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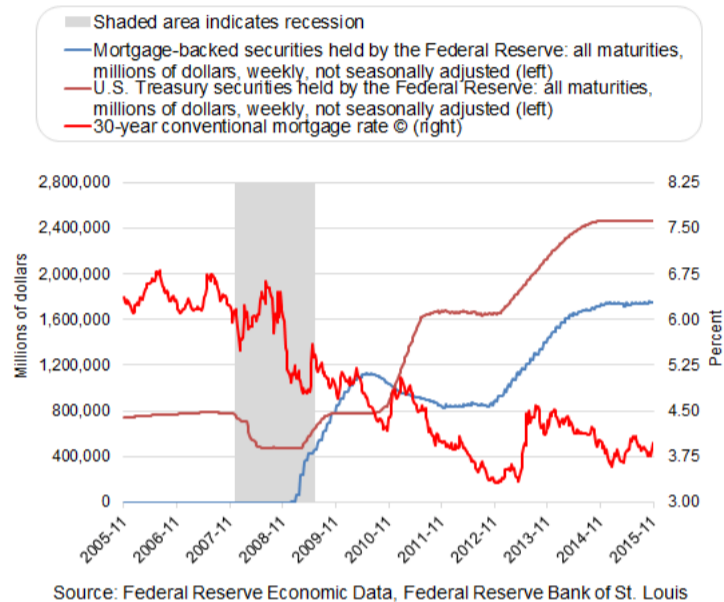
The Pass-Through of Monetary Policy

In the wake of the Great Recession, the Federal Reserve instituted three rounds of large-scale asset purchases (LSAPs) in 2008, 2010 and 2012, more commonly known as "quantitative easing 1" (QE1), "QE2" and "QE3." The objective of these interventions was to keep interest rates low in an attempt to stimulate household consumption and business investment.¹

In the United States, housing is the single largest asset on the household balance sheet, accounting for 73 percent of nonfinancial assets for the average U.S. household and an even higher share for homeowners.² Mortgage payments represent the largest class of household debt obligation.

Evidence of the effectiveness of the asset purchase programs on real economic activity has until recently been limited due to the lack of data and a credible identification strategy (by which we mean a way to separate the causal impact of the LSAPs on the economy from other government programs and market factors that were occurring at the same time). When we chart a timeline of the three LSAPs against the primary mortgage rate, we can see that the primary mortgage market rate effectively dropped below 6 percent when the Fed began buying \$600 billion in mortgage-backed securities during QE1. Indeed, the rate dropped following each of the subsequent LSAPs.

Treasury and Mortgage Backed Securities Held by the Federal Reserve and Mortgage Interest Rates



Since 2009, a number of papers have been published that evaluate the effectiveness of the policy interventions through different transmission channels. One such paper (Keys, Piskorski, Seru, and Yao, 2014) reports on borrowers with adjustable-rate mortgages (ARMs) who automatically receive the benefits of lower interest rates with no frictions or transaction costs, unlike borrowers with fixed-rate mortgages (FRMs) who must refinance in order to take advantage of lower interest rates. The paper provides new evidence on the effectiveness of the LSAPs.

Our strategy is to compare the change in the household balance sheets of 7/1 ARM borrowers to those of 5/1 ARM borrowers, using credit bureau data linked to mortgages. These two ARMs are the most popular ARM products among prime borrowers with very similar credit quality and risk preferences, yet they differ only in years 6 and 7, when the 5/1 ARM is eligible for a rate reset and the 7/1 is still locked (that is, the rate is still fixed). This creates a natural experiment that allows us to isolate other factors that might affect the mortgage rate.

By controlling for borrower characteristics and economic environments, we estimate that mortgage rates in the treatment group (5/1 ARMs) dropped in the first year by 1.14 percentage points, from 5.1 percent, and that payments dropped by \$150 per month, or about a 20 percent reduction on average. The average borrower had a cumulative two-year savings of \$3,456.³ We also subsequently found that borrowers spent 18 percent of the money saved on paying off credit card balances and that there was an 11 percent increase in new car purchases for the group. As a result, the leverage of U.S. households' dropped considerably from its peak during the financial crisis.⁴

We also find significant heterogeneity for these effects across different populations. Less creditworthy and more liquidity-constrained borrowers appear to have benefited the most from LSAPs as they experienced significantly greater reductions in mortgage rates and payments and larger improvements in mortgage and credit card performance. In terms of how they spent the extra liquidity received, highly leveraged borrowers (high credit utilization) spent 40 to 50 percent of the extra liquidity received during the first year, or \$814 out of \$1,740, to repay their revolving debts, then spent 20 percent of the extra liquidity received during the second year. Borrowers in the top quartile of credit utilization rates allocated about 70 percent of the extra liquidity toward repaying their credit card debt. We found similar effects among borrowers in the bottom quartile of credit scores. (The low-wealth borrowers with low credit utilization experienced a much larger increase in auto debt or new car purchases.) In other words, the LSAP programs effectively stimulated household investment and consumption.

We also find, as a result of the estimated effects at the micro level, a significant impact on local (nontradable) employment growth, consumer spending, and house price recovery in regions that were more exposed to ARMs. For example, a 10 percentage point increase in the ARM share, which is associated with about a 20-basis-point average reduction in ZIP code mortgage rates, is associated with about a 0.25 percentage point increase in quarterly home price growth, or about 1 percent annual appreciation, a very meaningful increase.

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References

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¹ The LSAPs involved purchases of long-term securities issued by the U.S. Treasury, agency debts, and agency mortgage-backed securities (MBS). They ultimately affected the yields of the MBS as well as the mortgage rates offered to borrowers in the primary mortgage market through several potential transmission channels: (1) the signaling of the Fed's commitment to keeping rates low, (2) a portfolio rebalance between assets and deposits and among different durations, and (3) increasing the liquidity value of MBS (Hancock and Passmore, 2014).

² Survey for Consumer Finance, Federal Reserve Board of Governors, 2013.

³ Di Maggio, Kermani, and Ramcharan (2014) found much bigger savings for subprime and Alt-A borrowers based on a similar approach.

⁴ It is notable that in the United States the majority of prime borrowers take out fixed rate mortgages while most subprime borrowers take out adjustable rate mortgages.