

Testimony On

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Class”

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Financial Markets, The Macro Economy And The Middle Class

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Abstract

I highlight the financial market risks faced by the U.S. middle class using the 2007-2009 financial crisis as an example. The 2007-09 financial crisis disproportionately affected the middle class due to three distinct channels. First, the *wealth losses* fell disproportionately on the middle and lower-middle class. Second, the *foreclosure externality* amplified these wealth losses further. Third, the *aggregate demand externality* stemming from the wealth shocks created a large increase in unemployment that also disproportionately affects the middle class.

I argue that the middle class and indeed the overall U.S. economy remain at risk due to a fundamental flaw in our financial system: the inability of standard debt contracts to adjust to a changing macro environment. I propose Shared Responsibility Mortgages (SRM) as an alternative. SRMs are built on two relatively minor adjustments to the standard 30-year fixed rate mortgage. I discuss how SRMs can be implemented and argue that SRMs would have prevented most of the negative effects of the 2007-09 housing collapse on the middle class and the U.S. economy.

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I thank the Senate subcommittee on Economic Policy for inviting me to talk about the role of financial markets on the macro economy and middle class. My discussion on this topic is based on my research over the years with Amir Sufi of University of Chicago Booth School of Business.

Well-functioning financial markets are extremely important both for a healthy economy and a strong middle class. The U.S. in many ways is the envy of the world in terms of having the most sophisticated financial market. We need to protect and strengthen this advantage, and correct any flaws that remain. The 2007-09 financial crisis revealed a fundamental weakness in this regard that needs to be addressed.

The key weakness of our financial architecture today is the inability of standard mortgage contracts to adjust to a changing macro environment. I describe how this characteristic of mortgage debt devastated the U.S. economy in general, and the American middle class in particular in section I of my testimony. I explain how mortgage debt weakened the middle class and the economy via three distinct channels. (i) The concentration of wealth losses on the indebted homeowners. (ii) The amplification of wealth losses through foreclosure externalities. (iii) The translation of wealth losses into weak aggregate demand and high unemployment through the aggregate demand externality.

Section II presents a specific proposal: Shared Responsibility Mortgages (SRMs). SRMs are aimed at removing the basic flaw in existing mortgage contracts. I discuss how SRMs work and how they provide significant macro and social benefits – particularly to the middle class. I also discuss some of the ways in which the government can help facilitate their introduction.

Section I: House Price Collapse, Mortgage Debt and The U.S. Economy

It is clear in hindsight that market participants had become over-exuberant with respect to housing during the 2000's. However, why was the correction in house prices – starting in 2007 – so destructive for the overall economy? I discuss the three channels driven by the role played by mortgage debt.

A. Housing crisis and the destruction of middle class wealth

For many Americans, home equity is their only source of wealth. If house prices decline, then their wealth position becomes seriously impaired. They may be counting on their home equity for retirement, or even to help pay for a child's college education. And a dramatic decline in house prices is just as unexpected as a tornado barreling down on a small town in Kansas.

But when it comes to the risk associated with a collapse in house prices, the financial system's reliance on mortgage debt means that homeowners have no insurance against the financial calamity they face. Understanding how debt concentrates house price risk on homeowners is the first step in understanding why debt leads to severe economic downturns.

Debt plays such a common role in the economy that we often forget that it is an extremely harsh form of financing – especially in terms of its distributional consequences in the event of a downturn. The fundamental feature of debt is that the borrower must bear the first losses associated with a decline in asset prices. Thus, if a homeowner buys a home worth \$100 thousand using an \$80 thousand mortgage, then the homeowner's equity in the home is \$20 thousand. If house prices drop 20%, the homeowner loses \$20 thousand--their full investment--while the mortgage lender escapes unscathed.

The middle class tend to be the typical homeowner with a mortgage. In the example above, the middle class homeowner loses 100% of their net wealth, while the lender – typically wealthier – does not lose anything. This is the fundamental feature of debt--it concentrates the losses on the junior claim.

Now let's take a step back and consider the entire economy of borrowers and savers. When house prices in the aggregate collapse by 20%, the losses associated with that collapse are concentrated on borrowers in the economy. Given that borrowers tend to be individuals that already had low net worth before the crash (which is why they needed to borrow in the first place to buy their home), the concentration of losses on borrowers devastates their financial condition. They already had very little in terms of net worth, and now they have even less.

In contrast, the savers, which are typically high net worth individuals with a large amount of financial assets and little mortgage debt, experience a much less severe decline in their net worth when house prices collapse. This is because they ultimately own--through their deposits, bonds, and equity holdings--the senior claim on houses in the economy. House prices may collapse so far that even the senior claim experiences losses, but the losses will be much less severe than the devastation to the borrowers' net worth.

As this example makes clear, the concentration of losses on debtors is inextricably linked to wealth inequality. When house prices collapse in an economy with high debt levels, the collapse amplifies wealth inequality because low net worth individuals experience the lion's share of the losses.

During the Great Recession, house values collapsed by \$5.5 trillion: an enormous decline relative to the annual economic output of the U.S. economy of \$14 trillion. Given such a massive

hit to house prices, the net worth position of the U.S. household sector obviously suffered. But what is less obvious was the distribution of those losses: who actually lost wealth when housing collapsed?

Let's start with an examination of the net worth distribution in the United States as of 2007. A household's net worth is composed of two main types of assets: financial assets and housing assets. Financial assets include stocks, bonds, checking and saving deposits, and other business interests the household owns, while housing is typically the value of the home the household owns. Net worth is defined to be financial assets plus housing assets minus any debt the household has. Mortgages and home equity debt are by far the most important components of household debt, making up 80% of all household debt as of 2006.

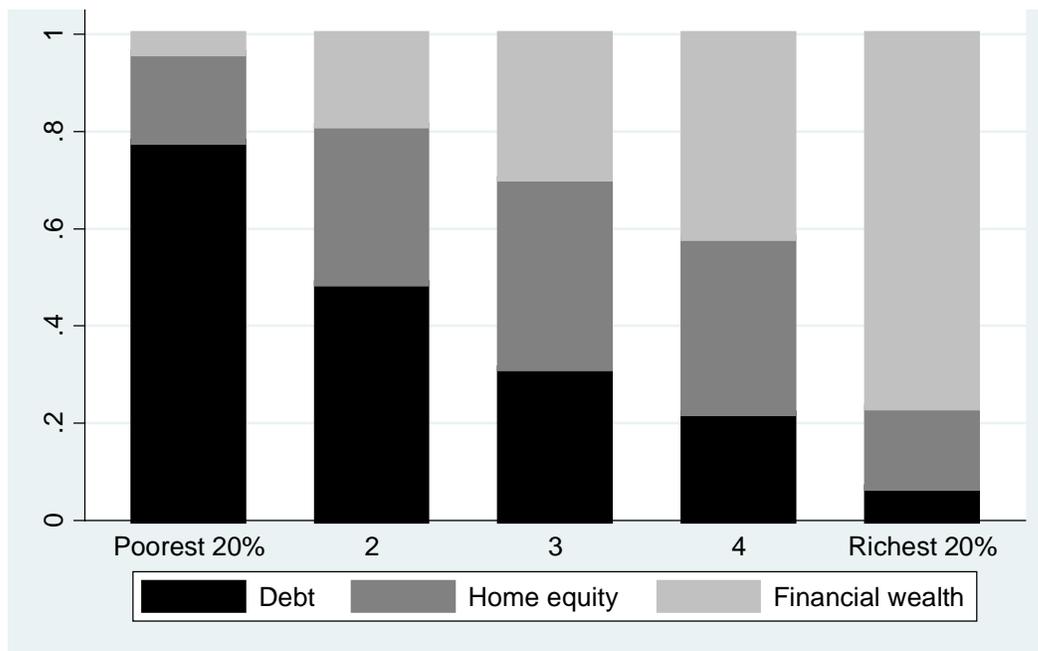
As of 2007, there were dramatic differences in leverage and the composition of net worth across U.S. households. Homeowners in the bottom 20% of the net worth distribution--the poorest homeowners--were highly levered. Their leverage ratio, or the ratio of total debt to total assets, was near 80%. Continuing the example at the beginning of the chapter, if the household had a home worth \$100 thousand and a mortgage worth \$80 thousand and no other assets, the households would have a leverage ratio of 80%.

Moreover, the poorest 20% of homeowners relied almost exclusively on home equity in their net worth. Their ratio of home equity to total assets was 18%, while the ratio of other net worth to total assets was only 4%. Or in other words, about \$4 out of every \$5 of net worth was in home equity. In a nutshell, poor homeowners had almost no financial assets coming into the recession. They had only home equity, and that home equity was highly levered.

The rich were different in two important ways. First, they were far less levered coming into the recession. The richest 20% of homeowners had a leverage ratio of only 7%, compared to the 80% leverage ratio of the poorest homeowners. Second, their net worth was overwhelmingly concentrated in non-housing assets. While the poor had \$4 of home equity for every \$1 of other assets, the rich were exactly the opposite with \$4 of other assets for every \$1 of home equity. Most of their wealth was in financial assets such as money market funds, stocks, and bonds.

Chart 1 shows these facts graphically. It splits homeowners in the United States as of 2007 into five quintiles based on net worth, with the poorest households on the left side of the chart, and the richest households on the right side. The chart shows the fraction of total assets each of the five quintiles has in debt, home equity, and financial wealth. There is a very striking pattern. Poor homeowners, those with low net worth, are much more levered and rely exclusively on home equity in their wealth. As we move to the right of the chart, leverage declines and financial wealth increases.

Chart 1. Leverage Ratio for Homeowners by net worth quintile



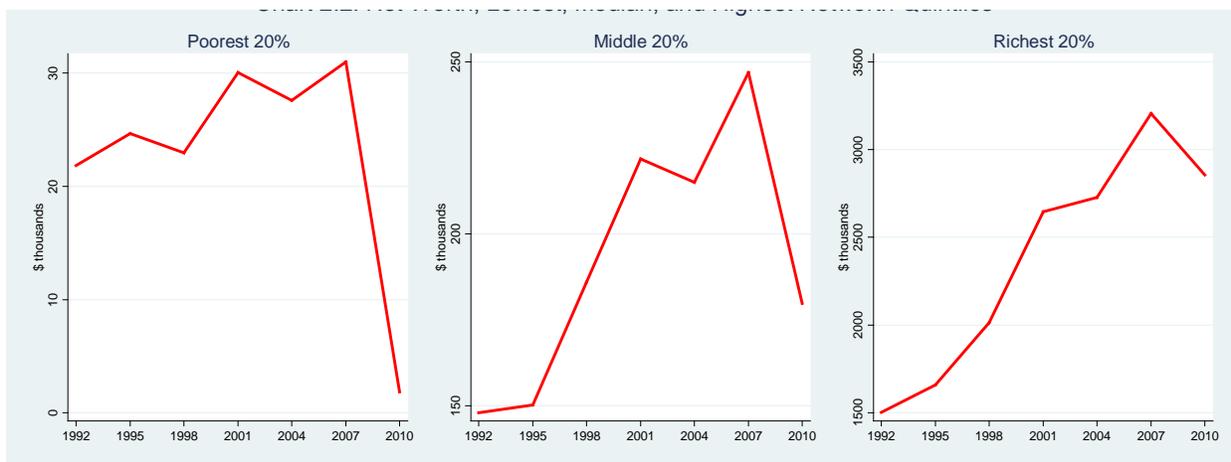
This pattern isn't surprising. Remember, a poor man's debt is a rich man's asset. When a poor homeowner gets a mortgage, we tend to think that a bank is lending to the homeowner. But the bank must get the money from somewhere! Ultimately, the rich own the bank. They own the bank through their financial asset holdings, which include the stocks, bonds, and deposits of the banking sector. As a result, as we move from poor homeowners to rich homeowners, debt declines and financial assets rise. This captures how the rich, through the financial system, are ultimately lending to the poor. As I mentioned above, the use of debt and wealth inequality are closely linked.

Now that we understand the net worth position of homeowners as of 2007, we can assess who was affected the most by the collapse in asset prices during the Great Recession. House prices for the nation as a whole fell 30% from 2006 to 2009. Further, they stayed low, only barely recovering toward the end of 2012. While stock prices fell dramatically during 2008 and

early 2009 they eventually rebounded strongly afterward, and bond prices actually rose dramatically throughout the recession. Thus household holding financial assets – stocks and bonds – were protected from the brunt of the crisis, while households exposed to housing *and* debt suffered large losses.

So which homeowners were hit hardest by the Great Recession? Chart 2 puts these facts together and shows one of the most important patterns of the Great Recession. It shows the evolution of household net worth for the bottom quintile, the middle quintile, and the highest quintile of the homeowner wealth distribution.

Chart 2. Net worth, Lowest, Median, and Highest Net worth quintiles



The net worth of poor homeowners was absolutely hammered during the Great Recession. From 2007 to 2010, net worth collapsed from \$30K to almost \$0K. The decline in net worth during the Great Recession completely erased all of the gains from 1992 to 2007. This is exactly what we would predict given the reliance on home equity and their large amount of debt. The financial system's reliance on debt concentrated losses directly on the poorest households.

In contrast, rich homeowners were hardly touched. Their average net worth declined from \$3.2M to \$2.9M. While the dollar amount of losses were considerable, the percentage decline was negligible. Further, the decline wasn't even large enough to offset any of the gains from 1992 to 2004. The rich made out well because they held financial assets that performed much better during the recession than housing. They also made out well because many of the financial assets were senior claims on houses. House prices hammered poor households because they were indebted; house prices affected the rich by far less because they ultimately held the senior claim on homes.

Wealth inequality was already severe in the United States before the recession. As of 2007, the top 10% of the net worth distribution had 71% of the wealth in the economy. This was up from 66% in 1992. In 2010, the share of the top 10% jumped to 74%, which is consistent with the patterns shown above. The rich maintained their wealth while the poor got poorer.

Many have discussed the trends in income and wealth inequality. But an often overlooked aspect of this issue is the role of debt. As I have shown here, a financial system that relies excessively on debt will amplify wealth inequality when asset prices collapse. Debt and wealth inequality are closely linked.

B. The foreclosure externality

For many households during the Great Recession, the value of a home dropped by more than the value of the homeowner's equity. The homeowner then became "underwater" or "upside-down" on his mortgage. As of 2011, 11 million properties with a mortgage - or 1 in 4 homeowners with a mortgage - had negative equity.

Not only was a homeowners equity stake completely wiped out, but if he chose to sell the home, he would have had to pay the difference between the mortgage and the sale price to the bank. Faced with this dire circumstance, many homeowners decided to walk away from the home, allowing the bank to foreclose.

Economists have long appreciated that debt affects everyone when asset prices collapse, not just the indebted. The fire sale of assets at steeply discounted prices is the most common example. A fire sale refers to a situation in which a debtor or creditor is willing to sell an asset for a price far below fundamental market value. In the context of housing, a fire sale typically occurs after foreclosure. When a bank takes the property from a delinquent homeowner, they sell the property at a steeply discounted price.

When the sale occurs, the fire sale price, which is typically far below market value, is used by home buyers and appraisers to estimate the price of all other homes in the area. As a result, all of the homes in the area suffer a decline in price. Even homeowners with no debt at all see the value of their homes decline. Consequently, financially healthy homeowners may be unable to refinance their mortgages or sell their home at a fair price. Over the last few years, many homeowners in the United States have been shocked by a very low appraisal of their home during a refinancing. This low appraisal was typically the direct result of an appraiser using a fire sale foreclosure price to estimate the value of all homes in the neighborhood.

Foreclosure externalities are among the most insidious effects of debt financing. A negative externality occurs whenever there are negative effects of a private transaction between two parties that are not fully borne by the two parties. In a foreclosure, a bank selling the property does not internalize the negative effects of the fire sale on the net worth of all the other

homeowners in the area. As a result, the bank is willing to sell at the lower price, even though society as a whole would not want the bank to do so.

Research demonstrates that foreclosures significantly exacerbated the housing downturn during the Great Recession. In 2009 and 2010, foreclosures reached historically unprecedented levels. The previous peak before the Great Recession was in 2001 when about 1.5% of all mortgages were in foreclosure. During the Great Recession, foreclosures tripled relative to their prior peak: Almost 5% of all mortgages outstanding were in foreclosure in 2009. Daniel Hartley at the Federal Reserve Bank of Cleveland has estimated that between 30 and 40% of all home sales in 2009 and 2010 were foreclosures or short sales.

In research with Amir Sufi and Francesco Trebbi, we estimated the negative effects of foreclosures on house prices and household spending. We used the fact that some states have much more lenient foreclosure policies than others. In some states, the lender must go through the courts to evict a delinquent borrower from the home. In other states, no such court action is required. Foreclosures are much faster in states that require no court action. As a result, there were far more foreclosures in some states than others during the Great Recession, and this difference can be used to estimate the effects of foreclosure on the local economy.

Using these differences across states, we found large negative effects of foreclosure during the Great Recession. Given the nationwide decline in house prices of 30%, our research suggests that house prices would have only fallen by 22.5% from 2007 to 2009 if states had implemented more lenient policies toward foreclosing. Further, by pulling down house prices, foreclosures dampened consumption and home building. We found that one-fifth of the decline in both spending on autos and residential construction was the direct result of foreclosures.

When the housing bubble burst, there was no doubt a need for reallocation of resources in the economy. Too many renters had become homeowners. Too many homeowners had moved into homes they could not afford. Too many homes had been built. But when the crash occurred, the debt-ridden economy was unable to reallocate resources in an efficient manner. Instead, debt led to fire sales of properties which only exacerbated the destruction of net worth. Debt was the crucial problem.

C. The aggregate demand externality

The large loss in wealth of indebted households forces them to cut back on their overall spending for two reasons: they feel the need to save given loss to wealth, and they have poorer access to credit markets due to the loss of housing collateral. The contraction in spending is particularly severe because wealth losses tend to disproportionately fall on indebted households and households with low levels of net wealth.

In my work with Amir Sufi, we show that the propensity to cut back spending in the face of wealth losses is three times as large for poorer households and households with high levels of leverage. Thus in terms of spending, the rich and less levered have more capacity to absorb losses. However, as I have already explained, the unique characteristics of a mortgage debt contract impose losses on the indebted and the less wealthy. This is inefficient from an aggregate demand management perspective.

When debtors sharply pull back on household spending, the economy tries to boost demand from elsewhere. One possible channel is to convince creditors to consume more by lowering the interest rate. However, if this is not possible even at zero interest rates, then the economy is stuck in a “liquidity trap” with below-capacity aggregate demand.

The decline in aggregate demand due to wealth loss for the indebted soon becomes a problem for everyone in the economy – whether someone borrowed initially or not. The reason is that one person’s demand is another person’s job. In a paper with Amir Sufi, we show that the decline in spending by households suffering the loss in wealth led to sharp decline in employment everywhere in the economy. In fact we can quantitatively show that majority of the job losses during the 2006-2009 period were driven by this particular aggregate demand externality.

An important lesson from this example is that we are in this mess together. Even households in the economy that stayed away from toxic debt during the boom suffer the consequences of the collapse in household spending during the bust. For example, many auto plants in the United States are located in areas of the country that completely avoided the housing boom and bust: Indiana, Ohio, and Kentucky. Yet auto workers in these states suffered during the Great Recession because highly levered household in other parts of the country stopped buying cars.

Section II: Shared Responsibility Mortgages (SRMs) – a policy proposal

I have highlighted three aspects of mortgage debt that devastated middle class wealth, lowered aggregate demand and massively increased job losses in the U.S. economy during the 2007-09 financial crisis. Can these outcomes be prevented while still maintaining a healthy mortgage market? Yes, I believe that is possible. I outline my proposal (again a result of joint work with Amir Sufi) below and discuss how SRMs would have protected both the American middle class and the overall economy.

A. Shared Responsibility Mortgages (SRMs)

Consider an 80,000\$ 30-year fixed rate mortgage loan at 5 percent interest rate, for a house bought for 100,000\$. The homeowner puts 20% down payment for her house and starts paying an annual mortgage payment of \$5,204 to the lender.

An SRM works in exactly the same way as the fixed rate mortgage described above with a couple of important differences. First, there is *downside protection* for the homeowner based on her local house price index. A number of market participants produce local house price indices (e.g. at the level of the zip code). The government can monitor and certify the production of such a house price index on which the downside protection of an SRM can be contracted.

Say the local house price index were 100 when the mortgage was originated. Then if at the end of any year during the life of the mortgage, the local house price index drops below 100 by X%, the mortgage payment due the following year will also decline by X%. For example, if the local house price declined by 10% after the first year to 90, mortgage payment in the second year will decline by \$520.4 while maintaining the original amortization schedule for principal. If house price index goes above 100 in subsequent years, mortgage payment will also go back up to its original \$5,204.

Such a contract is very easy to implement. All we need is a local house price index which is already available. The provision of downside protection to the homeowner comes at the expense of the lender and will therefore increase the upfront cost of the mortgage in practice. How large is this cost, and can we somehow compensate the lender sufficiently for bearing this cost?

The cost of providing downside protection depends on expected annual house price growth and volatility. Historically, house prices in the U.S. have grown at an annual rate of 3.7%

with a standard deviation of 8.3%. Using mortgage pricing formulas, one can show that the cost of providing downside protection will be around 1.4 percentage points. This is a substantial increase in cost of financing. However, we can completely eliminate this upfront cost by introducing a second innovation in our SRM contract.

The second important feature of an SRM contract is a 5% *capital gain sharing* provision. The capital gain provision implies that whenever the home owner sells the house – or refinances the mortgage – the lender collects 5% of net capital gain on the house. Since capital gain on owner-occupied housing is tax-exempt anyways, homeowners still gets to keep 95% of any gain in home value. Moreover, since the lender can securitize a large number of mortgages together, he can completely diversify the uncertainty of when a particular homeowners sells his or her property. On average the lender will receive a fairly stable flow of 5% capital gains from his pool of mortgages.

Is the 5% capital gain provision sufficient to eliminate the 1.4% up front cost added due to the downside protection offered by the lender? We can once again turn to mortgage pricing formulas for help. Given historical house price growth in the U.S., it turns out that a small 5% capital gain share is more than sufficient to compensate the lender. In fact, with a 5% capital gain rule, the lender comes out ahead by 81 basis points.

B. The benefits of SRMs for middle class and the macro economy

Suppose instead of traditional mortgage contracts, all mortgages were SRMs in 2007. What would have been the impact on the middle class and the overall U.S. economy? The research cited in section I of my testimony gives us the answers.

First, the wealth of the middle class would have been naturally protected. Suppose a homeowner has 20% equity in his home. A 20% fall in house prices would have translated into a 20% reduction in his net wealth with SRMs, instead of the 100% reduction in net wealth with traditional mortgage. We would thus not have had the devastating increase in wealth inequality that we saw in section I.

Second, *everyone* would have benefited in the case of SRMs since we would have completely avoided the foreclosure mess. The costs associated with foreclosure externality discussed in section I were all driven by forced sale of distressed homes. However, with SRMs, no one is under water as mortgage payments naturally and automatically adjust to lower debt burden and keep homeowners in their home. Foreclosure prevention helps everyone by stabilizing house prices quickly and reducing overall wealth loss.

Third, everyone benefits due to the large reduction in aggregate demand externality discussed in section I. The reduction in aggregate demand externality is driven by three channels: (i) Foreclosure avoidance raises house prices, thus boosting spending. (ii) Wealth losses are now more equitably shared between lenders and borrowers. Since borrowers have significantly higher marginal propensity to consume than lenders, a more equitable distribution of losses raises aggregate spending. (iii) The increase in spending due to these two reasons lead to smaller job losses, which further help support a higher level of aggregate demand.

The macro benefits of SRMs can also be understood by our own calculations that show that most of the job losses and reduction in aggregate GDP could have been avoided if SRMs were in place.

SRMs should be attractive for a number of additional reasons as well. Our proposed mechanism is entirely market-based. There is no subsidy from the tax payers involved – ever. In fact, in a way the SRMs help reduce budget deficits in the long run. A significant share of the recent increase in U.S. government debt has been driven by counter-cyclical fiscal deficits. The need for such fiscal deficits is greatly reduced due to the positive macro benefits of SRMs. Of course as always we need a sound banking system with sufficient capital, and all efforts to boost bank capital need to be encouraged.

Another advantage of SRMs is that they give the lender a direct interest in worrying about potential bubbles. In particular, if many of the lenders fear that the market might be in a bubble, they will raise the interest rate for new mortgages since these mortgages are more likely to require downside protection. There is thus automatic and market-based “leaning against the wind”. Not only do SRMs reduce the negative effects of a bursting bubble, but they also reduce the likelihood of those bubbles appearing in the first place.

What can the government do to promote SRMs? There is a vigorous debate regarding the interest deductibility of mortgage interest. Given the reliance of the housing market on this particular deduction, it is safe to assume that this deduction will largely remain in place. However, given the macro benefits of SRMs, I believe there is a strong social case to be made that the tax deductibility of interest should only be given to SRMs. If the government made such a switch, the market would naturally move towards SRMs. Both the middle class and the U.S. economy would be better protected as a result.

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