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GUEST EDITOR'S INTRODUCTION

Liquidity: An Overview

The liquidity of an asset is often defined as the ease with which the asset can be sold at short notice. Here the term ''ease'' includes transaction costs such as search costs, bid–ask spreads, contracting and bargaining costs, and the costs of delay. It also includes discounts that may have to be offered to compensate for asymmetric information and asset specificity. Yet this definition is not complete. For example, real assets such as projects or machines may be hard to sell to others, yet may produce substantial cash flows in the short run. For all practical purposes, these assets are liquid because they transform themselves into cash. Similarly, some real assets may be hard to sell because a manager has specific skills in operating them, and agency costs preclude offering an outside equity interest. Yet they may be easy to borrow against because outside debt can control these agency costs well. So these assets are liquid in the sense that cash can be raised against them despite their being hard to sell. So an asset's liquidity may be more generally defined as a composite of the speed with which it can be converted into a fungible source of value and the value lost in doing so relative to its value in current use.

While illiquidity may have efficiency consequences, it seems to arise largely because of distribution. The asymmetric distribution of inventories, information, wealth, talents, or bargaining power often places impediments in the way of transforming an asset into a fungible source of value. The problems of illiquidity can be reduced if investors choose their holdings of assets based on liquidity needs or if they write contracts that reduce the impact of distribution. The papers in this issue examine these ways of dealing with illiquidity both empirically and theoretically.

The paper by Barclay, Kandel, and Marx makes use of a very natural experiment to investigate the effects of illiquidity. Market makers for certain stocks on Nasdaq avoided odd-eighth quotes, leading to larger bid–ask spreads. While we need not go into the reasons for this behavior (much has been written about it elsewhere), the investor would effectively face a larger bid–ask spread for these stocks. There were also a number of stocks

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that were quoted more normally on the Nasdaq. When stocks moved to the NYSE or AMEX from the Nasdaq, spreads typically decreased, but more so for the ''no-odd-eighth'' stock. The test then consists of examining the difference in the impact of the change in exchange between the ''no-odd-eighth'' stock and the other stock. Specifically, the authors find that the stocks that prior to the move were not quoted on odd eighths had a significant relative increase in trading volume, but the move had no relative effect on returns. The conclusion appears to be that if assets are not in limited supply, investors will choose to hold assets that suit their liquidity preferences. Long-term investors will hold illiquid assets, while short-term investors will hold liquid assets. Thus illiquidity may have only second-order effects on price while having first-order effects on trading volume. In other words, the redistribution of illiquid assets to those who do not need liquidity is an obvious, but effective way of reducing the problem of illiquidity.

Kim's paper uses a different approach to determine the liquidity of assets. While Barclay *et al.* use the bid–ask spread, Kim measures liquidity of an asset class based on the relative frequency with which assets in that class are sold. This approach is consistent with Barclay *et al.*'s finding that trading volume may be a better correlate of liquidity than price discounts. Kim also corroborates this measure with one that relies on the Shleifer and Vishny (1992) notion that the liquidity of specific assets is determined by the purchasing power of agents who have the specific knowledge or ability to operate the assets. Oil industry assets are classified as more or less liquid using both measures of liquidity. The measures result in similar classifications.

Kim goes on to test the effects of differences in asset liquidity. She finds that the costs of selling illiquid assets are high. She also finds weak evidence that firms sell more liquid assets before selling illiquid ones, and that firms that have a portfolio of relatively liquid assets appear to have higher debt capacities. More than the specific results, however, this paper provides a methodology to identify the effects of asset liquidity when it is not obvious, a priori, which asset classes are more liquid.

The above empirical papers examine aspects of the demand for assets of different liquidity. A vast theoretical literature focuses on situations where the supply of liquid real assets is not enough to meet investor demands for liquidity, or situations where liquid real assets do not promise a high enough return. Those who need liquidity may then have to suffer a substantial loss of return. In this case, there may be a role for an ex ante contract risk sharing contract that subsidizes the loss faced by those who need liquidity by redistributing returns across investors (see Diamond and Dybvig (1983)). The problem, however, is that if liquidity needs are not observable or verifiable, the mechanism for redistribution has to be incen-

tive compatible. As Von Thadden (1998) shows, only certain kinds of real investment opportunities allow the emergence of these incentive compatible mechanisms to share liquidity risk.

Specifically, Von Thadden argues, in a continuous time extension of Diamond and Dybvig (1983), that optimal risk-sharing requires those who need their money early to be paid a lot. But then this conflicts with incentive compatibility because other investors may have the incentive to withdraw early and invest directly in the real technology. The higher the returns to withdrawing and investing directly, the lower the bank's ability to front load returns to investors who need liquidity.

The problem, more generally, is that the Diamond and Dybvig model has a very abbreviated treatment of what banks do on the asset side of the balance sheet. Since banks are deemed to do nothing special other than simply holding on to the real asset, it is quite possible for investors to replicate the returns banks can get. This makes it hard for cross-subsidies to be incentive compatible, and has led to much controversy, including Jacklin's (1987) critique and the paper by Von Thadden in this issue. One way around the problem is to take the bank's role on the asset side more seriously, thus making it less plausible that investors can get the same returns from holding assets that banks can get.

This is precisely what Qi (1998) does, though with a somewhat different motivation. He argues that the link between the bank's use of liquid deposits and its funding of information-intensive loans is not well understood (though see Calomiris and Kahn (1991) and Flannery (1994) for explanations). In his model, bank asset quality is not observable, and bank monitoring is needed to keep quality high. He shows that by issuing liquid deposits, the bank can commit itself to providing greater monitoring of loan applicants. By the same token, depositors cannot simply withdraw their money and generate the same returns as the bank because the bank provides specialized monitoring services.

More generally, the problem in the Diamond and Dybvig model is that the real asset is illiquid in the sense that cash flows are produced only in the long run, but it is very liquid in the sense that it is easily traded. This then permits a variety of arbitrage opportunities that ''break'' the bank when it attempts to provide liquidity services. In a similar vein to Qi, Diamond and Rajan (1998) point out that one way the bank's stability can be re-established is if the returns on the asset the bank holds can be generated only with the bank's specific skills. Since the bank's specific skills cannot be easily promised along with the asset, the asset cannot be easily traded, and arbitrage opportunities no longer exist.

Despite all this research on liquidity, there still exist vast unexplored areas. Why do small differences in default risk lead to large differences in the liquidity premium? Do the existing theories account for the magnitude

of the liquidity premium for government securities? Why can the government apparently have such an important effect on economic activity by simply changing the supply of one liquid asset (reserves)? What role do banks play in transmitting these effects? Can such a role be derived in a model where the fundamental role of banks is to provide liquidity to clients? There is clearly ample scope for further research and many more special issues of this kind.

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