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Macroprudential regulation under repo funding

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ABSTRACT

The use of collateral has become one of the most widespread risk mitigation techniques. While it brings stabilizing effects to the individual cash lender, it may exacerbate systemic risk by accelerating bank deleveraging under funding stress. We show how a liquidity shock to the cash lender may propagate as a solvency shock via liquidity hoarding even if the cash lender remains solvent in all states of nature. Albeit a privately optimal response of the cash lender to a liquidity shock, bank deleveraging may lead to excessive bankruptcy among its borrowing counterparties while, at the same time, triggering contagion across asset classes. To buttress financial system resilience, we lay out a menu of macroprudential policies that deactivate this channel of financial contagion.

1. Introduction

Macroprudential policy has become a high priority area of regulatory reform. It covers measures directed at countering risks in the financial system that, if realized, can severely impact real activity (Tarullo, 2013). These measures include policies supporting the build-up of capital and liquidity buffers to strengthen the resilience of regulated entities. Yet the global financial crisis showed that, under market stress, solvent banking institutions can engage in runs on other non-bank financial institutions for precautionary motives creating severe disruptions in financial markets.[1] This calls for addressing

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[1] Berrospide (2013) finds that over one-fourth of the reduction in bank lending during the crisis obeys to liquidity hoarding as a response to increased risks in their asset portfolios and liquidity risk. Likewise, Acharya and Merrouche (2012) show that the build-up of bank liquidity observed during the subprime crisis was precautionary in nature and linked to payment uncertainty.

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the externalities created by banks' response to stressful conditions and for revising the regulatory toolkit accordingly. Clearly a better understanding of how a market shock may morph into a solvency shock down the credit chain and how existing prudential regulation may be ineffective as a circuit breaker is needed. When stress is transmitted outside regulatory boundaries contagion is a major concern as it is more difficult to detect and – by definition – less prone to timely regulatory action. Moreover, unregulated entities are exempt from loss-absorbing capital requirements, making the overall financial system more prone to failure. As the Chief Economist at the Bank of England recently put it[2]:

> "What we are seeing from the future financial system is not risk being removed, we are seeing risk change shape; it is migrating off the balance sheet of the banks from the conventional mismatch and maturity risk and on to the balance sheet on non-banks in the form of market illiquidity risks".

This paper contributes to filling this gap by examining the role played by secured funding in propelling contagion. Secured funding creates an automatic correlation between market risk and funding risk.[3] A drop in asset values can trigger a margin call, creating cliff effects through funding pressures in a downward market. Further, it transfers risks to the borrower who may be less equipped to withstand shocks. In the specific application of the paper, a regulated entity hit by a liquidity shock finds it privately optimal to cut down on its secured lending activities, which forces its borrowing counterparties to sell assets, potentially in a disorderly way. The ensuing credit crunch is followed by the demise of the unregulated sector. We show that, to the extent that defensive actions contribute to shifting risks outside the banking sector, making the regulated perimeter safer will not guarantee overall financial stability. We then explore how, to redress systemic risk, macroprudential policy can be calibrated to strengthen the resilience of the financial system as a whole rather than that of regulated entities only.

In that spirit, we consider a model where a regulated broker-dealer issues long-term collateralized debt and parks its cash balances in bilateral short-term repos with hedge funds.[4] We focus on the repo market, though the same mechanisms play out on a wider range of market activities including securities lending, over-the-counter derivatives and primer broker transactions. The special attention paid to repo transactions is due to the size of the market[5] and its relation to financial stability.[6] Given that broker-dealers are typically units of regulated banks, we use the terms "broker-dealer", 'bank" and "regulated entity" interchangeably throughout the paper.[7] The broker-dealer is hit by a liquidity shock that depresses the value of the collateral, opening a net exposure in its collateralized repo. This creates funding pressures. To meet the margin call, the broker-dealer can: (i) sell its unencumbered asset portfolio; (ii) unwind the cash operations with its borrowing counterparties; or (iii) issue fresh unsecured debt to purchase equivalent securities. These actions have different implications for financial stability. We show that cutting credit (option ii) is the privately optimal response of the broker-dealer as long as it is protected from counterparty risk by holding enough collateral. The liquidity shock is amplified through its effect on the shadow cost of funding. After a market shock, the shadow cost of funding increases for a

[2] Monetary policy has 'aided risk taking' says Haldane" Commentary by Chris Giles and Sarah O'Connor, Financial Times, July 3, 2014.

[3] The reinforcing effects of market risk and funding risk have been examined by Adrian and Shin (2009) and Brunnermeier and Pedersen (2009).

[4] Repos between broker-dealers and hedge funds are typically bilateral repos without a third custodian party to stand between them. This paper focuses on bilateral repos, although the results would carry through to the tri-party segment as the tri-party agent does not participate in the risk of the transaction (Adrian et al., 2013).

[5] Gross amounts outstanding in June 2008 reached $10 trillion in the US (70% of GDP), €6 trillion in the euro area (65% of GDP), and £662 billion in the UK (50% of GDP) according to BIS estimates (2008). The June 2014 ICMA survey of the repo market in Europe revealed that the total value of outstanding repo contracts reached €5.8 trillion on the back of the improved confidence in the Eurozone.

[6] The recent global financial crisis is often viewed as a run on repo (Gorton and Metrick, 2012). In the second half of 2008 repo markets collapsed which affected particularly key dealer banks with large exposures to private sector securities, creating adverse effects on their balance sheet. This caused a credit crunch among dealer banks creating a widespread drop in the provision of repo funding as documented by Krishnamurthy et al. (2014).

[7] Broker-dealers are typically units of the regulated banking sector. In the US, the main cash providers are Goldman Sachs, Morgan Stanley, JPMorgan, Citibank, and Bank of America. Cross-border lenders include Credit Suisse, UBS, RBS, Barclays, Deutsche Bank, BNP Paribas, Societe Generale, and HSBC.