Collateralized Debt

and the

Monetary Transmission Mechanism

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Abstract

We examine the monetary transmission mechanism and optimal monetary policy in a DSGE model with long-term debt financing housing and asymmetric information across lenders. Adverse selection results endogenously in a prime and a subprime segment of the mortgage market, and in the market share of loans held by the banking sector or sold in the financial market varying over the business cycle.

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1 Extended Abstract

In most models used in optimal monetary policy analysis the financial intermediation sector plays no role. While bonds of different maturities can be priced using optimality conditions, the maturity structure of debt is irrelevant, as long as arbitrage across different financial instruments is possible for either households or financial intermediaries.

There is a long history of DSGE models deviating from the assumption of frictionless financial markets (Bernanke, Gertler, Gilchrist, 1999, Christiano, Motto and Rostagno, 2007, Curdia and Woodford, 2008, Iacoviello, 2005). These approaches allow for a spread between the interest paid by borrowers and received by lenders, and build on models of lending with adverse selection where firms have complete information but lack funds to finance projects, and lenders lack information but have an elastic supply of funds (Stiglitz and Weiss, 1981, Bernanke and Gertler, 1990).

In this paper we study the implications for the business cycle and optimal monetary policy of two financial frictions. First, we assume households’ durable purchases, including housing, have to be financed with long term debt issued at fixed nominal rates. Since we allow financial intermediaries to arbitrage across debt of different maturities, this constraint by itself does not imply monetary non-neutrality. Second, we assume two different types of financial intermediaries exist, which can trade financial obligations in the secondary market. Since in this market buyers and sellers of loans are all financial institutions, they value the debt contracts in the same way. Information asymmetries lead to adverse selection not between lenders and borrowers, but between different types of lenders.

This structure of the financial market captures some essential features of the US mortgage market, and has been used in partial-equilibrium setups by Cutts and Van Order (2005) and Van Order (2002). Up to the 1970s, the US residential mortgage market was dominated by the primary market (mainly savings and loan associations). Over the last twenty years, the fraction of mortgages sold into the secondary market has increased substantially, reaching about 50% in the 1990s. Forty to fifty per cent of all conventional mortgages are now sold to Fannie Mae and Freddie Mac, and a large share of these loans are securitized and sold to investors. A related development is the increasing share of subprime mortgages over the total flow of new originations. US subprime originations amounted to $35 billion in 1993, or 5% of the overall mortgage market. By 2000, subprimes had increased to 12.7% of the mortgage market. Of the subprime originations,
43.1% were securitized.

Our model assumes banks originate collateralized loans, issued to borrowers who are heterogeneous with respect to default rates. The banking sector then either holds on to the investment, or sells the loan to the financial intermediary in the secondary market. Banks incur higher cost of financing relative to the secondary market (the overhead cost deriving from the large volume of cash and liquid securities a bank holds as a buffer stock), but have better information on the borrowers, and can select against the secondary market. The latter cannot engage in risk-based pricing, as banks do, and always ends up with a portfolio including the most risky loans.

We introduce incentives to induce banks to sell prime loans to other financial institutions. The secondary market can reject loans below some quality level (for example, indexed by a creditworthiness score), and carve out a separating equilibrium. This mechanism generates endogenously a prime and subprime sector of the mortgage market, with both banks and the secondary market holding a portfolio of loans in each sector. The model generates a discrete spread across the two sectors, consistently with empirical evidence for the US, where the loans pricing differentials are much higher between similar loans in different sectors than between slightly different loans in the same sector.

Using this framework, we examine three important questions. First, business cycle shocks change the market share of the prime vs. subprime sectors, and the share of mortgages held by banks vs. the secondary market. We investigate how this financial friction - and the fact that loan pricing is different across the primary and secondary market - affects the monetary transmission mechanism. Second, we ask what is the impact on the business cycle of a change in the distribution of default risk, and in the \textit{believes} about the distribution of default risk. Third, we study the optimal monetary policy problem. In our model, secondary market pricing of loans is constant within classes of risk, making loans exceedingly costly to the borrower who just misses the cutoff to the next-lowest risk class. This implies that financial frictions play a major role in affecting welfare over the business cycle and shaping the optimal monetary policy.