Financial fragility and over-the-counter markets

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Abstract

This paper studies the interaction between financial fragility and over-the-counter (OTC) markets. I model the financial sector as a large number of investors divided into different groups, which I interpret as financial institutions, and a large number of dealers. Financial institutions and dealers trade assets in an OTC market *à la* Duffie et al. (2005) and Lagos and Rocheteau (2009). Investors receive privately observed preference shocks, and financial institutions use the balanced team mechanism, proposed by Athey and Segal (2013), to implement an efficient risk-sharing arrangement among their investors. When the market is liquid, in the sense that search and bargaining are small frictions, I show that the economy is likely to have a unique equilibrium and, therefore, is not fragile. When these frictions are severe, a run equilibrium exists—investors announce low valuation of assets because they believe everyone else in their financial institution is doing the same. Conditional on bank runs existing, the welfare impact of the search friction is ambiguous. During runs, trade is inefficient, and, as a result, a friction that reduces trade during runs has the potential to improve welfare. This result is in sharp contrast with the existing literature, which suggests that search friction has a negative impact on welfare.
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1. Introduction

In developed financial systems, investors participate in asset markets as part of financial institutions that trade assets (often over the counter) on their investors' behalf and provide liquidity (withdrawal options) to investors. Examples of such institutions are money market mutual funds, bank conduits, and asset-backed commercial paper programs in general. An empirical literature suggests that large outflows from financial institutions during the 2007–08 crisis were due to runs. In particular, Schmidt et al. (2014) find evidence of runs among investors of money market mutual funds in the spirit of the equilibrium bank run discussed in Diamond and Dybvig (1983), where strategic complementarity plays an important role in withdrawal decisions.[3] However, the existing literature does not address whether the observed run episodes are connected to the over-the-counter (OTC) market structure. Establishing this connection is important to provide policymakers with a better understanding of which financial markets are fragile and which institutions are prone to runs.

In this paper, I embed the main ideas of financial fragility discussed in the Diamond and Dybvig (1983) literature into a dynamic model of OTC markets. The model allows me to study the connection between this market structure and the existence of runs in the financial sector. I find that run equilibria can occur in OTC markets with trade frictions due to search and bargaining—meaning, it is hard to find a dealer (search), and it is costly to trade with them (bargaining). I also find that small increases in the search frictions might be beneficial to agents if runs occur with positive probability in equilibrium. This result differs from the standard models of decentralized asset markets such as Duffie et al. (2005) and Lagos and Rocheteau (2009), where welfare always decreases with improvements in search frictions. The reason I obtain a different result is that, during normal times, the trades that occur increase welfare, but during runs, some trades decrease welfare because they do not represent investors' true valuation but rather a panic behavior. As a result, by increasing search frictions, welfare can go up or down depending on which effect dominates. I study numerical examples and find this to be the case for several parameters.

The model builds on Lagos and Rocheteau (2009), hereafter LR,[4] and extends it in two ways: investors are divided in groups, and their preference shocks are privately observed. The general environment is the following. Time is infinite, and there are two types of agents: investors and dealers. There is an asset in fixed supply. Investors derive utility from holding this asset and dealers do not. All agents can transfer utility using a linear technology. Investors are organized in groups, which I label financial institutions, and within the same financial institution they can trade assets for utility in any period of time. Financial institutions do not trade with each other, only with dealers. Dealers, on the other hand, participate in a competitive interdealer market where they trade assets among themselves. In every period there is a random match between finan-

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