2008. Household balance sheets then came under severe stress from a number of factors (Figure 9). First, the collapse in confidence triggered sharp asset price declines, which unwound previous net wealth gains. At the same time, the massive inflation and large depreciation of the krona during 2008–09 triggered a sharp rise in household debt since practically all loans were indexed to the consumer price index (CPI) or the exchange rate. CPI-indexed mortgages with LTV ratios above 70 percent were driven underwater by a combination of 26 percent inflation and an 11 percent drop in house prices. Likewise, with the krona depreciating by 77 percent, exchange-rate-indexed mortgages with LTV ratios above 40 percent went underwater. Inflation and depreciation also swelled debt service payments, just as disposable income stagnated. The combination of debt overhang and debt servicing problems was devastating. By the end of 2008, 20 percent of homeowners with mortgages had negative equity in their homes (this peaked at 38 percent in 2010), while nearly a quarter had debt service payments above 40 percent of their disposable income.

Figure 8 Foreclosures and Household Debt during the Great Depression in the United States

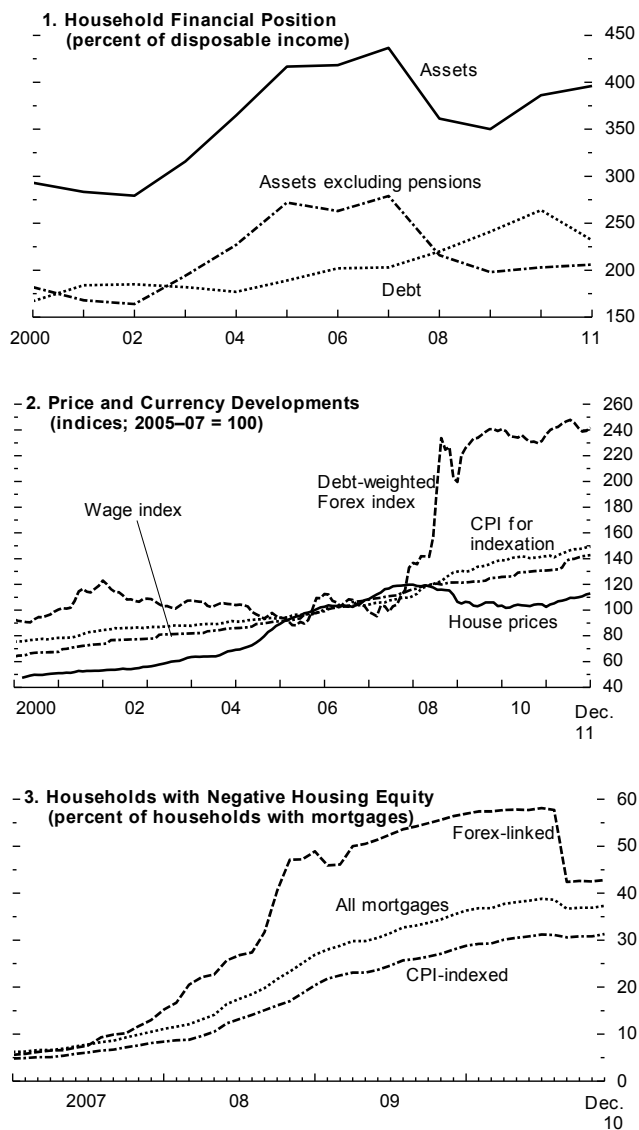
After the peak in house prices in 1925, foreclosure rates rose steadily for the following eight years. While widespread defaults lowered the stock of outstanding nominal debt starting in 1930, the collapse in household income meant that the debt-to-income ratio continued to rise until 1933.



Source: IMF staff calculations.
 Note: The debt-to-income ratio is in percentage points; nominal household debt is in billions of dollars.

Figure 9 Household Balance Sheets during the Great Recession in Iceland

The financial position of Iceland's households came under severe stress in 2008. The collapse in asset prices unwound previous net wealth gains, while widespread indexation coupled with higher inflation and exchange rate depreciation led to a rise in nominal household debt. The share of mortgage holders with negative equity in their homes rose steadily, reaching close to 40 percent by 2010.



Sources: Central Bank of Iceland; Statistics Iceland; and IMF staff estimates.
 Note: In panel 1, pension assets are corrected for an estimated tax of 25 percent. CPI = consumer price index; Forex = foreign exchange.