

Stricter Microprudential Supervision Versus Macroprudential Supervision

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By

Larry D. Wall
Federal Reserve Bank of Atlanta
1000 Peachtree Street, NE
Federal Reserve Bank of Atlanta,
Atlanta, Georgia 30309-4470
404-498-8937
larry.wall@atl.frb.org

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Prior to the crisis, the primary means of maintaining financial system stability in the United States were a set of policies designed to prevent bank runs. These policies included the provision of the federal safety net to commercial banks and the imposition of prudential supervision to mitigate the moral hazard associated with the safety net.¹ Yet the crisis showed that maintaining financial stability takes more than protecting banks. The high risk mortgages that led to the crisis were often underwritten by mortgage banks, securitized by investment banks, rated by credit rating agencies (CRAs), and held in mortgage conduits funded by money market funds (MMFs).² Moreover, policymakers were often forced to make critical decisions during the crisis with limited understanding of the actual vulnerabilities of the financial system.

The important role of nonbank entities in the crisis has not escaped the attention of the political and supervisory authorities. In the U.S., the Dodd-Frank Act (DFA) established the Financial Stability Oversight Council (FSOC) to identify and address broader threats to the financial system—including the power to designate financial firms as being so systemically important that they should be subject to Federal Reserve prudential supervision. DFA also created the Office of Financial Research (OFR) to obtain, manage and analyze data on financial risk. Additionally the Federal Reserve reorganized its large bank supervision to increase the focus on the most systemically important banks and created its own office to monitor potential systemic risks. Internationally, the Financial Stability Board has issued standards for the supervision of shadow banks, credit rating agencies and money market funds.

¹ The safety net included the provision of explicit deposit insurance, implicit liability guarantees of the so-called “too-big-to-fail” banks, and the provision of emergency discount window lending to commercial banks.

² Although mortgage conduits were sponsored by commercial banking organizations, many of the sponsors were foreign banks that were not necessarily subject to U.S. prudential supervision.

The expansion of the supervisory frontier is a welcome, albeit belated response to the crisis. However, the thrust of this expansion, to bring more institutions under prudential supervision, misses an important lesson from the crisis. The severity of the crisis was not due to a few nonbank financial firms becoming distressed due to exposure to an increase in the overall failure rate of borrowers. Rather, the crisis was due to widespread losses to financial firms arising from a common risk factor, in this case U.S. residential mortgages. Stricter microprudential supervision of a larger set of financial firms will reduce the risk of instability. But if policymakers want to get at the root cause of such instability, greater emphasis needs to be placed on macroprudential supervision of important financial markets.

This paper expands on Wall (2010, 2013) to develop an explicitly macroprudential supervisory framework designed to identify threats to financial stability, use existing mechanisms to reduce the risk these threats are realized and to provide information to the authorities to more efficiently mitigate any instability that does arise. The first section discusses the limitations of microprudential supervision and importance of financial market considerations to maintaining stability. The second section explains the conduct of the monitoring and the use of that result in financial supervision. The third section discusses the gaps in current monitoring that motivate the need for more in-depth monitoring. The final section provides concluding remarks.

1. Microprudential regulation is necessary but not sufficient

Microprudential regulation is intended to preserve the safety and soundness of individual institutions and is an appropriate response to the threat that the idiosyncratic failure of a systemically important financial institution (SIFI) poses to financial stability. Microprudential

supervision also reduces the risk of financial instability by reducing the risk that weaknesses in one financial firm will spillover, causing other financial firms to fail.

However, microprudential regulation has several important limitations with respect to maintaining financial stability in a large financial system such as that in the U.S. The first limitation is that the threats to systemically important institutions and overall financial stability not so much at risk from idiosyncratic mistakes by individual institutions as by widespread misjudgments about the riskiness of major markets. The most systemically important firms, those labeled global SIFIs (G-SIFIs) are huge financial firms with diverse revenue streams and large capital bases. These firms are very unlikely to fail due to an isolated, idiosyncratic mistake. For example, JP Morgan Chase suffered trading losses of \$6.2 billion due to the so-called “London Whale” in 2012 and later paid another \$920 million in penalties. JP Morgan Chase nevertheless reported positive earnings every quarter of 2012.³ The real danger to the G-SIFI group of financial groups is that one of them takes a big position in a large market that is seemingly providing high returns with low risks, such as the residential real estate mortgage market prior to the financial crisis. Yet if one G-SIFI mistakenly identifies a large market as being high return and low risk, likely some other G-SIFIs and many mere SIFIs have made the same mistake and are exposing themselves to similar risks.⁴

Another weakness of a microprudential approach is that attempts to regulate seemingly profitable activities in one part of the financial system are likely to result in changes to the market structure that shift the risk to firms with lower regulatory costs. The crisis provides many

³ See Kopecki (2013) for a discussion of the London Whale and resulting settlement and JPMorgan Chase & Co. (2012, p. 331) for the company’s quarterly profitability through 2012.

⁴ Moreover, idiosyncratic failures are likely to be less of a macroprudential threat if the rest of the financial system is financially strong, as other financial firms can provide replacement services for the failing firm rather than being threatened by the failure.

examples of such regulatory arbitrage to shift risks to less regulated firms and locations. For example, supervisors sought to limit the risk exposure of domestic commercial banking organizations by imposing higher capital requirements. Yet the extent to which these requirements enhanced financial stability was substantially undercut by risk exposure at investment banks, mortgage conduits and structured investment vehicles sponsored by domestic and foreign banking groups, and the government sponsored enterprises (GSEs) Fannie Mae and Freddie Mac.⁵

A third weakness of relying on microprudential supervision is that it tends to focus on firms which are individually systemically important, implicitly presuming that other individual firms would not pose a threat to stability. However, what is true of any individual firm is not necessarily true of groups of otherwise independent firms that are following correlated business strategies, what Brunnermeier, Crockett, Goodhart, Persaud, and Shin (2009) call “systemic in a herd.” For example, arguably no one money market mutual fund was systemically important in 2008. However, a large group of money funds were following correlated strategies of investing in short-term corporate debt. When Reserve Fund “broke the buck” (failed) due to excessive concentration in Lehman Brother’s commercial paper, investors pulled out of similar money funds. While some other similar money funds became distressed (but were bailed out by their sponsor according to Rosengren (2012)), most money funds remained solvent. Nevertheless, the

⁵ How the relative weakness in investment bank and GSE regulation impacted their ability to take risk is relatively straightforward. Levine (2010) discusses the ineffectiveness of Securities and Exchange Commission (SEC) prudential regulation of investment banks. Acharya et al. (2011, p. 21) observe that relative to other financial institutions that “Fannie and Freddie were afforded extraordinarily light capital requirements.”

The ability of mortgage conduits to avoid capital regulation is a bit more complicated. Conduits such as structured investment vehicles (SIVs) financed a large share of their MBS holdings with commercial paper backed by liquidity guarantees. However, these conduits were largely disguised mechanisms for avoiding bank capital regulation. They relied on the liquidity guarantees that were accorded low capital requirements to provide de facto credit guarantees that should have been subject to higher capital requirements if bank regulators had recognized their economic function according to Acharya, Schnabl, and Suarez (2013).

sharp contraction in the size of the money fund industry led to a sharp contraction in the availability of funding to corporations through the commercial paper market.

A fourth potential problem relying on microprudential supervision of SIFIs is that financial innovations can result in financial risk shifting to nonfinancial agents. For example, households were borrowing in a foreign currency in Eastern Europe, exposing them to the risk that their home currency may depreciate (See Yeşin, 2013). As another example, municipalities issued long-term debt with the provision that the securities would be re-auctioned in short-term debt markets. So long as the auction market was functioning with the support of market makers, this allowed municipalities to avoid paying the term premium associated with longer term debt. However, Han and Li (2011) and Wei and Yue (2013) explain how the collapse of market maker support led to failed auctions which left many municipalities paying a much higher rate than anticipated and investors left holding securities that were much less liquid than they had anticipated. In both of these cases, major financial intermediaries played an important role in facilitating the shifting of risk to nonfinancial agents. However, supervisors that are focused on microprudential supervision of financial firms may underappreciate the implications of this risk shift for overall financial stability.

A fifth weakness is that prudential supervisors focused on individual institutions might overlook the significance of some financial markets, especially over-the-counter markets. The tri-party repo market is an example of a market that was not adequately understood prior to the crisis. Dudley (2013) states that: “The recent financial crisis showed us that the tri-party repo market was inherently unstable due to deficiencies in the settlement infrastructure.” Moreover, developments in this market had a substantial effect on how the financial crisis evolved. In the context of a discussion about the support provided to Bear Stearns, the Financial Crisis Inquiry

Commission (2011, pp. 290-91) notes Federal Reserve Board Chairman Ben Bernanke concerns that the collapse of Bear Stearns would “freeze” the tri-party repo market and ultimately result in the massive forced sale of much of the collateral used in this market.

2. Macroprudential monitoring and supervision

This section draws heavily on Wall (2013) to develop a plan for macroprudential monitoring and supervision of potentially systemic markets and discusses how that plan might have mitigated the financial crisis in the U.S. that started in the markets for residential real estate finance. The proposal has three main parts: the conduct of the analysis, the selection of markets for detailed analysis, and the ways in which the findings could be used to enhance financial stability. The discussion uses several examples to help illustrate how the proposal would work, the primary example based on commercial lending but the discussion also uses several examples from residential real estate finance market in the period prior to the crash.

2.1 Market analysis

The purpose of analyzing major markets is two-fold: (a) to identify unsafe or unsound practices which might cause or contribute to financial instability and (b) to develop sufficient understanding of the market so that the authorities could make informed crisis management decisions should financial stability problems emerge. The process would be start at the beginning where the risks are first being generated and follow those risks through the financial system to the ultimate bearers of those risks.

As an example of how such analysis could go, suppose that the market for loans to middle market firms is considered system. The first step in analyzing the market would be analyze the primary methods by which the risks of lending to a middle market firm are passed through to the ultimate risk bearers. Such loans could be as simple as a loan from a bank or

supplier to the firm implying that the market analysis should focus solely on bank lending practices.

However, the allocation could involve many more steps if the loan were packaged into a collateralized debt obligation (CDO). In addition to analyzing the lending decision, the process for selecting loans to be included in the CDO adds a layer of complication. Then one needs to consider the investors in a CDO. Figure 1 gives an example of what could be a representative hedge fund, XYZ Hedge Fund, that has decided that U.S. dollar denominated CDOs provide an attractive rate of return. Additionally, XYZ would like to boost its returns by funding its holdings with short-term liabilities denominated in euros. However, XYZ does not have strong views about general corporate credit risk in the U.S. and would like to reduce its exposure by entering into a credit default swap on an index of corporate loans. In order to understand the risks and how they are allocated in this example, one would need to understand:

- How CDO sponsors select loans for inclusion in CDOs,
- How hedge funds select CDOs,
- How hedge funds evaluate their various risk exposures,
- How prime brokers evaluate loans to hedge funds, and
- How derivatives' counterparties evaluated transactions with hedge funds.

If hedge funds were material buyers of CDOs, breakdowns associated with any step in this chain could impact demand for middle market loans. Thus, a comprehensive understanding of how the market for middle market loans would require an understanding incentives and ability to perform of the participants at each step of the chain.

Moreover, analysis of the direct participants in each step in the chain is not sufficient. Figure 2 highlights two potentially important parts of the risk transfer process: the contract used

to implement the risk transfer and the gatekeepers that provide critical information to the buyer of risks. An understanding of the contracts typically being used for risk transfer is essential to understanding how the buyer is limiting his risk exposure. For example, the covenants in middle market loans may play an important role in reducing the losses on the loan if the borrower. As another example, if the loans are securitized into CLOs, the distribution of loan payments among the various loan claimants (the “waterfall”) has important implications for the risks being borne by each of the classes of CLO securities.

Additionally, Figure 2 highlights the important role of gatekeepers in providing investors with valuable information. At the level of a bank making a loan, these gatekeepers may include accountants that audit a firm’s financial statements and business credit reporting agencies such as Dunn and Bradstreet. Investors in CLOs may also depend upon reports from the CLO trustee and from credit rating agencies such as Moody’s, and Standard and Poor’s. These external gatekeepers are specialists that exploit economies of scale in providing valuable information to the buyers of risk. If these gatekeepers are not performing their functions, as has been alleged in the case of mortgage backed securities both for trustees and credit rating agencies, the buyers of risk may be underestimating their risk exposure.⁶ Such underestimation of risk may result in higher losses to the buyers of risk and to a reduction in the demand for the risk when buyers eventually come to understand their actual risk exposure. Thus, an understanding of the incentives and performance of key gatekeepers is potentially important in understanding the amount of risk being created in a systemically important market.

⁶ See Ashcraft, Goldsmith-Pinkham, and Vickery (2010) for evidence that overstated credit ratings played an important role in mortgage securitization. An argument can be made that many investment advisors understood that some ratings understated the true risk, such as the “Aaa” ratings awarded some collateralized debt obligations (CDOs). Even if this is true, the high ratings allowed the investment advisors to deceive their clients about the true risk exposure of these clients’ investments.

Moreover, the amount of risk being transferred also depends upon the mechanism for enforcing contract terms if one party in the chain does not meet their contractual obligations. Figure 3 highlights that enforcement depends both upon the contractual terms and the outside parties responsible for enforcing those terms. An important threshold issue is whether the contract, relevant statutes and related case law cover the important contingencies.⁷ Assuming the contingencies are covered, the details of the contract and the incentives of those enforcing the contract can play an important role in mitigating and allocating losses.

For example, corporate loans often contain restrictive covenants to protect the lenders by limiting the borrower's actions and/or by giving the creditors the right to demand repayment if the firm's financial ratios deteriorate beyond some specified level. Borrowers subject to covenants may seek to renegotiate a covenant before or after its violation. The incentives of the party responsible for the renegotiation will then play an important role in both keeping viable firms in operation thereby reducing costly bankruptcies and in forcing nonviable firms to stop operations in order to reduce creditors' losses when the firm fails.

Another example where enforcement mechanisms are important is residential mortgage loans. On the one hand, arguably many servicers had an incentive to forgo loan modifications that would have benefited investors in the securities backed by those mortgages. On the other hand, investors may have also lost value because the lengthy foreclosure process in some states

⁷ For example, do the contracts address reasonably likely contingencies and would they function as intended in times of distress? Did both parties to the contracts have reasonably similar understandings about what the contracts would require in distress situations? Is this understanding based on clear statutes and/or prior legal precedent? Or are the parties hoping that the courts will read the contract language and relevant statutes the same way that the parties currently read them? The problem of adequate legal certainty about enforcement of contract terms is unlikely to be a major concern if the contract has been thoroughly tested in court (as would likely happen over the course of full business cycle). However, new contract terms which arise during relatively good times for the relevant market may not be adequately tested until the market experiences losses—which could add to uncertainty if the first downturn is during a systemic crisis.

allowed borrowers to remain in their homes for extended periods despite the fact that the borrower had not made any mortgage payments for many months (or even years).

In sum, market analysis of the sort discussed in this subsection is necessarily a quantitative and qualitative exercise. Quantitative information on the amount of risks being transferred, the pricing of those risks and the amount borne by different risk bearers is important to understanding how big a threat the market could become to financial stability. However, the qualitative aspects are at least as important. Examples of such qualitative concerns are the process by which investors decide to take some risks but not others, the (range of) contractual terms in the market, and whether the incentives of gatekeepers and contract enforcers are aligned with the expectations of investors. Such qualitative understanding requires field work and discussions with market participants. Moreover, both the quantitative and qualitative information from such market examinations will often require relatively sophisticated analysis in order to identify those potential problems that could threaten financial stability.

2.2 Market selection

The set of markets analyzed in any given year depends both on the set of markets to be evaluated and the frequency of the evaluations. The basic principle in selecting markets for analysis would be their importance to financial stability and systemic risk. This would include not only markets that could have a material impact on financial institutions but also markets which could have a material impact on markets that are important to the real economy. For example, the freezing up of the commercial paper market after Lehman's failure had the potential to have a severe adverse impact on the ability of large nonfinancial corporations to obtain essential funding.

One factor obviously correlated with financial stability concerns is simply the size of the market, including the amount of potential loss in a crisis claims and the volume of trading. By this standard the housing finance market was huge and would certainly have been a target for periodic reviews.⁸

A second criterion is the extent to which the market uses credit transactions and the degree of leverage inherent in those transactions. The collapse of stock prices after the so-called “dot-com” bubble is an example of a large market where some participants suffered large wealth losses but which did not threaten financial stability because no major firms were threatened with insolvency. Conversely, the early defaults on high risk mortgages in 2006-8 quickly led to financial distress and failure for some participants in the mortgage backed securities market.

A third criterion would be the extent to which the market facilitates maturity transformation. A market in which some participants fund longer term assets with shorter term liabilities expose both those participants investing in longer term assets and those who supply the short term funding to the risk of becoming illiquid. The consequence of such illiquidity could be the forced of assets at potentially “fire sale” prices and the potential that some investors could default on their obligations.

A fourth criterion is the importance of the market to major financial institutions. Problems in an important funding or risk management market for major financial institutions could quickly spill over into threats to these institutions financial condition.

Those markets that are designated as systemically important should be subject to periodic review given that all markets evolve over time. The general principle is that these markets

⁸ The historical data in the Federal Reserve Flow of Funds (<http://www.federalreserve.gov/econresdata/releases/mortoutstand/current.htm>) shows total one- to four-family lending exceeding \$10 trillion in the second quarter of 2006

should be reviewed frequently enough to identify emerging threats but not so frequent they become perfunctory.⁹ I suggest that the standard be that every market would be reviewed every at least every three to five years—albeit experience might suggest more or less frequent reviews for the typical market.

Although a three to five year break between reviews seems appropriate for most markets, some markets are likely to merit more frequent review. One characteristic that should be taken into account is the rate of growth in a market. Rapid growth is likely to bring in new participants who have not experienced a down cycle in that market and accordingly may be taking excessive risk. Moreover, some rapidly growing markets that are not yet systemically important may merit review as they could grow to become systemically important. Also, the supervisors may find it easier to address weaknesses in market practices while a market is still relatively small and not yet systemic.

A related characteristic that may indicate greater risk taking is the rapid growth of new financial instruments or instruments which had previously served only small niche markets (as had been the case for subprime lending prior to 2000). Kane (2014) emphasizes that supervisors should be especially concerned about the use of these instruments to shift risk to firms whose prudential supervisor is not well equipped to understand, evaluate or limit the risks.

A third characteristic that may justify more frequent reviews is one in which major participants appear to be earnings sustained high profits that seemingly exceed reasonable compensation for the risks being taken. Seemingly high economic profits should be competed

⁹ For example, continuous monitoring of long established markets may actually obscure emerging issues as change often happens in a series of small steps, none of which seem particularly important at the time but which are cumulatively important.

away in efficient markets. If the profits seem to persist, that may be suggestive that the risks are being underestimated.¹⁰

2.3 Market supervision and crisis management

After the review of a market is complete, the information from that review should be used to reduce the probability of a crisis and the cost of any crisis that should occur. Prior to a crisis, this means taking some measures to reduce both the probability and cost. After a crisis has begun, the data may be used by the authorities to minimize the expected costs.

2.3.1 Market supervision

The problem with using the information to take action prior to the crisis is that we have limited experience with doing so. In the spirit of first “do no harm,” I propose a variety of ways in which existing supervisory powers and structures could be used to reduce the expected cost of a financial crisis.

An obvious use of the information would be to inform the practice of the existing microprudential supervisors. One such way in which it could inform microprudential supervision is by highlighting widespread deviations from sound credit underwriting practices. For example, if a macroprudential review of the mortgage markets determines that a high percentage of no document loans are indeed “liars’ loans,” the supervisors could restrict their regulatees’ ability to make no documentation loans.¹¹ Another way in which existing powers could be used is to inform the stress tests required of financial firms that are designated as SIFIs under the Dodd-Frank Act (DFA). For example, if the macroprudential review finds widespread

¹⁰ The recommendation to look at high profit markets is based on Lehnert (2014) who points to “supernormal profits” as an example of a trigger for obtaining more information about the risks and thinking more imaginatively about those risks.

¹¹ See Jiang, Nelson and Vytlačil (2010) for a discussion of the importance of liar’s loans to mortgage delinquencies early in the crisis.

reliance on increasing collateral values, the Federal Reserve could require DFA SIFIs to run a stress test which measures their ability to withstand a downturn in collateral values.¹² Those SIFIs that would not remain appropriately capitalized through such a scenario could find the Federal Reserve objecting to their plans to increase capital distributions (dividends and/or stock repurchases).

If a macroprudential market review reveals weaknesses at institutions not subject to prudential supervision, obtaining corrective action may be relatively easy if it can be corrected at low cost by existing participants. However, fixing the problem may be far more difficult if the required changes would impose high costs on some participants in the market. If participants in the market are unable to lower risks to acceptable levels, the supervisors may be able to encourage reform using other tools.

One way of changing markets would be to address the potential risks through those aspects of the market that do touch the regulated financial system. For example, hedge funds are not subject to prudential regulation. However, hedge funds depend upon regulated firms as sources of various types of credit including margin credit. Thus, Federal Reserve Chairman Ben Bernanke (2006) described how the supervisors could influence the systemic risk being generated by hedge funds through the supervisors control over the firms they do supervise.¹³

Another possibility would be to use supervisory tools intended for other purposes to support financial stability. For example, the Federal Reserve had some regulatory power over

¹² See Gerardi, Lehnert, Sherlund and Willen (2010) for evidence that participants in the 2005-06 markets for residential mortgages were relying on optimistic forecasts of house price appreciation.

¹³ Another example is conduits such as structured investment vehicles (SIVs) which financed a large share of their MBS holdings with commercial paper backed by liquidity guarantees. These conduits were largely disguised mechanisms for avoiding bank capital regulation. They relied on the liquidity guarantees that were accorded low capital requirements to provide de facto credit guarantees that would have been subject to higher capital requirements according to Acharya, Schnabl, and Suarez (2013). If the bank supervisors had recognized these liquidity guarantees as credit guarantees they could have imposed tougher capital requirements.

housing finance as a part of its ability to write consumer protection regulations. Much of the bank supervisors' consumer protection power was shifted outside the prudential supervisors and given to the Consumer Financial Protection Bureau (CFPB) by DFA. However, DFA also gives the FSOC the authority to recommend new or heightened standards if the FSOC determines that an activity possess significant risk to U.S. financial firms or markets.

Even if neither of the above methods of changing market behavior would be appropriate ways of lowering risk to acceptable levels, it may be possible to expand the scope of prudential supervision. This could be done within existing law if major participants in this market were designated as systemically important by the FSOC as that would subject these participants to Federal Reserve prudential supervision. A final possibility if none of the above would adequately reduce risks would be the FSOC's annual report. The FSOC is required to make an annual report to Congress in which it identifies emerging threats and includes appropriate recommendations. If an end-to-end market review reveals a potential threat that cannot be adequately addressed with existing regulatory tools; the FSOC's report and the testimony of its members could be used to encourage appropriate Congressional action.

2.3.2 Crisis management

Even when macroprudential monitoring is unable to prevent a financial crisis, the information gathered from these reviews may allow authorities may be in a better position to judge the significance of emerging problem and take effective action to reduce the costs. For example, the Federal Reserve would have been in a better position to judge the impact of a Bear Stearns insolvency on the tri-party repo market had this market been better understood. Another example of missing data that would have been helpful during the crisis is information on the

extent to which home buyers “borrowing” their downpayment (that is taking out a second lien, or engaging in piggyback lending).¹⁴

3. Existing macroprudential monitoring insufficient

Many parts of the financial system were subject to intrusive supervision prior to the financial crisis. Further, post-crisis there has been an expansion in the set of institutions subject to prudential examination and the amount of information required from many of those already subject to prudential regulation. Thus, an appropriate question is whether the additional monitoring proposed by this paper would merely be duplicating those efforts.

3.1 Pre-crisis responsibilities

Prior to the crisis, many federal agencies were tasked with prudential supervision of specific types of firms but none was explicitly tasked with monitoring the overall stability of the financial system. To be sure, the prudential supervisors did not ignore financial stability concerns prior to the Dodd-Frank Act. For example, the 1974 failure of Bankhaus Herstatt demonstrated to bank supervisors the risks then inherent in the settlement of foreign exchange transactions (Galanti 2002). U.S. and foreign bank supervisors “encouraged” banks to significantly reduce this problem and these efforts ultimately led to the creation of the Continuous Linked Settlement Bank (Shirakawa, 2008). Similarly, U.S. and foreign supervisors forced changes that led to a substantial decrease in confirmation backlogs in the credit derivatives market (United States Government Accountability Office (2007)). But these were one-off supervisory efforts were triggered by the finding of specific weaknesses with potential implications for financial stability rather than by systematic efforts to identify weaknesses across the financial system.

¹⁴ Lehnert (2014).

3.2 *Post-crisis measures targeted at specific financial markets*

One set of changes made by DFA are intended to reduce the riskiness of two markets. The Act sought to make the over-the-counter (OTC) derivatives market safer by mandating that swap transactions be cleared, and by requiring changes to some market structures.¹⁵ AIG's credit default swap (CDS) operations are perhaps the poster child for the problems with the existing OTC derivatives market. Contrary to the practice of other large participants in the CDS market, American International Group (AIG) had a "one way" book which consisted almost entirely of protection sold on low quality mortgage backed securities (International Swap and Derivatives Association 2009). Market value losses on its CDS portfolio combined with losses on other parts of its portfolio and related margin calls from its counterparties resulted in AIG becoming illiquid and needing Federal Reserve support to continue operation. If AIG's sale of CDS had been conducted under the new DFA requirements, the one-sided nature of the trades would likely have become apparent to supervisory authorities at a time when effective action might have been possible.¹⁶

Additionally DFA enhanced supervision and regulation of U.S. payment, clearing and settlement systems. In part this change is due to DFA's requirements that OTC derivatives be cleared which has the effect of creating new systemically important institutions. As Bernanke (2011) states: "if you put all your eggs in one basket, you better watch that basket."

¹⁵ The Commodity Futures Trading Corporation and the Securities and Exchange Commission (2012) provides a discussion of the regulatory framework for OTC derivatives in the United States and other major markets, including a discussion of the DFA required changes for the United States.

¹⁶ Whether and in what circumstances the requirements for swap clearing will actually reduce risk is the subject of some debate, see Pirrong (2011) and Duffie and Zhu (2011) for some additional perspectives on this issue.

However, these provisions of DFA focus on specific financial markets. As such they are not designed to provide the systematic review of systemically important markets discussed above.

3.2 *Post-crisis measures targeted at specific institutions*

After the crisis, the Federal Reserve decided to strengthen the macroprudential monitoring and supervision of those institutions under its control by creating the Large Institution Supervision Coordinating Committee (LISCC). The LISCC provides an interdisciplinary and cross-firm perspective to the supervision of the most systemically important financial institutions operating in the United States.¹⁷ The LISCC focuses on systemic risks and horizontal reviews which reduces the probability that common weaknesses within the LISCC portfolio will be treated as idiosyncratic problems.

The potential scope of the Federal Reserve's macroprudential supervision was expanded by DFA. DFA created the Financial Stability Oversight Council to designate both individual firms and financial market utilities as being systemically important and hence subject to prudential supervision by the Federal Reserve. As a part of this supervision, the DFA requires the Federal Reserve to establish prudential standards that are more stringent than those imposed on other nonbank financial companies and bank holding companies that have not been designated as systemic.

The post-crisis enhanced supervision of systemically important firms is likely to enhance financial stability. The LISCC's addition of a cross-firm perspective also addresses one of the problems of microprudential regulation that is focused on single organizations, that the largest financial firms are rather unlikely to fail for idiosyncratic reasons. However, as discussed above

¹⁷ See the LISCC home page <http://www.federalreserve.gov/bankinforeg/large-institution-supervision.htm> for a discussion of its activities and a list of the firms currently under LISCC.

stricter microprudential supervision of individual firms or even a horizontal slice of systemically important firms is not the same as an in-depth understanding of the threats to financial markets.

3.3 Enhanced monitoring of financial stability

Along with enhanced regulation of systemically important firms, three new oversight bodies were created to monitor systemic risks. The FSOC is charged with monitoring “the financial services marketplace in order to identify potential threats to the financial stability of the United States.” However, the issues it discusses are going to be framed by its members and apart from the Treasury and its Office of Financial Research (OFR), all of the other FSOC members are assigned specific types of financial firms. The Treasury certainly capable of bringing macroprudential issues it observes to the FSOC, but the Treasury would have at most a small staff devoted to the full range of prudential regulatory issues and would not have the resources to conduct routine, in-depth market reviews.

The OFR is tasked with supporting the FSOC and its agencies. However, its primary assignment is data collection and related tasks such as standardizing the types and formats of data. That the agency is focused on obtaining data rather than understanding how markets operate can be seen from its 2013 human capital plans, OFR (2013) which lists as its steady state goals as having 145 people associated with its data center and 61 people in its research and analysis center. The availability of high quality data should significantly assist research on the condition of financial firms. However, the mission and staffing of OFR implies that it cannot be expected to identify and provide in-depth understanding of emerging market trends that may

pose risks such as the flaws in foreign exchange transactions settlements and CDS confirmations.¹⁸

Finally, the Federal Reserve's responsibility for the conduct of monetary policy and discount window lending give that agency a mission driven reason for monitoring the stability of the U.S. financial system. On the analytic side, the Federal Reserve Board responded by creating the Office of Financial Stability Policy and Research (OFSPR) to coordinate the Board's work on financial stability. The homepage listing the Office's economists listed 23 economists as of May 5, 2014. Analytic research on financial stability topics is also conducted in other parts of the Board and in the various Reserve Banks. This OSFPR provides a mechanism for monitoring and elevating awareness developments related to financial stability.

The OFSPR provides the Federal Reserve with better insight into financial stability issues as its mandate is not limited to firms supervised by the Federal Reserve. However, the OFSPR is not designed to provide routine, in-depth reviews of major markets. What can reasonably be

¹⁸ One way of evaluating whether OFR's current plans would be an adequate substitute would be to consider what problems OFR likely would have caught and which ones its data collection efforts would be unlikely to reveal. One example where better data would likely have been sufficient to identify a potential problem are in providing better measures of the extent to which mortgage borrowers were borrowing the downpayment needed for their. OFR's focus on high quality data should have provided a wealth of information on the extent and geographic distribution of piggy back loans. Another likely example is that of AIG's large role as a seller of CDS contracts, something that should have been identifiable from simply compiling a list of the largest participants on each side of the CDS market.

However, the data provided by OFR seems unlikely to catch some other problems, such as the deliberate provision of false data. For example, to the extent that borrowers were lying on their loan applications and mortgage lenders were avoiding doing adequate quality checks (indeed, even encouraging misstatements in some cases), it seems unlikely that OFR would have been able to identify the extent of the problems. In other cases the OFR may have had the data, but the problems could only emerge if someone had enough imagination to conduct the right sort of analysis. For example, it may have been possible to identify the reduction in standards applied to MBS and CDOs by the credit ratings agencies with data collected by OFR. However, it would have taken a study deliberately focused on this area to identify a potential problem. In contrast, discussions with market participants in a macroprudential market review would likely have triggered concerns that standards were deteriorating. Similarly, it likely would be possible to identify the reliance of MBS conduits on credit guarantees masquerading as liquidity guarantees but that would have taken some imagination. On the other hand, people who have spent time understanding the economic and legal underpinnings of a market are more likely to identify potential problems than someone tasked with collecting data that may be useful in identifying some problems.

expected of the OFSPR is high level monitoring of major markets with more in-depth reviews of those aspects of major markets that the Office perceives could threaten financial stability. Even here, however, the OFSPR does not have the statutory authority to gather data from firms that are not subject to Federal Reserve prudential examination.¹⁹

3.4 Overall monitoring likely from post-crisis supervisors

The pre-crisis prudential supervisory system is mostly designed to provide microprudential supervision. That system was not oblivious to the risks being raised by key financial markets, but it was not designed to systematically identify emerging risks. The crisis spurred a number of new supervisory and monitoring organizations. These organizations put into place some valuable pieces that will expand the coverage. However, none of them are designed to or tasked with providing the systematic and comprehensive analysis of markets that could threaten financial stability.²⁰

4. Conclusion

A large fraction of the increase in “macroprudential” supervision since the crisis is really enhanced microprudential supervision of financial firms that are thought to be systemically important. While valuable in reducing the vulnerability of the financial system, such efforts fall

¹⁹ An approach that seems broadly consistent with the OFSPR’s mandate and authority is Adrian, Covitz and Liang (2013). Their approach distinguishes between shocks and vulnerabilities that amplify shocks, viewing vulnerabilities as easier to identify and mitigate. The vulnerabilities they identify are leverage, maturity transformation, interconnectedness, complexity and the pricing of risk. They recommend tracking these in four areas: SIFIs, shadow banking, asset markets and the nonfinancial sector.

²⁰ The Financial Stability Board’s (2013) recommends a wide ranging program for monitoring shadow banks. However, exactly how this proposal would work in practice is unclear. One could interpret the monitoring aspects of their proposal as largely consistent with current U.S. practice. However, one could also interpret as a mandate for something close to that proposed by Wall (2010) and fleshed out by this paper. Under the later interpretation, this paper’s proposal provides considerably more detail about the implementation of the monitoring routine. In either case, the Financial Stability Board’s (2013) recommendation calls for regulatory responses that are arguably beyond the scope of the U.S. authorities whereas this paper’s recommended responses are tailored to existing U.S. regulatory authority.

short of the systemic reviews of major financial markets that should be a central element of a truly macroprudential supervisory regime.

The primary threat to financial stability is widespread financial distress due to important participants in financial markets suffering large losses at the same time, most likely because the firms took correlated exposures. This threat can be alleviated by macroprudential policies designed to identify and remedy weaknesses in major markets. This paper proposes routine, end-to-end reviews and discusses how the results of these reviews could be used to enhance financial stability.

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Figure 1
Example of Risk Dispersion
ABC Hedge Fund takes currency, interest rate and funding risk

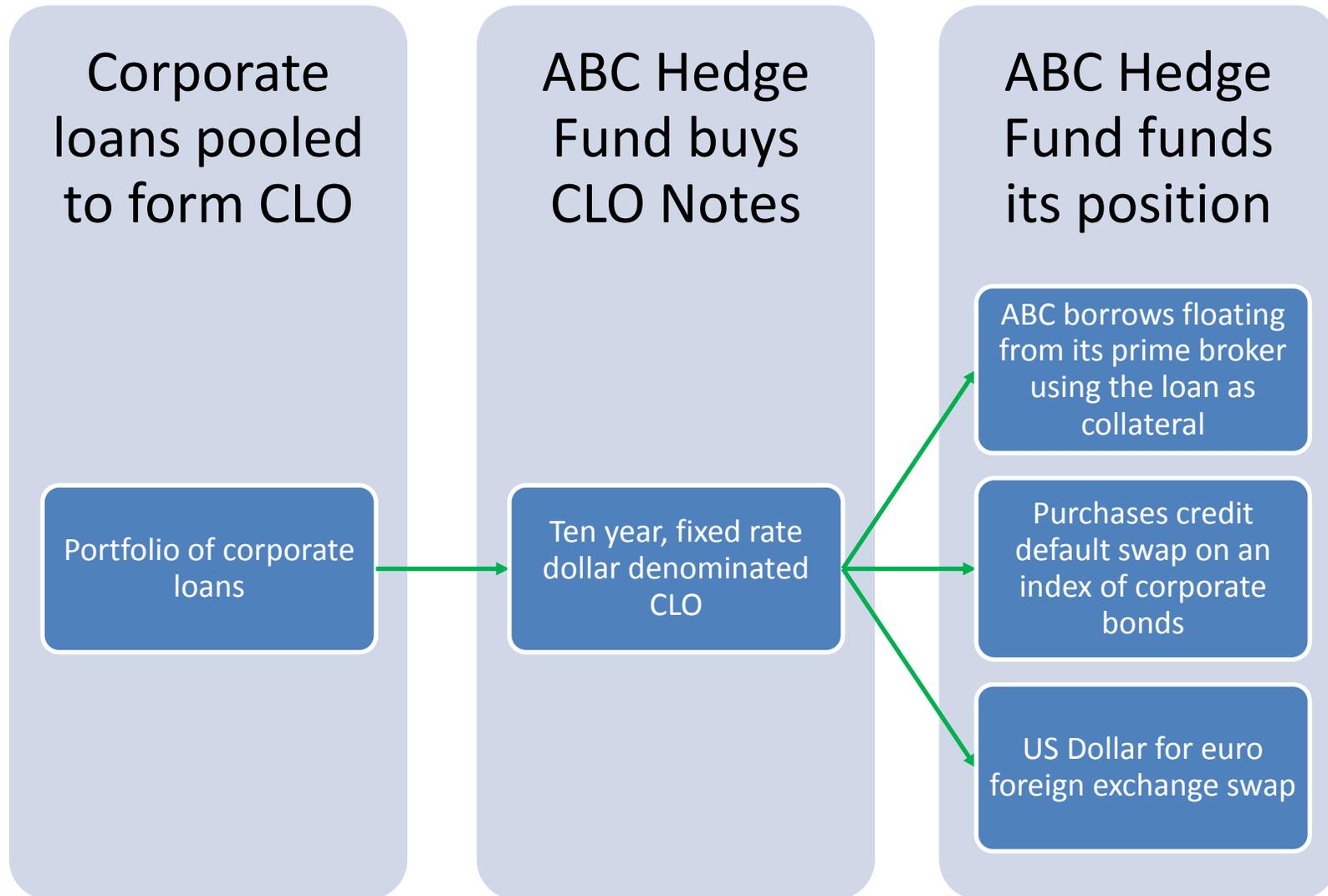


Figure 2
Initial transfer of risk

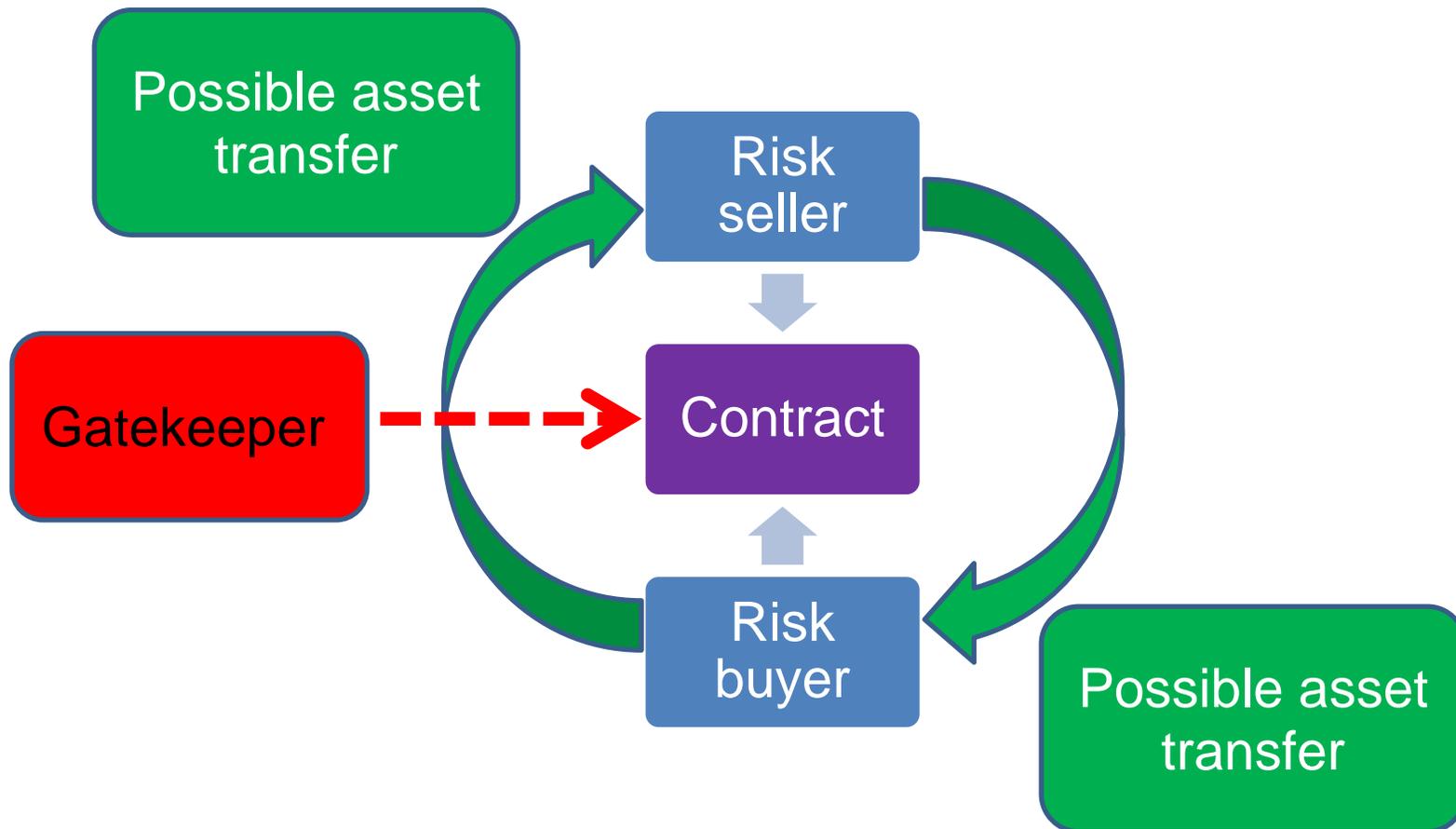


Figure 2
Subsequent transfer of risk

