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Household's optimal mortgage and unsecured loan default decision

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ABSTRACT

How do households make optimal borrowing and default decisions when they have the option to borrow in multiple ways? In this paper, I analyze households' optimal mortgage and unsecured loan borrowing and default decisions in the context of the recent recession. I model households as able to default on mortgage debt to walk away from capital losses, at the price of foreclosure. However, a household can also default on unsecured debt to maintain its home, in exchange for a longer exclusion from credit markets following default. Depending on the costs of each alternative, financially constrained households exhibit heterogeneity in optimal default decisions.

Next, I analyze how mortgage loan modification policies, after a sudden drop in house prices, affect household choices in the mortgage and unsecured loan markets. The quantitative exercise shows that the government-driven mortgage modification program, initiated in 2009, reduces the mortgage default rate by 0.27% points. However, this increases the unsecured loan charge-off rate by 0.66% points.

1. Introduction

After the outbreak of the US housing market crisis in 2007, many financially suffering households could not afford to repay either their mortgages or their unsecured debts. Unsurprisingly, the default rates of residential mortgages and unsecured loans suddenly increased in the recent recession. Households that default on their mortgages can walk away from the capital loss, in exchange for giving up their homes. Households that default on their unsecured debts can maintain their homes, in exchange for a longer exclusion from credit markets. Since households hold different amounts of each type of debt, and since the penalties for each type of default are different, households may default on either mortgages or unsecured loans depending on their individual characteristics. In this paper, I analyze the optimal mortgage and unsecured loan default decisions of households in the recent recession. I then analyze how mortgage loan modification programs, like the Home Affordable Modification Program, influence these decisions.

Fig. 1 shows residential mortgage and consumer loan charge-off rates, along with the bankruptcy rate and foreclosure rate. The Federal Reserve defines charge-offs as "the value of loans removed from the books and charged against loss reserves, measured net of recoveries as a percentage of average loans." The residential mortgage charge-off rate held around

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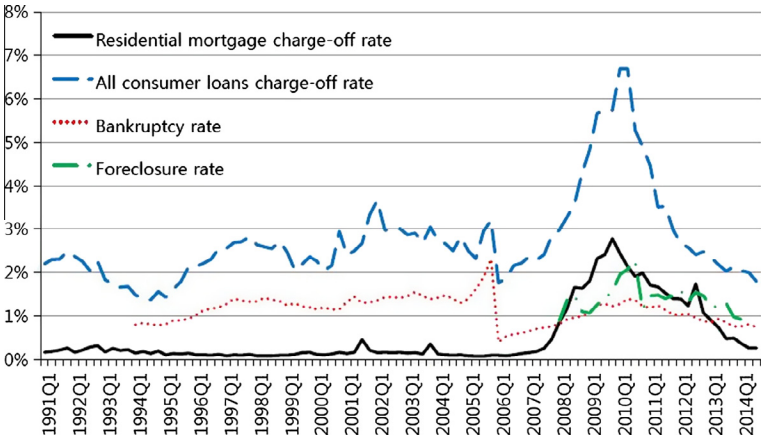

Fig. 1. Residential mortgage and consumer loan charge-off rates, bankruptcy rate, and foreclosure rate. Note: The bankruptcy rate is the ratio of the number of bankruptcy filings to the number of households. The foreclosure rate is the ratio of the number of completed foreclosures to the number of servicing mortgage loans. All rates are annualized. *Source:* Federal Reserve Board, American Bankruptcy Institute, OCC Mortgage Metrics Report.

0.14% before the housing market crisis. However, it jumped to 2.8% after the housing market crisis. This pattern was observed not only for the mortgage charge-off rate: the consumer loan[1] charge-off rate, mortgage foreclosure rate, and bankruptcy rate all suddenly increased in this recession.

In this paper, I formulate a model in which households can take out two types of loans; mortgages and unsecured loans. Each of these loans carries its own distinct default decision. Once a household defaults on an unsecured loan after facing adverse income or house price shocks, it cannot access financial markets for several years. At the same time, unsecured loan lenders can partially recover their losses by collecting (non-exempt) housing equity. On the contrary, when a household defaults on a mortgage, it loses its home and also cannot access the financial market for several years. However, the exclusion period following mortgage default is shorter than following bankruptcy. According to the Fair Isaac Corporation (FICO),[2] "[filing for] bankruptcy as an alternative to foreclosure, that may have a greater impact to your FICO score." In addition, mortgage lenders can partly claim defaulting household's financial assets to mitigate their final losses.

In order to analyze households' optimal default decision in this recession, I construct an experiment mirroring the recent housing market crisis. I initially calibrate the model to target the US economy in 2004. In 2005, US bankruptcy law was reformed, which made it more difficult for debtors to file a Chapter 7 bankruptcy. I incorporate this enactment of the US bankruptcy reform in my model transition. The Case–Shiller index of housing prices declined by 30% between 2007 and 2009. Motivated by this observed decline in house prices, I calculate the default rate responses from an unexpected drop in average house prices of 30%. As the average housing price suddenly decreases, financially troubled households decide to default on either their mortgage debt or their unsecured liabilities. Following this shock, the model mortgage default rate increases by 0.9% points, and the unsecured loan default rate increases by 1.74% points.

Increases in mortgage and unsecured loan defaults in this recession were more amplified because of the 2005 bankruptcy reform. I consider an counter-factual economy where US bankruptcy law was not reformed in 2005, but faced the same house price shock as in 2007. My quantitative results show that the mortgage default rate increases by 0.8% points, and the unsecured loan default rate increases by 1.5% points, which are smaller than the responses when bankruptcy law was reformed.

Next, I introduce a mortgage loan modification option and analyze how it affects the households' two default decisions. When a household defaults on a mortgage, the mortgage lender forecloses on the home and resells it on the market. This incurred foreclosure cost is estimated as 30% of the housing price (Posner and Zingales, 2009). Hence, to avoid such foreclosure costs, the mortgage lender is potentially willing to participate in a modification program. The structure of mortgage modification is similar to Harris and Holmstrom (1982) and Kim (accepted for publication). When a household wants to default on a mortgage, the mortgage lender reduces the mortgage debt principal up to the point where the value of defaulting on the current mortgage and the value of continuing on a modified contract are equal. The mortgage lender has an incentive to participate in such a mortgage modification only when the expected cash inflow after the modification is better than the cash inflow without the modification, including expected foreclosure costs. This type of modification scheme is quite similar to one that the US government has started since 2009, the Home Affordable Modification Program (HAMP).

By comparing an economy with and without mortgage modification, I analyze how such a program affects defaults in both types of loans. I choose the cost of modification to match the HAMP modification rate in 2010–2011, which is 0.82%. Quantitatively, the modification program reduces the mortgage default rate by 0.27% points and the mortgage charge-off

[1] Consumer loans include credit cards, other revolving plans, loans for purchasing automobiles and mobile homes, student loans, loans for medical expenses and vacations, and loans for other personal expenditures.

[2] FICO is a business analytic software company which measures and sells people's credit score.