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Liquidity and Financial Market Stability

Maureen O'Hara (*)

The views expressed in this paper are those of the author and do not necessarily reflect the views of the National Bank of Belgium.

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Editorial

On May 17-18, 2004 the National Bank of Belgium hosted a Conference on *"Efficiency and stability in an evolving financial system"*. Papers presented at this conference are made available to a broader audience in the NBB Working Paper Series (www.nbb.be).

Abstract

Liquidity occupies a central importance for many areas of finance. But there are very disparate views of liquidity, and correspondingly many different policy implications attached to these views. In this paper, I consider the many faces of liquidity and their implications for financial market stability. In particular, I focus on the traditional economics view of liquidity as destabilizing and the more positive microstructure view of liquidity as a positive attribute for both traders and markets. I outline the various policy prescriptions for market stability that arise from these disparate views, and how they relate to current market developments. I then consider a new view of liquidity deriving from the new research on uncertainty aversion, and I detail what this approach implies for market stability. I conclude by summarizing the implications for public policy and central bank behavior toward liquidity.

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1. Introduction

Liquidity occupies a central role for many areas of finance. There are now substantial literatures investigating the importance of liquidity for asset pricing, credit risk, financial market development, option pricing, microstructure, and central bank behavior.¹ Despite the considerable attention devoted to liquidity, there is a surprising diversity of views regarding its role and impact. For example, there is debate as to whether liquidity fosters or retards financial market stability. This divergence reflects a deeper disagreement as to whether liquidity is actually a positive feature of markets; in effect, whether liquidity is best viewed as a virtue or a vice. From a public policy perspective, this determination matters because it dictates the role that central banks should play in fostering or curtailing liquidity.

In this paper I focus on the many faces of liquidity and their implications for the linkage between liquidity and financial market stability. In particular, I will contrast the traditional, or economic-based, view of liquidity, with the more recent microstructure-based view. These different views come with very different perspectives on the linkage with market stability, and I will develop these implications in more detail. I will also offer a third view of liquidity deriving from recent work relating liquidity and uncertainty. I will conclude the paper by summarizing these three theories of liquidity and their implications for public policy and central bank behavior towards liquidity.

2. Liquidity - The Basics

Any analysis of liquidity must confront a basic question: what exactly is liquidity? While seemingly a simple concept, the exact meaning of liquidity is far from apparent, and it is this definitional quandary that contributes to the various disagreements over liquidity. In earlier work (see O'Hara [1995]) I drew on an analogy with pornography: it is hard to define, but you know it when you see it. For our purposes here, however, we need more precision, so as a starting point we might agree that liquidity relates to the ability to buy and sell assets easily. Elaborating on this further, a liquid market is one in which buyers and sellers can trade into and out of positions quickly and without having large price effects.

This definition seems sensible, but its precision may be illusory. What, for example, is the dimensionality of quickly? For some assets, such as foreign exchange, quickly may be measured in seconds, while for others, such as antique clocks, transactions may take days or even weeks to consummate even with a willing buyer and seller. This suggests that the appropriate metric for

¹ A recent selection of representative articles looking at these various aspects of liquidity are Amihud [2003]; Amihud and Mendleson [1986]; Barth, Remolina and Wooldridge [2002]; O'Hara [2003]; and Pastor and Stambaugh [2003].

liquidity may be asset specific, and perhaps even microstructure dependent. For example, the introduction of EBay has transformed the trading of hitherto illiquid assets (such as antique clocks) by providing a venue for buyers and sellers to meet electronically. This new microstructure has thus enhanced the liquidity of the market, and with it the desirability of holding these assets.

Yet another challenge with this definition is determining what constitutes a “large” price effect. Certainly, buyers and sellers of one share of stock would like to transact without moving the price at all, but even here the existence of bid-ask spreads suggests this goal may be unattainable. Trading larger amounts, or repeatedly trading even small quantities may elicit substantial price movements, particular if the typical volume in the asset is low. Microstructure researchers (see, for example, Black [1971]) often employ the concepts of depth (the amount of stock that can be traded at a given price), breadth (the ability to trade across assets without affecting the price) and resiliency (how quickly the price returns to the pre-trade price) to capture these dimensions of liquidity.

However one defines liquidity, would we all at least agree that liquidity, like motherhood, is a good thing? At some level (the individual trader, perhaps) this might be so, but there is much more disagreement with this proposition when we turn to the market level. For at least some observers, liquidity is not a positive attribute, setting the stage for a basic disagreement regarding the role of liquidity in the economy.

3. Liquidity - The Dark Side

The traditional view of liquidity is perhaps best summarized by Keynes [1935]:

*“Of all the maxims of orthodox finance none, surely, is more anti-social than the fetish of liquidity, the doctrine that it is a positive virtue on the part of investment institutions to concentrate their holdings of “liquid” securities. It forgets that there is no such thing as liquidity of investment for the community as a whole”.*²

This is the negative view of liquidity- that the ability to buy and sell assets seamlessly leads to capital markets that are fixated on the short-term, and prone to instability. While Keynes was a particularly articulate proponent of this view, there is a long tradition in economics of viewing liquidity as a destabilizing force. Indeed, Tobin [1978] argued forcefully that liquidity may undermine the basic functioning of markets:

² J.M. Keynes, The General Theory, page 155.

*"I believe that the basic problem today is... the excessive international – or better inter-currency mobility of private financial capital....What we have is an incredibly efficient set of financial markets... I mean the word "efficient" only in a mechanical sense: transactions costs are low, communications are speedy, prices are instantaneously kept in line all over the world, credit enables participants to take long and short positions at will or whim. Whether the market is "efficient" in the deeper economic-informational sense is very dubious."*³

And it is not simply Keynes and Tobin who declaim against the virtues of liquidity. Larry Summers [1989] argues that liquidity begets instability:

*"It does not follow that once an adequate level of liquidity has been attained, as must have been the case in the stock market many years ago, further increases in liquidity are stabilizing. Indeed,... excessive liquidity actually encourages destabilizing speculation."*⁴

Yet another manifestation of this negative view is found in authors linking liquidity to corporate governance problems (see, for example, Coffee [1991]; Bhidé [1993]). Indeed, Coffee argues:

"The liquidity promoted by U.S. policies has obvious benefits: investors can encash their assets quickly and diversify cheaply. The same policies, however, impair corporate governance by encouraging diffuse stockholding and discouraging active investing. Diffuse stockholders face more serious collective action problems..."

For these authors, the recent difficulties of Enron and Parmalat are the natural outcomes of liquid markets in which investors care only for buying and selling, and not for investing in the underlying economic process. And the negative effects of liquid markets are not limited to their impact on single firms. If Keynes, Tobin and Summers are correct, liquidity cannot exist for the market as a whole, leading to instability in the overall functioning of markets.

³ Tobin [1978] page 155.

⁴ Summers and Summers [1989] pg. 170.

4. Policy Implications: Restraining the “Bad” Effects of Liquidity

What then to do if you regard liquidity as having this bad side? Certainly, the natural prescription is to curtail market liquidity, or at least to impose costs on traders to offset the negative social costs that liquidity imposes on the markets. Tobin formalized this reasoning in his famous dictum:

“My proposal is to throw some sand in the wheels of our excessively efficient international markets”.

To accomplish this, Tobin proposed taxing short- term holdings of assets. Two specific applications of these “Tobin taxes” are securities transactions taxes found in equities markets and the new proposals to tax the trading of foreign exchange advocated by opponents of globalization.

Securities transactions taxes have attracted wide-spread attention, and generated wide-spread disagreement over their desirability.⁵ Stiglitz [1989] argued in favor of such taxes, noting that traders routinely overestimate their ability to trade profitably in the market and so might be helped by taxes that restrict their trading:

*“Since short-term speculators consist largely of noise traders and those trying to smooth out the market to make money from noise traders, there may be a welfare gain from impeding these exchanges”.*⁶

Yet a counter-argument to this view was put forth by Stephen Ross, who likened such taxes to restricting pedestrians from crossing the street. Ross [1989] argued that pedestrians routinely overestimate their ability to cross highways safely, that in equilibrium there will be approximately equal numbers of people on each side of the street, and so society would be better off restricting all street crossing. Needless to say, advocates of securities transactions taxes do not find this particular analogy appealing.

There are other policy prescriptions consistent with this negative view of liquidity, most notably circuit breaker rules and short sale restrictions. Short sale restrictions have a long history in securities markets, as detailed by Bris, Goetzman and Zhu [2003]. Restricting short sales either by up-tick rules or proceeds constraints essentially raises the costs of selling assets. Circuit breaker rules have a similar goal of restricting trading when markets are volatile (at least as measured by movements downward). Such policies reflect the reasoning that because liquidity begets instability curtailing liquidity can enhance market stability.

⁵ For discussion see Schwert and Seguin [1993].

⁶ Stiglitz [1989] pg. 106.

What is less clear is if such policies actually work. There is an extensive literature investigating the role of circuit breakers (see, for example, Subrahmanyam [1993]; Goldstein and Kavajecz [2004]; Christie, Corwin, and Harris [2002]), but there is little agreement as to whether these rules enhance market stability. One concern with such rules is that they can actually exacerbate instability by pushing traders to sell assets more quickly – in effect, to get out of assets before the circuit breakers kick in. Yet a more serious concern is that if trading out of assets is made too difficult, investors will opt not to trade into assets in the first place. This perspective underlies an alternative, more positive view of liquidity to which we now turn.

5. Liquidity - The Bright Side

The alternative view of liquidity, which I will term the microstructure view, is that liquidity enhances market stability because investors are more willing to hold securities that they can easily buy and sell. Indeed, the microstructure definition of liquidity is that an asset is liquid if there are a large number of ready buyers and sellers. By this definition, more liquidity leads to more stability because the price will be little affected by trades in a liquid market.

Is there any evidence to support this more positive view? To address this issue, let us consider the evidence linking liquidity to investor participation more generally. There is now a burgeoning literature investigating liquidity and asset pricing (see Amihud and Mendelson [1986]; Amihud [2003]; Pastor and Stambaugh [2003]). These authors argue that investors need higher returns to hold illiquid assets, suggesting that illiquidity is a risk that requires higher compensation. Conversely, then, liquidity can be viewed as risk-reducing, and investors will therefore be more willing to hold assets that have greater liquidity.

Such greater participation, in turn, leads to more liquidity, so liquidity begets liquidity. This notion is also implicit in the positive view of noise traders in microstructure models. In microstructure, noise traders are the mainstay of efficient markets. As Fisher Black [1986] discussed, noise traders make markets more liquid, which then allows markets to exist when information problems would otherwise lead them to fail. While Stiglitz decried noise traders as delusional investors in need of protection, the noise traders depicted in microstructure models provide counterparties for informed traders, thereby allowing the market to become informationally efficient. Thus, in microstructure there is no trade-off between efficiency and liquidity as postulated by Tobin; it is because markets are liquid that informational efficiency can arise.

But what of the noise traders themselves? They are being taken advantage of by the informed traders, so why do they still remain in the market? Stiglitz would point to irrationality, while microstructure models would allude to other reasons for trading (a convenient, but not particularly convincing explanation). Recent work by David Easley and I suggests another possibility. In Easley and O'Hara [2004], O'Hara [2003], and Easley, Hvidkjaer, and O'Hara [2002; 2004], we argue that the price discovery function of markets is the key to resolving this conundrum. Noise traders lose to informed traders because of asymmetric information. But noise traders recognize this risk, and in equilibrium demand compensation to hold assets in which they face a greater informational disadvantage. Markets with more uninformed traders present allow this risk to be spread more widely. Thus, markets with more uninformed will be more liquid, and liquid markets will thus require a lower risk premium. We show empirically that stocks with lower measures of private information-based trading require lower returns, supporting this positive view of liquidity.

Can liquidity lead to market instability? Certainly, commonality in liquidity can lead to asset prices moving together, although there is not agreement in the literature that such commonality exists (see Chordia, Roll and Subrahmanyam [2000]; Hasbrouck and Seppi [2001]). But assuming that it does, would this lead to instability? There are two general responses to this. First, what may be bad for one market may be good for another market. Thus, the "flight to quality" may induce investors to leave one asset for another, but provided they stay in the market somewhere the instability effects are local and not global. A second aspect of commonality is that it may induce investors to enter the market in the first place, enhancing stability by increasing the overall number of ready buyers and sellers. An example of this effect may be illustrated by the dramatic growth of the credit derivatives market. Certainly, for some investors, bonds are now more attractive investment vehicles given the ability to hedge with credit derivatives. Indeed, by separating the risk-bearing and investing roles, these linked markets provide a mechanism to provide liquidity to the market as a whole, an outcome never envisioned by Keynes and his contemporaries.

6. Policy Implications - Enhancing the Liquidity of Markets

If this positive view of liquidity is correct, what then are the policy implications? One immediate implication is that the negative policy prescriptions are exactly wrong. The problem in markets is not liquidity, but illiquidity. The solution here is to make people more willing to hold the asset, and this requires enhancing, not retarding, the ability to buy and sell the asset. From this perspective, it doesn't matter if a trader wants out of an asset provided some other trader wants in.

The issue becomes then how to make others want to provide liquidity to markets. Recent experimental research may provide some insights into this process. In Bloomfield, O'Hara and Saar [2004], we find that informed traders place limit orders more frequently than do uninformed traders. In effect, the informed traders face lower risks in providing liquidity to the market, and so endogenously take on the role of liquidity providers. This suggests that liquidity provision is enhanced when risk is perceived to be lower. Such behavior may explain why Electronic Communications Networks (or ECNs) have grown so powerful in the U.S., and why electronic trading systems have proved useful in a wide variety of asset markets. For many assets, liquidity is endogenous, determined, at least partially, by the characteristics of the asset and the market in which it trades. This suggests that changes in markets may have profound implications for liquidity and stability, an issue addressed in an interesting paper by Barth, Remolona and Wooldridge [2002].

If the goal is to enhance market liquidity, how might this be accomplished? The microstructure literature provides some simple prescriptions. Disclosure rules, greater transparency, insider trading laws, lower transactions costs, all contribute to making markets more attractive to investors. Without these enhancements, traders opt for other portfolio choices, leaving markets illiquid and prone to instability. The "bottom line" is straightforward: better markets are more liquid, and liquid markets are more stable.

7. A New Wrinkle - The Role of Uncertainty

The negative and positive views of liquidity discussed above stand in stark contrast to each other, and their policy implications are similarly divergent. Whether one views liquidity or illiquidity as the problem, the risks to the markets are real, and policy makers must wrestle with diametrically different solutions to the problem of market stability. Yet another complication is to consider the divergence between liquidity in normal market conditions and liquidity in crisis times. Newly developing research into uncertainty aversion may provide the key to understanding liquidity in these settings.

Uncertainty aversion is different from the standard economics paradigm of risk and return (for development of uncertainty aversion see Gilboa and Schmeidler [1989]). In the standard setting, agents evaluate risks by calculating the risk-return tradeoff they face. The uncertainty paradigm introduces another dimension to risk in that economic agents face uncertainty over the distribution of returns, in effect over what state of nature actually prevails. Unable to determine this state, investors assume the worse, causing the risk-return trade-off they perceive to differ dramatically from that without uncertainty aversion.

A particularly intriguing implication of this approach is that liquidity can now differ between normal markets and crisis markets. This is because very small changes in beliefs can set off very large changes in behavior, and this in turn can have large effects on markets. The culprit here is the uncertainty over the true state of nature: when investors become uncertain, they opt to “play it safe,” and this can cause all traders to want to exit the market. Thus, uncertainty can beget illiquidity, and with it market instability.

How then to deal with this source of instability? The solution lies in reducing investor uncertainty. Transparency and greater information dissemination can play a role here, just as they did in our earlier discussion of the policy implications of the positive view of liquidity. But the uncertainty problem suggests an additional role for policy makers in ruling out the existence of certain states of nature. In particular, it suggests that central banks should pre-commit to keep certain states from occurring, thereby limiting the worse-case scenario confronting uncertain investors. While some have criticized such a role for exacerbating moral hazard, the benefits of reducing instability in crisis times may far outweigh these costs.

8. Conclusions - Implications for Central Banks

What then should we conclude regarding the linkage between liquidity and financial market stability? Our discussion has highlighted the many faces of liquidity, and the divergent policy prescriptions that attach to these views. As my arguments suggest, I believe the traditional approaches to liquidity are misguided. The view that liquidity is a negative feature of markets and must therefore be constrained is ill-conceived. From a microstructure perspective, policies to enhance liquidity and the free flow of capital will enhance market stability. Central bankers and policy makers thus share the mandate to improve the transparency and efficient functioning of markets. At long last, it is time put the sand away and let the markets work!

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