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WORKING PAPER

Prime Brokers and Derivatives Dealers

Squam Lake Working Group on Financial Regulation
April 2010

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The Squam Lake Working Group on Financial Regulation is a nonpartisan, nonaffiliated group of fifteen academics who have come together to offer guidance on the reform of financial regulation.

The group first convened in fall 2008, amid the deepening capital markets crisis. Although informed by this crisis—its events and the ongoing policy responses—the group is intentionally focused on longer-term issues. It aspires to help guide reform of capital markets—their structure, function, and regulation. This guidance is based on the group's collective academic, private sector, and public policy experience.

To achieve its goal, the Squam Lake Working Group is developing a set of principles and their implications that are aimed at different parts of the financial system: at individual firms, at financial firms collectively, and at the linkages that connect financial firms to the broader economy.

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PRIME BROKERS, DERIVATIVES DEALERS, AND RUNS

Runs by prime-brokerage clients and derivatives counterparties were a central cause of the World Financial Crisis. Worried about potential losses, many hedge funds withdrew their assets from brokerage accounts at Bear Stearns and Lehman Brothers in the weeks before these banks failed. Although Morgan Stanley did not fail, it also suffered from the withdrawal of prime brokerage assets. These runs, together with runs by short-term creditors, precipitated Bear Stearns' and Lehman's demise.[1] Even if these firms would have failed anyway, the runs made their failures much more sudden and chaotic, and made coherent policy responses much harder.

In this paper we consider why clients "ran," how such runs precipitated failure by substantially reducing the broker's liquidity, and what changes might ameliorate this unstable situation.

Two conditions are needed to generate a run. First, customers must have the incentive to withdraw their assets before bankruptcy occurs and at least the quickest ones must have the ability. Second, customer withdrawals must weaken the broker's financial position, making failure more likely and reinforcing the incentive for customers to claim their assets.

We focus here on two forms of investor exposures to large banks: through the loss of assets placed in prime brokerage accounts, and through losses incurred as a derivatives counterparty, when the bank fails.

"Prime brokerage" is the package of services that securities broker-dealers offer to large active investors, especially hedge funds. These services typically include trade execution, settlement, accounting and other record keeping, financing, and, critically, holding the customers' cash and securities.

The relationship between a prime broker and its clients has the two features necessary for a run. First, even though securities entrusted to a prime broker belong to the client, it can be difficult or impossible for the client to extract its securities once the prime broker fails. As a result, customers are likely to withdraw their assets at the first sign that their prime broker is in difficulty. Second, as we explain below, prime brokers often use their clients' assets as an important access to funding or "liquidity." When a substantial number of clients leave, the broker must either quickly find new financing or sell assets to raise capital. As a result, concern that a prime broker is in trouble can be self-fulfilling.

Over-the-counter (OTC) derivatives relationships pose a similar problem. OTC counterparties have incentives to withdraw or restructure their contracts if they suspect the broker will fail. And the collateral provided by over-the-counter derivatives counterparties is another important source of dealer liquidity.

Large broker-dealers are widely considered to be systemically important, so the potential for runs is a problem for the financial system. Regulatory changes that (1) reduce the incentive for customers to run, (2) reduce the liquidity effects of the decision to run, and (3) reduce the reliance of broker-dealers on run-prone financing can make the financial system more stable. These changes are worth making if the benefits to society exceed the costs to dealers, their customers, and the rest of the industry.

Our recommendations focus on segregation of assets. A customer's assets are segregated from those of its broker if the assets are held in a separate account that is legally distinct from the broker's accounts. If its assets are not segregated, the customer merely holds a contractual claim against the

broker. In the event of bankruptcy by the broker, the customer owning unsegregated assets may need to pursue claims against the dealer in court. Thus, segregation reduces the client's incentive to run.

The market for prime brokerage services is competitive and the customers are well-informed. Thus, when prime brokers and their customers use nonsegregated accounts, one can infer that the private costs of segregation outweigh the private benefits. Because of the potential systemic cost of a run, however, the broker and its customers do not bear all the costs of their decision to use nonsegregated accounts.

To encourage greater segregation, we recommend higher regulatory liquidity requirements for dealer banks that use the assets of clients and counterparties as a source of liquidity. We also recommend the international harmonization of segregation regulations, to prevent a "race to the bottom." This approach is more focused on the essence of the problem than simple constraints on size or activity that are sometimes advocated. We also warn against policy interventions that can increase the chance of runs.

PRIME BROKERAGE ASSETS

Broker-dealers depend on the assets of their prime brokerage customers for liquidity in two important ways. First, the dealer can offer cash loans to one client, funded by cash held on deposit by another client.[2] Second, the dealer can pledge a customer's securities as collateral to obtain a loan from another bank or dealer. Such loans can finance the broker's own trading as well as loans to its customers.

Suppose Bank X has two prime-brokerage clients, Hedge Fund A and Hedge Fund B. It holds $250 million in cash belonging to A. If B requests a cash loan of $150 million, the broker can fund that loan from the $250 million deposited by A. If Hedge Fund A moves its prime-brokerage account to another bank, however, then Bank X must immediately find $150 million in new cash from other sources.[3]

Securities deposited with a prime brokerage are also a source of liquidity. Though these securities belong to the client and are not assets of the broker-dealer, the broker-dealer can use part of these securities as collateral for its own borrowing. If the client withdraws its assets, the broker must replace the collateral with uncommitted assets, which it may not have, sell assets on the market and repay the loan, or raise new capital by selling debt or equity. Because loans collateralized by securities typically come due at the start of the next business day, the broker needs to act quickly, even desperately. If, as is typically the case in a financial crisis, the market for the broker's securities is illiquid, or the opportunity motivating its trades has gotten worse, the broker must close out its position at a loss, weakening it further.

For example, in the quarters before the Lehman bankruptcy, Morgan Stanley reported that it held over $800 billion in client assets that it could pledge as collateral. In its first disclosure after the bankruptcy, that figure had fallen to under $300 billion.[4] Not coincidentally, in the days following the Lehman failure, the "premium" for insuring Morgan Stanley debt in the credit-default-swap market rose sharply to above 10 percent per year.

There is nothing inherently nefarious or unethical about a prime broker using a client's assets to fund its own or other clients' activities. If the bank uses A's cash to fund a loan to B, it is in essence mediating lending from A to B. This raises the interest A receives on its cash, lowers the interest B pays for its loan, and generates fee income for the bank. If the bank uses A's securities as collateral, it

can fund an original margin loan to A that lets A buy securities in the first place. It is in essence acting as intermediary for A's collateralized borrowing. And if A's securities are better collateral than the bank's, then using A's securities as collateral for the banks' own operations is simply a more efficient use of capital. The problem with using a client's assets in this way is that it makes the bank susceptible to a run, and the social costs of the run are likely to be greater than the costs to the individual parties.

Regulations in the United Kingdom allow prime brokers to commingle their clients' assets with their own. This leads to both a strong incentive to run and a strong effect on broker liquidity if there is a run. If the broker fails, the client can find itself unable to quickly retrieve assets that the broker has used as collateral for its own loans, since those assets now also "belong" to someone else.[5] Many former U.S.-based Lehman clients are still trying to regain the assets they had placed in Lehman accounts in London before the firm's bankruptcy.

Segregation rules in the United States are stricter. U.S. rules limit the amount of customer assets which can be "rehypothecated," or used again as collateral for the broker's purposes, to 140 percent of the amount the dealer has lent the customer in cash. Thus, if a dealer lends a client $100 to buy $200 of securities, it can use $140 of those securities as collateral for its own loan.[6] Thus, despite the tighter U.S. rules, client assets are an important source of funding for prime brokers in the United States.

As in the UK, clients of a troubled prime broker in the United States have an incentive to run. Failure by a broker-dealer can subject levered investors, such as hedge funds, to substantial costs and delays. Even if a client eventually recovers all of its assets, the investor may remain exposed to market risks and unable to use the collateral value of its securities for weeks or months. Thus, clients of prime brokers in the United States and the UK are likely to flee with their assets at the first sign of trouble.

International competition is important in this market, and must be considered in any regulatory response. Because regulations controlling the use of customer assets in the United States are tighter than those in the UK, U.S. banks often provide prime-brokerage services through their London-based broker-dealer affiliates, and offer clients better terms for agreeing to this move. They can also offer better terms than custodian banks, where assets are fully segregated.

OTC DERIVATIVES COLLATERAL

Collateral provided under over-the-counter derivatives contracts, such as interest rate swaps and credit default swaps, presents a similar set of issues.[7]

A counterparty to a derivatives dealer often provides an "independent amount" of collateral at the inception of a trade, which the dealer holds for the life of the position. Then, as the market value of the position moves, each counterparty provides additional collateral, dollar-for-dollar with the change in value of the contract. Typically, dealers do not demand an independent amount of collateral from corporate (nonfinancial) end users or from other dealers. The aggregate amount of collateral held by dealers from other clients is often substantial. For instance, the International Swaps and Derivatives Association reports that in 2008 approximately two-thirds of derivatives positions were collateralized.[8]

Dealers are not required to segregate the collateral OTC derivatives counterparties post with them. They can use the collateral as an unrestricted source of financing. A dealer may use cash collateral, for example, to buy securities. As a result, if a dealer goes bankrupt, it may be difficult for its

customers to quickly recover the independent-amount collateral. The customer may also worry that a bankrupt dealer may not be able to make the contractual payments promised by the derivatives contract, such as those of a credit default swap or an interest rate swap.

Thus, once a dealer's viability is threatened, its OTC derivatives counterparties have an incentive to run by reducing their derivatives positions with the dealer. When they do, they can reclaim the independent amount of collateral that they had deposited with the dealer. They can also enter into contracts that require the dealer to pay cash to the customer, thus draining cash from the dealer. Dealers in financial difficulty will be reluctant to refuse such requests, since a refusal could signal liquidity problems and make the run worse. In turn, again, such withdrawals hurt the dealer's cash position, driving it further into trouble.

U.S. law grants most OTC derivatives an exemption from the automatic stays that "freeze" access to assets and certain other contractual rights during bankruptcy. Without this provision there would be even more runs than there are now. The less a derivatives counterparty worries about a broker's bankruptcy, the less incentive that counterparty has to run. However, the privileged position of OTC counterparties is not universally popular. After a bank has failed or been bailed out by the government, it is not obvious to other creditors why derivatives counterparties deserve to walk away with the first available dollars. Should new regulations expose derivatives counterparties to an automatic stay or other less favorable treatment, the risk of a flight of OTC derivatives counterparties from a weak dealer will rise.

Regulators are also likely to demand an increase in collateralization, to increase the "safety" of the system. Absent new regulations regarding the segregation of such collateral, dealers are also likely to use that collateral as a source of financing, and will find themselves in even more trouble when counterparties start to pull away from derivatives contracts.

RECOMMENDATIONS

The painful lessons taught by the World Financial Crisis have already reduced the amount of unsegregated hedge-fund assets provided to prime brokers. Now wary, many hedge funds have been moving some of their assets into custodial accounts, in which securities are completely segregated and are not available to prime brokers as a source of financing. An increasing number of hedge funds are also spreading assets more widely across multiple prime brokers.[9]

Nevertheless, it would be a mistake to assume that such learning, combined with the interests of the private parties involved, will be sufficient to eliminate forever prime-brokerage runs as a threat to systemic stability. There is a clear externality. When a bank and a hedge fund agree to a prime-brokerage arrangement with less segregation, both parties share in the financing benefits. There are additional risks to the two parties as well, of course, and these risks are now more evident.

However, because of the threat of runs created when assets are not segregated, taxpayers and society bear some of the costs of this arrangement. If the government intervenes because it fears "systemic" effects from the failure of the prime-broker bank, taxpayer dollars are at risk. The failure of a truly systemic institution by definition carries costs for society as a whole. Finally, financial crises usually involve losses in output and employment, which lead to social costs beyond the raw costs of bailouts and other interventions. A prime broker and its clients do not consider these costs when de-

ciding how carefully to segregate assets. (On the other hand, the free flow of rehypothecated securities may offer external benefits as well, by providing additional liquidity to markets.)

To make prime brokerage and OTC derivatives less run-prone, either or both of the central ingredients of a run must be addressed. There needs to be less incentive for customers to run, and withdrawals must cause less damage to the broker's financial strength.

Increased segregation of client assets is a natural recommendation that serves both purposes. At a minimum, we recommend the following two changes:

Recommendation 1. *Regulators should impose and monitor liquidity requirements on systemically important banks and broker-dealers. To the extent that a bank or broker-dealer depends for short-term financing on its customer's assets (that is, if it does not segregate those assets), this financing source should be assumed to disappear when determining whether the bank and broker-dealer meet those liquidity requirements.*

Recommendation 2. *The prime-brokerage regulations of the United Kingdom and other major financial centers should be tightened so that segregation requirements for customer assets are at least as restrictive as current U.S. requirements.*

The first recommendation gives an incentive to segregate but stops short of simply mandating segregation. An example of a liquidity requirement for banks, broker-dealers, and other regulated financial institutions is the minimum liquidity coverage ratio outlined by the Basel Committee in 2009.[10] The current Basel proposal does not, however, recognize that customer assets held by a prime broker are a source of liquidity that could disappear.

By increasing the liquidity requirements of firms that do not segregate, those firms feel some of the social costs, and also will have more sources of cash with which to withstand runs. The second recommendation ensures there will not be a regulatory "race to the bottom" in this international and interconnected market.

Alternative and stronger approaches may also be considered. One alternative is to require that assets are fully segregated, as they are when held in custodial accounts. Full segregation is cleaner, simpler, and easier to monitor. On the other hand, it imposes additional costs because it forces assets to sit idle when they could provide other services. Existing research does not provide good guidance that quantifies the benefits or the costs, so we do not take a position on full segregation.

We also warn against regulatory changes that could make prime-brokerage clients, derivatives counterparties, and short-term creditors more vulnerable in bankruptcy, and thus more prone to run. For example, removing automatic-stay exemptions for OTC derivatives, or forcing investors to post additional collateral with their dealers, could have unintended consequences unless other measures are taken to safeguard the short-term liquidity of the dealer.

Endnotes

1. Darrell Duffie, "The Failure Mechanics of Large Dealer Banks," *Journal of Economic Perspectives*, 2010.
2. SEC Rule 15c3-3 requires prime brokers in the United States to collect their clients' free credit balances "in safe areas of the broker-dealer's business related to servicing its customers" or to otherwise deposit the funds in a reserve bank account to prevent commingling of customer and firm funds. "Free credit balances" are the cash that a client has a right to demand on short notice. The text of the SEC rules is available online from multiple sources, including "Securities Lawyer's Deskbook," published by the University of Cincinnati College of Law. The text of Rule 15c3-2, on customers' free credit balances, is at http://www.law.uc.edu/CCL/34ActRls/rule15c3-2.html. Rule 15c3-3, on "Customer Protection—Reserves and Custody of Securities," is at http://www.law.uc.edu/CCL/34ActRls/rule15c3-3.html.
3. Bank X may be contractually entitled to demand that Hedge Fund B immediately repay its loan, but would be very unlikely to do so. Such an action would raise suspicions about Bank X's financial health and spark a worse run.
4. See Manmoham Singh and James Aitken, "Deleveraging after Lehman—Evidence from Reduced Rehypothecation," unpublished, Working Paper WP/09, International Monetary Fund 2009; and Andrew Ross Sorkin, *Too Big To Fail: The Inside Story of How Wall Street and Washington Fought to Save the Financial System—and Themselves* (New York: Viking, 2009).
5. Sean Farrell, "Hedge funds with billions tied up at Lehman face months of uncertainty," *The Independent*, October 6, 2008; James Mackintosh, "Lehman Collapse Puts Prime Broker Model in Question," *Financial Times*, September 24, 2008; and Singh and Aitken, "Deleveraging after Lehman."
6. See Duffie, "The Failure Mechanics of Large Dealer Banks," for details.
7. In an interest rate swap, a customer may promise to pay a floating rate in exchange for a fixed rate of payments. If interest rates rise, payments flow from customer to bank, and the customer must post collateral to guarantee those payments. A credit default swap is essentially insurance on a bond: The buyer of protection pays a premium, say, 2 percent of face value per year, and in return the seller of protection promises to cover a bond default. If the bond becomes riskier, the seller has to post additional collateral with the buyer, so that if the seller defaults the buyer can get a new contract at the now-higher premium.
8. International Swaps and Derivatives Association, "ISDA Margin Survey 2009."
9. Brad Hintz, Luke Montgomery, and Vincent Curotto, "U.S. Securities Industry: Prime Brokerage, A Rapidly Evolving Industry," Bernstein Research, March 13, 2009.
10. Basel Committee, "International Framework for Liquidity Risk Measurement, Standards and Monitoring," Bank of International Settlements, December 17, 2009, http://www.bis.org/publ/bcbs165.pdf.

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