

How did the subprime crisis affect US household Savings and Investment Portfolios: Observations from 2007-2009

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ABSTRACT

This article provides a brief overview of the subprime mortgage crisis and its impact on the financial economy of American households, then introduces the theoretical perspectives on household savings and investment behavior during the financial crisis, and then reviews the impact of the subprime mortgage crisis on American household savings and investment portfolios. The empirical literature on other financial crises is discussed, policy implications and recommendations are outlined, and the main findings, limitations, and recommendations of the paper are summarized at the end.

KEYWORDS

Subprime crisis; Household investment behavior; Household savings

1 Background

The subprime mortgage crisis that erupted between 2007 and 2009 had a profound impact on the global economy, financial markets, and households. It originated in the United States, where a significant increase in mortgage defaults, mainly by subprime borrowers, led to a severe contraction in credit markets and a sharp fall in house prices. Subprime borrowers are individuals with low credit scores who are considered higher risk to lenders because of their history of late payments, defaults, or bankruptcies. The crisis then spread to other countries, including China, through spillovers from financial markets and trade links, leading to a global financial collapse and the Great Recession.

The subprime crisis that originated in the United States in 2007 has had a profound impact on the global economy. The main feature of the crisis was a significant increase in mortgage defaults and foreclosures, especially among subprime borrowers, which led to a sharp decline in the value of mortgage-backed securities (MBS) and the subsequent collapse of the housing market. With U.S. house prices plunging about 30 percent and unemployment soaring to nearly 10 percent, the crisis eventually led to the worst recession since the Great Depression. The fallout from the subprime crisis was not limited to the US; It cut across international borders and affected global economies, including China, whose growth rate dropped from 14.2 percent in 2007 to 9.4 percent in 2009. Given the severity and importance of the subprime crisis and its impact on millions of households, understanding the extent of its impact on household savings and investment portfolios is an important research question with implications for both economic theory and public policy.

2 Literature review

Based on a large body of literature, studies on the impact of financial crises on household savings and investment behavior have produced mixed results. Some studies have found that during a crisis, households tend to increase savings and shift investments to safer assets, driven by prevention incentives and heightened risk aversion. In addition, some researchers believe that the impact of financial crisis on family behavior is heterogeneous, depending on various factors such as income, age, education, and financial knowledge ^[1]. According to the research results of Weinberg (2007), the subprime crisis had a significant impact on household savings and investment portfolios, and also led to tighter credit and more difficult loans, which made it difficult for households to obtain credit and thus reduced household savings.

Other studies have also found that the subprime crisis has had a long-term impact on household finances. According to the study of Mian and Sufi (2014), the subprime mortgage crisis led to a sharp decline in household wealth and net worth, and the recovery rate of wealth and net worth was very slow after the crisis. They believe that this may be due to factors such as the decline in house prices and stock markets caused by the crisis, as well as the increased debt burden ^[2].

Covitz, Liang, and Suarez (2009) documented that between 2007 and 2011, the average national housing price experienced a decline of over 20%, a significant drop that played a pivotal role in triggering the financial crisis of 2007-08. This sharp downturn in housing values created substantial uncertainty among financial market participants, particularly regarding the loss rates of mortgage-backed assets. As housing prices fell, the value of these mortgage-related securities, which were heavily tied to housing market performance, also deteriorated, leading to heightened volatility and risk in the financial markets. As a result of the subsequent stress in financial markets, money market investors were cautious about their exposure to subprime mortgages ^[3].

In November 2008, in response to the escalating financial crisis, the Federal Reserve initiated a series of large-scale asset purchases (LSAP), targeting mortgage-backed securities (MBS) and long-term U.S. Treasury bonds. The primary objective of these purchases was to stimulate economic activity by exerting downward pressure on long-term interest rates, thereby lowering borrowing costs and encouraging investment and consumption. Additionally, these actions aimed to improve overall financial conditions by enhancing liquidity in financial markets and restoring investor confidence. As noted by Bernanke (2012)^[4], such unconventional monetary policies were designed to address the liquidity trap and prevent further deterioration of financial markets during a period of severe economic distress. The Fed's LSAPs were a critical component of its broader strategy to stabilize the economy and mitigate the negative impacts of the crisis on both the real economy and financial institutions.

The Brunnermeier report shows that the crisis led to a sharp contraction in credit markets, as banks and other financial institutions faced severe liquidity and solvency problems due to the decline in the value of mortgage-related assets^[5]. That leads to less credit available to households and businesses, which leads to lower consumer spending and investment. On the other hand, the crisis has also led to a significant rise in unemployment, reduced access to credit for businesses, reduced consumer spending and reduced investment.

3 Theories of household saving and investment behavior during financial crisis

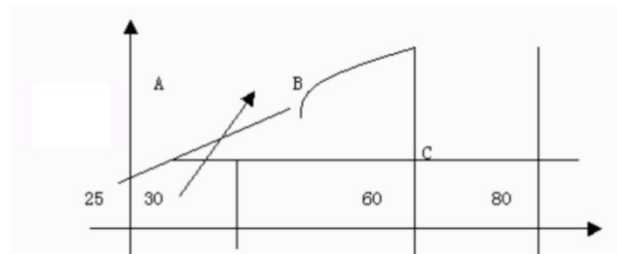
3.1 Key theoretical framework

The following are two theoretical frameworks to explain household saving and investment behavior during financial crises.

Life Cycle Hypothesis (LCH) : Proposed by Modigliani and Brumberg^[6], LCH assumes that households make spending and saving decisions based on their expected lifetime income. They smooth out their lifetime consumption by building wealth during their working years and spending it during retirement. During the financial crisis, households may lower their expectations of future income and increase savings to maintain their desired level of future consumption^[7]. Based on the life cycle hypothesis, rational consumers are expected to organize their consumption and savings in accordance with their daily earnings, ensuring that their total income over a lifetime is balanced with their total consumption. Household income encompasses both earnings from labor and income derived from assets. So the consumption function of the household is shown below.

$$C = a \cdot WR + c \cdot YL$$

In the figure above, c is consumption expenditure, WR is property income, YL is labor income, a is the marginal propensity to consume of property income, and c is the marginal propensity to consume of labor income.



Precautionary Saving hypothesis: This hypothesis, proposed by Leland^[8], suggests that households accumulate savings as a precaution against uncertain future income or expenditure shocks. In times of financial crisis, increased uncertainty may lead households to increase savings to protect themselves against potential adverse shocks^[9]. Increased income uncertainty significantly influences consumer behavior, often deterring adherence to the random walk theory of consumption, where future consumption is typically predicated on expected future income rather than solely current income. Instead, consumers gravitate towards basing their consumption more directly on their current income levels. Concurrently, the perception of heightened risk concerning future financial stability prompts individuals to engage in increased precautionary saving. This behavioral shift is primarily driven by the higher marginal utility associated with the safeguarding of future consumption when compared to a scenario of certainty. The elevation in the marginal utility of anticipated future consumption under uncertain circumstances not only fosters a stronger propensity for precautionary savings but also results in a greater allocation of resources towards future consumption needs. Consequently, during periods of pronounced uncertainty, we observe a notable decline in immediate income, an uptick in preventive saving habits, and a reduction in consumption expenditures. Conversely, when incomes rise, the urgency for precautionary savings diminishes, thereby enhancing consumer expenditure. This dynamic underscores a robust positive correlation

between current consumption and current income; this relationship intensifies as uncertainty escalates. This interplay corroborates the predictions of the precautionary savings theory and aligns closely with Keynes's absolute income hypothesis, which suggests that consumption adjustments are directly responsive to changes in current income levels.

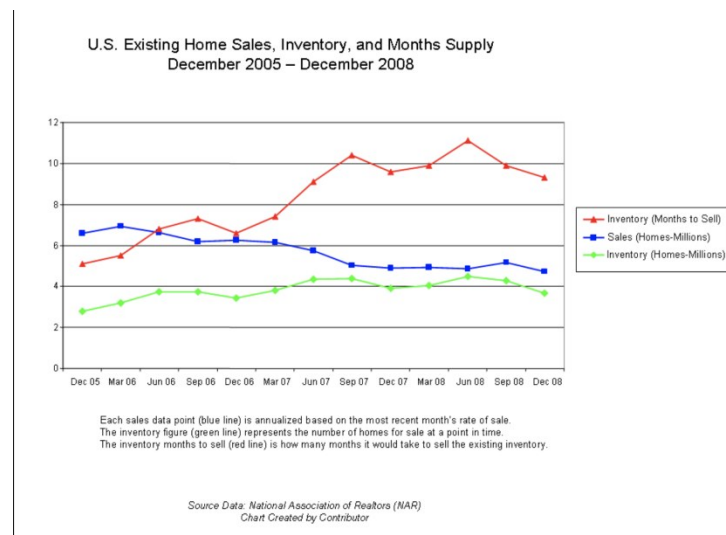
3.2 Demonstrate by example

3.2.1 Change in savings

The subprime crisis led to a decline in household wealth, which in turn affected household saving behavior. Several studies have examined this relationship in different countries. Using microdata from the United States, we found that households that experienced a larger decline in housing wealth during the crisis consumed 5.3 percent less than households that experienced a smaller decline. The results suggest that households have increased their savings in response to the decline in wealth. Similarly, Dynan^[7] examined the US household savings rate and found that it rose from 3.7% in 2007 to 6.1% in 2009 as households tried to rebuild their balance sheets. The study also showed that the increase in savings was more significant for households that had a greater negative shock to their wealth.

The rise in the personal savings rate in the United States, while the share of money market mutual funds in household financial assets rose from 3.8% to 4.6% over the same period. The report documents a reduction in household savings and a greater reliance on debt as households try to smooth consumption and sustain their standard of living despite income shocks and wealth depletion.^[10] A study by Mayan and Sufi (2014) found that the negative impact of the subprime crisis on household savings and consumption was more pronounced among low-income and less educated households in the America, who had a greater decline in housing wealth and a higher unemployment rate^[11]. Multiple studies have found that household savings rates tend to increase during financial crises, consistent with the precautionary savings hypothesis. Mody, Ohnsorge, and Sandri^[13] found that household savings rates rose significantly in advanced economies during the 2008-2009 global financial crisis, reflecting increased uncertainty and declining consumer confidence. Kaplan and Violante^[15] show that during the 2008-2009 crisis, the consumption of high-income households in the United States declined more and the savings rate increased more than that of low-income households.

It was discovered that the financial crisis had varying effects on household savings, depending on the type of household in question. The chart below, from the national association of realtors, shows each sales data point, the number of homes for sale at a given point in time, and the time it took for existing inventory to sell.



According to the research results of Weinberg (2007), before 2007, the household saving rate in the America had been declining, but after the outbreak of the crisis, the household saving rate showed an obvious upward trend^[1]. The subprime crisis has resulted in stricter credit standards and more difficult access to credit, making it increasingly challenging for households to obtain loans. Consequently, this has led to a reduction in household savings.

3.2.2 Changes in the portfolio

The subprime crisis has also had an impact on household portfolios. Guiso found that a decline in trust in the stock market during the crisis led households to reallocate investments from stocks to safer assets such as bonds and cash, with the share of households holding stocks in their portfolios falling 13 percent between 2007 and 2009. This result is supported by the findings of Calvet et al.^[12], who analyzed the asset allocation of Swedish households during the crisis

and found that they shifted investments to safer assets, such as government bonds. The share of government bonds in household portfolios increased from 10% in 2006 to 15% in 2008. After financial crises have been found to affect the composition of household portfolios, households redistribute their wealth to safer or more liquid assets. Guiso, Sapienza, and Zingales^[14] document that during the 2008-2009 crisis, households in the United States and Europe reduced their holdings of risky assets such as stocks and real estate and increased their holdings of safe and liquid assets such as cash and government bonds.

The crisis had a profound impact on household portfolios^[16], with the share of stocks and real estate in household portfolios declining while the share of bonds and cash rose. The housing bubble burst in 2006, resulting in a steep drop in home prices and a significant increase in mortgage defaults and foreclosures among subprime borrowers (Shiller, 2008). This, in turn, has exacerbated the problems faced by banks and other financial institutions that hold large amounts of mortgage-related assets on their balance sheets^[17]. A large number of properties went under foreclosure in 2007 and 2008, and it increased every quarter, from 239,770 in the first quarter of 2007 to 765,558 in the third quarter of 2008.

4 Family financial decision

First, policy interventions, such as fiscal stimulus packages and central bank liquidity rules, can help mitigate the adverse effects of financial crises on household savings and investment behavior, as shown by research findings aimed at reducing uncertainty and restoring consumer confidence^[18]. In the United States, policies such as the Troubled Asset Relief Program (TARP) and the American Recovery and Reinvestment Act (ARRA) were effectively implemented in response to the 2008 financial crisis. This is followed by advice on areas such as financial education: The changes in household portfolio composition observed during the financial crisis underscore the importance of financial education and advice in helping households make informed investment decisions. Policymakers and financial institutions can provide timely and accurate information about the risks and returns of different assets to help households better cope with volatile financial markets^[19]. Social safety nets and income redistribution can also effectively provide decision-making for family finances. The heterogeneous impact of financial crisis on different types of families highlights the necessity of establishing and improving social safety nets and income redistribution mechanisms. Policies that strengthen social protection, such as unemployment insurance, health insurance, and pension systems, can help reduce households' reliance on precautionary savings and promote more sustainable consumption patterns.

5 Conclusion

In this paper, we provide a brief overview of the subprime crisis, discuss theoretical perspectives on household savings and investment behavior during the financial crisis, and review the empirical literature on the impact of the subprime crisis on household savings and investment portfolios.

The subprime mortgage crisis, which originated in 2007, was sparked by the collapse of the US housing market and the subsequent implosion of mortgage-backed securities. This crisis extended to other nations, precipitating a global economic recession and a marked decrease in household wealth. Theoretical perspectives on household saving and investment behavior during financial crises suggest that households may respond to wealth loss by increasing savings and reallocating investments to safer assets. Moreover, financial literacy has been identified as a key factor in shaping household savings and investment behavior during crises. Empirical studies of the impact of the subprime crisis on household savings and investment portfolios in different countries show that households increased their savings in response to declining wealth.

Households in the United States that experienced a larger decline in housing wealth reduced their consumption by 5.3% compared to households that experienced a smaller decline. Urban households raised their savings rates because of concerns about the social safety net during the crisis. On the portfolio side, as trust in the stock market declined, the subprime crisis led households to shift investments into safer assets, such as bonds and cash. During the crisis, financial literacy played a crucial role in shaping household saving and investment behavior. Lusardi and Mitchell [19] comprehensively reviewed the empirical literature on financial literacy and found that households with higher financial literacy were more likely to save and have diversified investment portfolios.

In summary, the subprime crisis has had a significant impact on household savings and investment portfolios in different countries, including the United States. Households increased their savings to counter the decline in wealth and shifted investments to safer assets. Financial literacy plays an important role in shaping these outcomes, as households with higher financial literacy are more likely to save and have diversified investment portfolios. Policymakers should consider these findings when designing targeted interventions to improve financial literacy and promote more resilient household financial behaviour in different countries.

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