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Research Statement

The financial crisis of 2007-2009 demonstrated that financial intermediaries play a critical, if not yet well-understood, role in the economy. When economists want to understand a phenomenon, they turn to their models; many of our workhorse economic models, however, are not well suited for analyzing banks and other intermediaries. For example, the standard general equilibrium model has no role for banks; the standard representative agent macro model has no role for quantities of debt. My research seeks to improve the theoretical basis of our knowledge about what intermediaries do and how they affect the rest of the economy.

My job market paper, "Maturity Mismatch and Fractional-Reserve Banking", tackles two fundamental theoretical questions about banks. The first question seems simple but is still unresolved: how should we model a banking firm? I develop a dynamic model of a banking firm based on a very old idea: the notion of banking as the inventory management of cash, which goes back to Edgeworth (1888). A bank that makes loans and takes deposits is a dynamic, stochastic inventory management problem. The second question is an old issue that has again become relevant in the wake of the financial crisis: why do banks engage in maturity mismatch, the process of “borrowing short and lending long”? Raghuram Rajan describes this as the "puzzle of the ages"; I show how profit-maximizing behavior in an inventory management model can result in maturity mismatch. In my paper I present the dynamic model, solve it numerically, and use simulation to predict the bank's behavior in different environments.

A limitation of my job market paper is that interest rates and the supply of deposits are exogenous. The next step would be to endogenize interest rates and supply and demand; this would allow us to tackle problems from the IO literature such as competition, monopoly, and profit margins, while still recognizing the unique nature of financial firms. My second paper, “A Rational, Decentralized Ponzi Scheme”, attempts to do this for a simple model of an inventory-theoretic financial firm, a Ponzi scheme. As with an ordinary monopolistic firm, the bank faces a demand schedule and chooses the price it offers; here, the price is the interest rate, and demand is generated by an OLG population that chooses to borrow or lend using standard models of savings and portfolio choice. In this way I seek to endogenize interest rates, quantities of credit, and financial risk.

My research agenda is to build on, and test, this theoretical foundation. First, I plan to test my model against empirical data, as well as incorporate more realistic parameters and distributions. Second, I can extend the model to analyze other interesting financial intermediaries and activities; in particular, insurance and rehypothecation both played a role in the financial crisis. Finally, I am working towards developing a model in which deposits and loans, their durations, and interest rates are endogenous. This is a first step towards a larger goal of building a model of the macroeconomy in which banks and financial institutions have an independent role in affecting economic activity.