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Editorial

Do higher capital standards always reduce bank risk? The impact of the Basel leverage ratio on the U.S. triparty repo market☆

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A B S T R A C T

While simpler than risk-based capital requirements, the leverage ratio may encourage bank risk-taking. This paper examines the activity of broker-dealers affiliated with bank holding companies (BHCs) and broker-dealers not affiliated with BHCs in the repurchase agreement (repo) market to test whether this may be occurring. Using data on the triparty repo market, the paper arrives at three findings. First, following the 2012 introduction of the supplementary leverage ratio (SLR), broker-dealer affiliates of BHCs decreased their repo borrowing but increased their use of repo backed by more price-volatile collateral. Second, the paper finds that regardless of whether a U.S. BHC-affiliated broker-dealer parent is above or below the SLR requirement, the announcement of the SLR rule has disincentivized those dealers affiliated with BHCs from borrowing in triparty repo. Finally, the paper finds an increase in the number of active nonbank-affiliated dealers in certain asset classes of triparty repo since the 2012 introduction of the supplementary leverage ratio. This illustrates how regulation can have competitive effects on the financial sector and may result in activities shifting among financial firms.

1. Introduction

Capital requirements have been center stage in the international overhaul of banking regulation. The safety and soundness of large internationally active banks is cited[1] as one of the top concerns to domestic and global regulatory bodies, yet there is no consensus on the costs, benefits, and effects of increased bank capital requirements. In this paper, we investigate the effects of one new capital regulation, the Basel III leverage ratio, on the U.S. repurchase agreement (repo) market and how those effects differ between broker-dealers affiliated with bank holding companies (BHCs) affected by the rule and broker-dealers affiliated with nonbank firms.

The global financial crisis of 2007–2009 resulted in numerous changes in the international financial landscape. In particular, it gave birth to a new international framework for bank regulation that seeks to address vulnerabilities that were realized during the crisis. The Basel Committee on Banking Supervision (Basel Committee) introduced several reform measures, known as Basel III, which increased both the quality and quantity of bank capital and introduced regulatory requirements for banks' short- and long-term funding profiles.

Basel III increased banks' required risk-weighted capital ratios, and redefined what would be considered regulatory capital. These reforms also introduced the first global leverage ratio standard. A leverage ratio is a simpler form of a capital standard as it eliminates the use of risk weights to determine how much capital a bank may need to hold for different activities. This new Basel leverage ratio is also unique because it takes into account a much wider scope than simply a bank's on-balance-sheet assets, the traditional denominator for regulatory leverage ratios. The inclusion of off-balance-sheet credit commitments, potential future exposure of derivatives, and other exposures significantly increases the scope of capital requirements.

We present results that suggest that the supplementary leverage ratio (SLR), the U.S. implementation of the Basel III leverage ratio, may act as the binding capital requirement for some large U.S. banks, rather than the backstop role that the U.S. leverage ratio had played earlier. We analyze the use and composition of the triparty repo market where broker-dealer subsidiaries of BHCs obtain short-term financing in exchange for collateral. A broader measure of repo transactions (subject to less netting) is included in the total exposure measure of the Basel III leverage ratio and are

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[1] See Federal Reserve Chair Janet Yellen: www.federalreserve.gov/newsevents/speech/yellen20150303a.htm; Basel Committee on Banking Supervision: www.bis.org/publ/bcbs230.pdf; Federal Deposit Insurance Corporation's Doreen Eberley: www.fdic.gov/news/news/speeches/spfeb0915.html; and Federal Reserve Governor Daniel Tarullo: www.federalreserve.gov/newsevents/testimony/tarullo20130214a.pdf.

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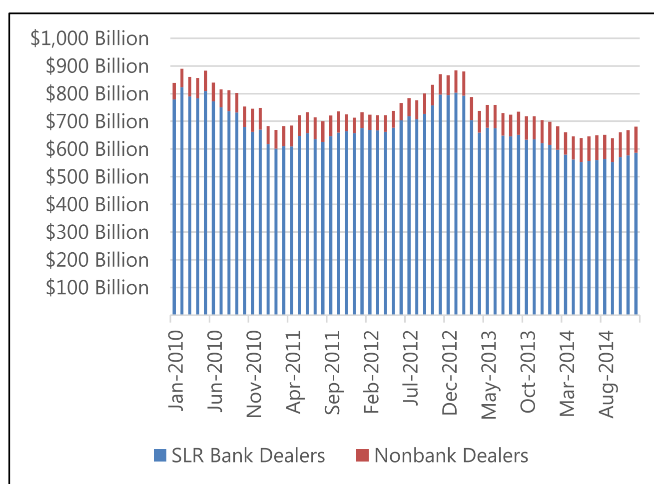

Fig. 1. Triparty Repo Volume by Dealer Type ($ billions)
Note: The parent bank holding company of an SLR Bank Dealer must comply with the supplementary leverage ratio requirement.
Sources: Federal Reserve Board of Governors, authors' analysis.

therefore subject to capital requirements. Our research also includes broker-dealers that are not subsidiaries of BHCs and not subject to the SLR, allowing us to exploit the differences in behavior following the announcement of the new regulation in a difference-in-differences type of analysis. Because government securities and associated repo activity is a low profit margin business, we hypothesize that there could be a change in broker-dealer behavior in response to the imposition of consolidated supplementary leverage ratio requirements for parents of bank-affiliated broker-dealers. While other researchers, including Duffie (2016), also have advanced this hypothesis, we are able to test this empirically.

In addition, since dealers use triparty repo to fund asset positions acquired from market-making and other dealer activities (Baklanova et al., 2015), a requirement to hold additional capital against these positions could incentivize BHC-affiliated broker-dealers to hold higher-return and riskier assets on their balance sheets. We find that following the introduction of the SLR, broker-dealer subsidiaries of U.S. BHCs subject to the new standard decreased their use of agency mortgage-backed securities (MBS) and increased their use of equities as collateral in triparty repo markets. We also find an increase in the number of nonbank dealers participating in the agency MBS class of triparty funding—an indication of activity migrating from the banking sector to the less regulated nonbank sector. This change in repo activity may have unintended implications for the liquidity of the agency MBS market Fig. 1.

Additionally, this change in repo activity may have unintended implications for a bank's funding risk. Specifically, while Copeland et al. (2014) find Lehman Brothers did not experience an increase in haircuts in triparty repo in the period preceding its failure, the firm did experience a precipitous fall in its triparty repo volumes. As described in the court examiner's report on Lehman's bankruptcy, Fidelity, a large triparty repo investor, requested back its cash (Valukas (2010). As discussed in Copeland et al. (2014), Lehman Brothers may have been forced to finance its securities in the centrally cleared General Collateral Financing (GCF) repo market or sell them.[2] However, the centrally cleared GCF repo service accepts only government securities as collateral. Thus, it is possible that a greater use of repo backed by non-government securities as collateral may reduce the stability of BHC-affiliated broker-dealers' funding by limiting their ability to migrate their triparty repo financing to centrally cleared repo venues in stress Fig. 2.

Our work is directly related to ongoing regulatory and policy debates surrounding capital adequacy, short-term funding markets, and financial regulation. In April 2016, the Group of Central Bank Governors and Heads of Supervision discussed a potential add-on to the Basel III leverage ratio for global systemically important banks (G-SIBs). While the Basel III leverage ratio was intended to reinforce risk-based requirements as a backstop from potential misspecifications in the risk-based capital standard,[3] it is, at least for some banks, the binding requirement. Our results shed light on the potential effects of increasing non-risk-based measures of capital adequacy that have garnered greater attention in policy-making circles post-crisis.

This paper also informs the policy discussion on the interactions between two aspects of Basel III reform: short-term liquidity standards and the leverage ratio. U.S. liquidity regulations (the liquidity coverage ratio) require bank holding companies to hold high quality liquid assets (mainly Treasuries and agencies) equal to net cash outflows over a 30-day stress period. Our results indicate that BHC-affiliated dealers subject to the SLR are incentivized to do more repo against more price-volatile collateral such as equities. This may work against the intent of liquidity regulation.

This paper also informs the conversation surrounding credit substitution, competition, and migration of financial intermediation to the nonbank sector. We find that while BHC-affiliated broker-dealers are reducing their agency-backed borrowing, nonbank dealers are increasing volumes. Nonbank dealers have grown in numbers and increased their participation in agency-MBS-backed borrowing. At the same time, no changes to capital rules have been introduced for nonbank broker-dealers since the crisis.

In Section 2 of the paper, we briefly review the related literature and discuss bank capital regulatory standards. Section 3 describes the data and methodology, and we introduce three phases of hypotheses. Section 4 explains results for three hypotheses: the impact on BHC-affiliated dealers bound by the new regulation, the impact overall on all BHC dealers, and the effect of the regulation on nonbank dealers not subject to the SLR. We conclude in Section 5 with a summary of results and potential policy relevance.

[2] Lehman's case may suggest that the blind brokered nature of centrally cleared repo as well as the mitigation of bilateral counterparty credit risk can enhance the stability of centrally cleared repo for firms experiencing credit stress.

[3] See Basel III leverage ratio framework document, page 4, at www.bis.org/publ/bcbs251.pdf.

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