PRELIMINARY DRAFT

FINANCIAL REGULATORY REFORM:

CHALLENGES AHEAD

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Abstract

The modern financial system is dominated by markets with complex institutions connected to each other through short-term financing (e.g., commercial paper and repurchase agreements), securitization, derivatives, and other means. Yet the regulatory structure traditionally has focused mainly on depositories and the instability of liquid deposits financing illiquid loans. Regulators thus had inadequate tools to deal with the 2008 crisis. We suggest two key principles to guide regulatory reform. First, some changes in the financial system were motivated by institutions attempting to avoid or lower the burden of regulations through so-called regulatory arbitrage. Reform thus needs to avoid driving businesses 'into the shadows,' where risks may accumulate unnoticed and set the stage for the next crisis. Second, regulatory reform ought to improve market transparency and thus reduce the uncertainty of counterparty exposures and inter-linkages between major players. We evaluate some aspects of the Dodd-Frank Act in light of these principles.

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Over the past thirty years the financial system has evolved from one reliant on traditional banking – lending financed mainly with deposits – to one dominated by market-based sources of funding involving nonbank institutions. In the new financial architecture, banks do not play the same role they once did. Sixty years ago, for example, depository institutions held roughly 60 percent of the assets in the financial sector but by 2006 that share fell in half to 30 percent (see Kroszner and Melick, forthcoming).

Transformations on both the liability and asset sides of bank balance sheets have created greater inter-linkages among financial institutions. On the liability side, banks and other financial institutions have come to rely on market-based sources of short-term funding, such as commercial paper, asset-backed commercial paper (ABCP), and repurchase agreements (repos). Money market mutual funds, which didn't exist before the 1970s, came to hold roughly $4 trillion in assets (roughly half the size of bank deposits) and have become key sources of this funding. On the asset side, banks and other intermediaries rely increasingly on the ability to securitize assets they generate (e.g. loans and mortgages). This "originate to distribute" model of intermediation thus relies heavily on the operation of the securitization markets, thereby connecting intermediaries to these markets and making them vulnerable to any instabilities that arise.

Derivatives markets have grown in parallel with the expansion of the securities markets. In the 1970s, for example, options markets grew in response to better understanding of pricing and hedging of non-linear instruments (Black & Scholes, 1973). Interest rate swaps grew in popularity in the 1980s, probably because instability in interest rates in the 1970s increased the demand from hedgers such as insurance companies and savings institutions to manage interest

rate risk exposure. In the 1990s and 2000s, credit default swaps emerged and exploded in popularity.

As a result of this evolution, we now have a highly *interconnected* financial system with *opaque* distribution of risks across firms within the system. Today's banking and intermediation system involves long chains with many of the crucial links being market-based, nonbank intermediaries that do not rely on deposits for their funding (see Adrian and Shin 2009, Kroszner 2011, and Kroszner and Melick, forthcoming). The many layers of intermediation in the modern financial system allow shocks in one market or institution to propagate rapidly into others. With the explosive growth of derivatives, the distribution of risks across institutions becomes harder to assess, particularly because these markets evolved without a central exchange or clearinghouse to aggregate information. Mismanagement or misjudgments about risk in particular institutions or markets, rather than being self-correcting, can thus cascade through the system in which it is difficult to isolate one institution or market from risks at counterparties or other markets. A market-wide loss of confidence can then occur due both to inter-linkages as well as to lack of knowledge of the counterparty exposures and uncertainty about whether those counterparties will be able to make good on their contractual obligations.

Despite these fundamental changes, the regulatory structure has focused mainly on depositories and the long-recognized instability associated with liquid deposits financing illiquid loans. Regulators thus had inadequate tools to deal with the 2008 crisis. As we detail below, the evolution to a more complex and interconnected system has been driven in part by regulatory distortions. Some (but by no means all) changes in the financial system occurred as institutions attempted to lower or avoid the burden of regulations through so-called regulatory arbitrage.

Many financial innovations have enhanced the liquidity of firms and markets, improved opportunities for diversification, and increased competition between suppliers of credit. As a result, opportunities for financial firms to manage risk have improved, and the cost of capital to the non-financial sector has declined. Some of these changes, however, also have allowed risk concentrations to grow larger and more rapidly than either supervisors or market participants were aware of or could adequately respond to, thereby increasing the potential for a crisis.

The welfare calculation for assessing regulatory reform thus is complex. Economies with better developed financial systems tend to grow faster than other economies, and a substantial body of evidence suggests that this link is causal.[1] That evidence has generally been used to support reduced restrictions on the financial sector. The recent crisis raises the issue of whether there is a trade-off between this more rapid growth and volatility.

Regulatory reform thus faces a fundamental tension: How do we allow continued innovation that fosters financial deepening and faster growth while mitigating the potential for instability inherent in the interconnections that come with financial development? In some cases, reduction in regulatory restrictions and increases in the size and scope of the financial sector has not involved a trade-off and has resulted in both higher growth and lower volatility (see the analysis of the elimination of geographical restrictions on bank expansion in Morgan, Rime, and Strahan, 2004 and Kroszner and Strahan, forthcoming). Obviously, this is not the case in all circumstances.

[1] There are three main pieces of evidence that suggest finance causes growth: first, financial development leads real growth temporally; second, this relationship is stronger at industries and firms that demand external finance more, in both normal times and in times of financial crisis; and, third, policy changes that open financial markets to greater competition are followed by faster growth. See Levine 2005 and Kroszner, Laeven, and Klingebiel 2007.

While we cannot provide a comprehensive analysis of this fundamental issue in this limited space, we suggest two key principles to guide financial regulatory reform to address this potential tension. First, reform needs to avoid the next round of regulatory arbitrage in which business moves 'into the shadows,' where risks may accumulate like dead wood on the forest floor ready to ignite into the next wildfire. Second, reform ought to improve market transparency and thus reduce the uncertainty of counterparty exposures and inter-linkages between major players, thereby lowering contagion risk. In the remainder of this paper, we try to suggest concrete ways to achieve these two principles and evaluate a few salient aspects of the recently passed Dodd-Frank Wall Street Reform and Consumer Protection Act.

I. Avoiding Regulatory Arbitrage

Some of the impetus pushing away from traditional intermediation described above came as firms worked to minimize the burden of regulations and maximize the value of subsidies. Securitization provides an example of a valuable financial innovation that fosters both diversification and liquidity but expanded too far due to these distortions. First, the GSEs subsidized securitization by offering low-priced credit enhancement to mortgage pools in the prime market and by purchasing securitized subprime mortgages in the secondary market. Second, the original Basel Capital framework encouraged securitization of low-risk loans because it treated all loans to businesses equally for the purposes of required capital. Thus it became attractive to securitize loans to the best-rated creditors and hold loans on balance sheet to lower-rated borrowers.

In the 2000s, the asset-backed commercial paper (ABCP) market expanded dramatically, creating off-balance sheet conduits with similar asset-transformation characteristics of traditional

banks (long-term loans financed with short-term liabilities). These structures allow issuers, mainly regulated commercial banks, to reap the same upside as if those assets stayed on balance sheet – because they were residual claimants in the conduits – but with no required regulatory capital (Acharya, Schnabl, and Suarez 2010). Thus, much of the explosive growth of this market may be due to regulatory arbitrage. The collapse of the ABCP market in August of 2007 marked the beginning of the financial crisis.

How do we move forward with reform without creating the next round of regulatory arbitrage? While it is probably impossible to impose any kind of restriction on firms without some reaction by regulated entities, perhaps the lesson of the past 20 years is that specific institution-based and bright-line rules may be particularly prone to regulatory arbitrage. The Basel process, for example, applied to a well-defined set of institutions (large banks) with a clear set of rules laid out in gruesome detail. This strategy encouraged firms outside the regulatory umbrella to engage in activities traditionally done by those under the umbrella. For example, money market funds began to supply large-scale funds to lightly regulated investment banks in the repo market that these institutions in turn used to finance their holdings of securitized assets – assets that formerly had been held on commercial bank balance sheets in the traditional depository-based system. Thus, much of the asset-transformation that had gone on in heavily regulated commercial banks moved to the less-regulated (so-called 'shadow') banking institutions. Between 1990 and 2007, for example, assets held by investment banks rose from 5% to 25% of assets held by commercial banks, and 50% of those assets were financed in the repo market (Gorton and Metrick, 2010).

In principle, Dodd-Frank moves in a positive direction by acknowledging that risks reside not only in traditional depositories but across a wide set of interconnected institutions and markets. The Act created the Financial Stability Oversight Council composed of the key Federal financial regulators. It has a broad mandate to ensure financial stability to all parts of the financial system, thereby in principle moving beyond institution-specific regulation to encompass risks across institutions and markets, and thus perhaps will lead to less regulatory arbitrage. This new so-called "macro-prudential approach," however, has at least three challenges.

First, what metrics of financial stability or systemic risk will trigger macro-prudential actions? Following the financial and currency crises in the 1980s and 1990s, academics and researchers at the IMF and World Bank tried to develop "early warning" systems to anticipate where a crisis might occur. This exercise has proved difficult, and there are no generally accepted early warning indicators to allow authorities to act early enough to avoid the next crisis.

Second, financial economics does not provide supervisors and regulators a straightforward and theoretically grounded metric to assess if risks are being improperly managed or priced. Reasonable people could disagree about appropriate assumptions or shifts in risk aversion, discount rates, "tail risks," and other factors that drive asset pricing. Regulators thus may face criticism of being arbitrary and attempting to substitute their judgment for those of investors who are putting their own money on the line. Such assessments are particularly difficult in new and innovative areas where data histories are short.

Third, will a central bank's independence be challenged if it is actively engaged in macro-prudential policymaking? In the case of housing, many countries have programs to

subsidize home ownership, ranging from reductions in down payments to subsidies to securitization. The costs of these subsidies have become clear to US taxpayers as losses at Fannie Mae and Freddie Mac mount. Despite these costs, neither Dodd-Frank nor any other plausible steps have been taken to limit housing subsidies, reflecting the powerful and broad political support for these policies. If a central bank again becomes concerned about "frothiness" in housing, policies to reduce loan-to-value ratios, restrict securitization, or raise capital requirements might run into political headwinds. The unelected body of the central bank could be accused of overruling policies explicitly adopted by an elected body. This certainly could put the central bank in the political cross hairs. Effective macro-prudential policies thus may involve risks for central bank independence.

In another area, namely restrictions on bank activities, Dodd-Frank moves in a direction that has the potential to increase interconnections and reduce stability. The so-called Volcker Rule puts strict limits on the extent to which commercial banks can engage in proprietary trading, private equity, or hedge funds. As we know from examples of regulatory arbitrage, shifting activities out of the bank does not necessarily reduce those risks but simply moves them elsewhere in the system, with the potential to increase external dependence and inter-linkages of the banks. Depending upon the definition of what constitutes "proprietary," hedging activities of banks may be curtailed or outsourced, complicating risk-management. Banks also might lose some of their most talented people to unrestricted institutions. An unintended consequence of the Volcker Rule and more extensive Glass-Steagall-like restrictions on bank activities being considered in the UK could be to increase, not decrease, financial fragility.

II. Improving Financial-Market Transparency

One potentially effective way to improve market transparency is to bring derivative contracts onto platforms with centralized clearing counterparties. In such arrangements, the clearinghouse becomes the counterparty to all derivatives transactions and thus, by construction, runs a matched book. Because the clearinghouse bears no market-risk exposure, uncertainty about counterparty risk declines.

Concern about counterparty failures and contagion to connected firms led to strong policy actions following the failures of both LTCM back in 1998 and AIG in September 2008. With bilateral OTC markets, firms entering into derivatives contracts may not understand the market-risk exposure of their counterparties. AIG Financial Products, for example, chose to make a series of one-way bets on the housing market and on corporate solvencies, but this exposure was not evident to AIG's counterparties. With a clearinghouse, information about exposures to market risk is aggregated and thus can be closely monitored, either by the clearinghouse itself or by regulators. Thus potentially destabilizing concentrations of market risk among one or a handful of institutions becomes less likely to occur.

While central counterparty clearing has many benefits, most derivatives contracts still trade over-the-counter. In fact, over the past 20 years about 90% of derivatives contracts traded in OTC markets versus organized exchanges (Bank of International Settlements). Why have OTC markets dominated for so long? One reason is that the gain in safety may come at the expense of flexibility. A central counterparty imposes a degree of standardization on contracts to make central clearing feasible. Similarly, experimentation and innovation may be easier in the OTC markets. Part of the reason for the rapid growth of OTC derivative markets is due to the demand for variety and customization of contracts. That said, many OTC contracts are already

eligible for clearing through a central counterparty. A second reason may be volume and liquidity. Undertaking the costs of central clearing by market participants and managing risks for central counterparties are most feasible when there is a relatively deep and active market in the contract. For CDS, for example, the index CDS as well as individual name CDS on the largest firms account for the vast majority of trading and would likely have enough depth to warrant central clearing. Third, some players in OTC markets may prefer the opacity of an OTC market compared with greater information that becomes public in a centrally cleared market about pricing, trading, etc.

The Dodd- Frank Act creates a new regulatory framework that strongly encourages the movement of OTC derivatives to centrally cleared platforms and increases disclosure about exposures. Dodd-Frank also provides a new framework for the regulation, oversight, and governance of the clearinghouses themselves. Strong incentives through differential capital charges for centrally cleared vs. OTC derivatives could be given to the major players to migrate existing contracts, to the extent possible, onto such platforms and to develop contracts with sufficient standardization that they can be centrally cleared. This would reduce the likelihood of institutions threatening to become "too interconnected to fail" as the supervisors and exchanges can more readily monitor the buildup of exposures and as the consequences of the failure of an institution are mitigated by the ability of the central counterparty to reduce disruption of the markets. Naturally, the extent to which the central counterparty will be successful will depend on its perceived ability to withstand the failure of key players in the market because now all major financial market participants will be connected to the clearing house. While clearinghouses have a more than a century of success in dealing with wars, depressions, crises,

and failures of important players (see Kroszner 1999 and 2010), a crucial challenge going forward will be to ensure that clearinghouses will be able to deal effectively with greater risk management challenges of these new products being centrally-cleared.

Financial market transparency would also be enhanced with better clarity about the process, timing, and treatment of customers and claimants of insolvent or nearly insolvent firms. The Dodd-Frank Act does create additional tools for regulators facing distress at financial firms. Under Section II of the Act, for example, federal regulators have the authority to close and liquidate in an orderly manner financial institutions that pose a risk to financial stability. The Act effectively replaces the bankruptcy code with what the FDIC has done for insured depository institutions for a potentially large set of vaguely defined 'covered financial companies'. The FDIC has stated its intent to impose losses on managers, shareholder and long-term unsecured creditors, as mandated under the law.

Committing to a credible and transparent resolution strategy, especially for short-term creditors, is difficult. Dodd-Frank allows the FDIC to "differentiate" among creditors and the pressure to "differentiate" will be hard to resist, especially in stressed markets. Failure to protect creditors holding collateral backing repurchase agreements would lead to asset fire sales, exactly the kind of 'disorderly' liquidation that Dodd-Frank directs regulators to prevent. This type of uncertainty generated fire sales during the 2008 crisis, yet Dodd-Frank does little to reduce this possibility. Moreover, committing to impose losses on long-term capital (equity and long-term subordinated debt) encourages more short-term debt and thus works against financial stability. Regulations limiting liquidity risk have been proposed under 'Basel III', but would apply only to a subset of banks and thus may encourage the regulatory arbitrage process discussed earlier. A

more comprehensive step – for example, imposing standardized haircuts on certain types of financing arrangement – would do more to insulate the financial system from this source of contagion.

Various forms of "pre-packaged" bankruptcy, "living wills," may help reduce uncertainty about failure resolution. The Dodd- Frank Act requires a rapid resolution plan, much like a living will, for systemically important institutions (see Kashyap 2009 and Kroszner 2011). A "living will" could provide the roadmap for how funds would flow and how creditors, counterparties, and customers would be dealt with as an institution begins to experience difficulty. It would provide guidance to market participants and supervisors about how a large complex institution might be dismantled and how operations that had gotten into trouble would be wound down. To be credible, such a contract would require a significant increase in the transparency of the operation of a financial firm, e.g., less commingling of funds, greater clarity of exposures, etc.

III. Conclusion

The modern financial system is now dominated by markets in which large and complex institutions are connected to each other through short-term financing, securitization, derivatives markets and other means. These connections are part of a long process of financial deepening which has paid dividends by improving opportunities for risk management, spurring competitiveness of financial markets, lowering the cost of capital, and increasing long-run economic growth, but they have not come without potential costs. Regulatory reform should not try to turn back the clock but should, instead, work to improve the stability of this interconnected

financial system through minimizing regulatory arbitrage and increasing transparency, including legal transparency.

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