Daniel K Tarullo: Regulating systemic risk

Speech by Mr Daniel K Tarullo, Member of the Board of Governors of the Federal Reserve System, at the 2011 Credit Markets Symposium, Charlotte, North Carolina, 31 March 2011.

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Events of the last few years have given the phrases "systemic risk" and "financial stability" a prominent place in the lexicon of policymakers. Although protecting financial stability is germane to numerous areas, including monetary policy, today I will focus on some aspects of its relevance for financial regulation. More specifically, I will address the implementation of the new statutory regime for special supervision and regulation of financial institutions whose stress or failure could pose a risk to financial stability. Then I will identify two important issues raised by the implementation of this regime that need the attention of academics, analysts, and policymakers if we are to regulate systemic risk effectively and efficiently.[1]

Distressed firms and systemic risk

Let me start by detailing how distress in a financial firm can create risks to overall financial stability, as a prelude to suggesting how an understanding of those dynamics should inform prudential regulatory policies. There are basically four ways:

- *First* is the classic domino effect, whereby counterparties of a failing firm are placed under severe strain when the firm does not meet its financial obligations to them. Their resulting inability to meet their own obligations leads, in turn, to severe strains at their other significant counterparties, and so on through the financial system.
- *Second* is a fire-sale effect in asset markets, when a failing firm engages in distress sales in an effort to obtain needed liquidity. The sudden increase in market supply of the assets drives down prices, often substantially. As we saw in the recent crisis, this effect transmits not only to firms that must sell assets to meet immediate liquidity needs but, because of margin calls and mark-to-market accounting requirements, to many other firms as well. The result is an adverse feedback loop, as these steps force still more sales.[2]
- *Third* is a contagion effect, whereby market participants conclude from the firm's distress that other firms holding similar assets or following similar business models are likely themselves to be facing similarly serious problems.
- *Fourth* is the discontinuation of a critical function played by a failing firm in financial markets when other firms lack the expertise or capacity to provide ready substitutes.

The first two effects are largely a function of the interconnectedness of the distressed firm with other large firms, either through direct counterparty exposures or through common exposures of the firm's balance sheet with those of other firms. Typically, these first two effects will scale with a firm's size as well. These effects are directly relevant to concerns about the too-big-to-fail (TBTF) syndrome that have animated much of the reform debate in the past few years.

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[1] The views presented here are my own and not necessarily those of other members of the Board of Governors of the Federal Reserve System or the Federal Open Market Committee.

[2] A related effect is liquidity hoarding, whereby firms suspend their normal extensions of liquidity to other firms in anticipation of, and in an effort to insulate themselves from, domino or fire-sale effects.

The traditional TBTF concern is that of moral hazard – the expectation that, when faced with the prospect of either variant of a major blow to the financial system, government authorities will provide funds or guarantees to the firm to keep it functioning. Creditors and managers of firms who anticipate such support may not price into their credit or investment decisions the full risk associated with those decisions. As a result, the firms may become more leveraged and thus still larger, an outcome that would only reinforce the belief that the government will not allow them to fail. The consequence can be both a competitive funding advantage for these large firms and more underlying risk to the financial system.

Important as it is, moral hazard is not the only worry engendered by very large, highly interconnected firms in financial markets. Assuming that a government overcomes time-consistency problems and credibly binds itself not to rescue these institutions, their growth would presumably be somewhat circumscribed. But it is possible, perhaps likely, that some combination of scale and scope economies, oligopolistic tendencies, path dependence, and chance would nonetheless produce a financial system with a number of firms whose failure could bring about the very serious negative consequences for financial markets described by the domino and fire-sale effects.

In contrast to these first two effects, the contagion effect is not necessarily a function of size at all. The run on money market mutual funds began in September 2008 after the "breaking of the buck" by the Reserve Primary Fund, less because of its size than because of what its vulnerability told investors about the balance sheets of other funds. Earlier that year, stress on the British banking system had increased significantly following the failure and subsequent nationalization of Northern Rock, a mid-sized bank heavily concentrated in residential mortgage activity. The stress arose not from the direct effects of Northern Rock's failure, but because it focused attention on the problems in British mortgage markets.

This distinction is very important, since the contagion effect can plausibly originate in a very large number of firms, depending on circumstances in financial markets as a whole. Indeed, the failure of almost any financial firm could bring about systemic problems if markets believe that failure reveals heretofore unrecognized problems with one or more significant classes of assets held by many financial actors, especially where the assets are associated with considerable degrees of leverage, maturity transformation, or both. That is, the broader economic and financial environment interacts with the new knowledge produced by a firm's failure to determine whether a contagion effect develops.

The fourth effect, relating to an essential role in financial markets, also need not be a function of size, though it is surely related to a particular kind of interconnectedness – one that may have little to do with the assets of the firm and could instead rest on the firm's status as a node through which an important class of financial transactions flows.

Implications for regulatory policy

The foregoing observations inform the execution of two important administrative assignments given by Congress in last year's Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act). First, section 113 of the Dodd-Frank Act gave the newly created Financial Stability Oversight Council (FSOC) authority to subject nonbank-affiliated financial firms to prudential standards and consolidated supervision if the FSOC determines that they could pose a threat to the financial stability of the United States. Second, section 165 instructs the Board of Governors of the Federal Reserve to develop special prudential standards and apply them to any bank holding company with assets of more than $50 billion, as well as to any firms designated by the FSOC.

With respect to the issue of designation, the difference in congressional approach for bank-affiliated and nonbank-affiliated firms is the starting point for analysis. In specifying that all bank holding companies with more than $50 billion in assets be subject to enhanced supervisory and prudential standards, Congress obviated the need for a determination of

whether the consequences of failure of any of these institutions warrants special regulation. In contrast, with respect to the designation of nonbank institutions, Congress has required the FSOC to consider a lengthy list of factors, which collectively emphasize the importance of various attributes of size and interconnectedness. The FSOC's designation function is governed by administrative law features such as notice, opportunity for hearing, a statement of reasons for decision, and judicial review.

The combination of this legal structure and my earlier delineation of the ways in which a distressed firm can contribute to systemic risk suggests that the designation of firms under section 113 is both an important tool for safeguarding financial stability and a limited one. It is important because the recent financial crisis made clear that the failure of certain financial institutions outside the perimeter of mandatory prudential regulation could have major systemic effects. Moreover, if and as other firms outside that perimeter grow so as to pose similar risks – whether because of the migration of risky activities from the regulated sector or for other reasons – it will be important to apply prudential standards and consolidated supervision in a timely fashion.

Still, the tool of designating firms is a limited one. The structure established by Congress itself suggests that the standard for designation should be quite high. Congress could, for example, have made every financial firm with more than $50 billion in assets subject to prudential standards and consolidated supervision, but it chose not to do so. Instead, it required an administrative determination on the basis of a list of factors which, though not by its own terms exclusive, leans heavily toward characteristics associated with the first two kinds of systemic effects from failed firms.

Furthermore, the rationale for regulation provided by the potential for contagion effects is really an argument for sound regulation of the type of financial firm or instrument under consideration. If a small money market fund's travails can provoke a run on the entire industry, then all such funds should be subject to requirements that reduce the fragility of their business model. The potential for systemic problems would be essentially as great in an industry structure with many mid-sized funds as in one with a smaller number of large funds.

Another consideration is that prudential standards designed for regulation of bank-affiliated firms may not be as useful in mitigating risks posed by different forms of financial institutions. Continuing with the money market fund example, the options for reform identified by the President's Working Group on Financial Markets show that these standards may not be the optimal form of regulation.[3] Note, for example, that while money market funds engage in maturity transformation, they have essentially no leverage.

All this suggests to me that the initial list of firms designated under section 113 of the Dodd-Frank Act should not be a lengthy one. In part this is because some of the most obvious pre-crisis candidates – the large, formerly free-standing investment banks – have either become bank holding companies, been absorbed by bank holding companies, or gone out of existence. Any additional institutions so designated should probably present some combination of the first and second kinds of systemic effects discussed earlier and reflected in many of the factors enumerated in section 113. That is, the emphasis ought to be on the direct consequences of the firm's failure. The potential for systemic risk from contagion effects really reflects the potential failure of an asset class or business model more than a firm. These risks are, at least presumptively, more effectively addressed head-on.[4]

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[3] President's Working Group on Financial Markets (2010), *Money Market Fund Reform Options* (436 KB PDF), October.

[4] I do not address further here the rather special case of a firm whose failure would bring about the fourth kind of effect – the removal of a critical function in the financial system – but that doesn't otherwise have the size and asset composition to elicit the first and second kinds of systemic effects. To a considerable extent, this

Of course, just as the existence of a contagion effect depends on the economic and financial circumstances in which a firm's failure arises, so the universe of firms whose failure would produce the first two effects will also vary. When Drexel, Burnham failed in 1990, there were consequences in financial markets to be sure, but nothing approaching a systemic problem, whereas the failure of Lehman Brothers in 2008 sparked a conflagration in what was then the very dry tinder of financial markets. At some point of sufficiently high stress, the conceptual distinctions among the first three kinds of effects may in practical terms elide, since even a smaller firm could be the proverbial straw that broke the camel's back. For purposes of designating firms under section 113, it makes little sense to hypothesize all such crisis moments, since under this reasoning virtually all firms pose systemic risk. But it may be appropriate to assume a moderate amount of stress in financial markets when considering the first and second kinds of effects that would follow a firm's failure.

One additional issue bears mention here. During the legislative debate, a question was raised as to whether identification of institutions as systemically important would itself exacerbate moral hazard. The worry was that markets would regard such identification as confirmation that the government did indeed regard a firm as too-big-to-fail. Part of the rationale for setting the statutory standard of $50 billion in assets for bank-affiliated firms was that the failure of some of these firms, while likely to cause some noticeable disruptions in financial relationships, would not be regarded as necessarily endangering the financial system. Any link between the list of firms and TBTF is thereby attenuated. There is a reasonable concern that designating a small number of nonbank-affiliated firms would increase moral hazard concern.

There is no complete answer to this concern, but the possible alternative approaches would likely be more problematic. Doing nothing would mean allowing the presence and growth in markets of large unregulated firms, creating the potential for large negative effects on the financial system should they follow the path trodden by some such firms in the years preceding the crisis. On the other hand, as already suggested, treating financial firms of all sorts as banks could be both ineffective and inefficient. The Dodd-Frank Act does provide discretion to the Federal Reserve to apply other, "similarly stringent" capital requirements where bank standards are not "appropriate."[5] While this discretion may well be needed in particular cases, broad application of that approach would in effect require the Federal Reserve to develop new capital regimes for different segments of the financial system. In declining to extend the $50 billion standard to nonbank-affiliated firms, members of Congress may have been influenced by some of these considerations. Again, if there are latent systemic risks in one or more of these segments, a more targeted, industry-wide response would be preferable. Finally, any moral hazard that might be created by the designation process should be substantially offset by the specially applicable supervisory and regulatory requirements, to which I now turn.

Implementing the special supervisory and prudential requirements

We are still the midst of developing the regulations that will set these requirements, as well as some related international initiatives, so I cannot this afternoon give you a full review of how the Federal Reserve will implement the rules required or authorized by the Dodd-Frank Act. I do, however, want to suggest a few principles that should inform the broader task of regulating and supervising the institutions covered by that statutory provision – whether through stricter capital and liquidity regulation, risk management, concentration limits,

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issue is addressed in Title VIII of the Dodd-Frank Act, which calls for the separate designation and regulation of "systemically important financial market utilities."

[5] This discretion is granted only for capital standards, not for the other prudential standards required by section 165.

resolution plans, or the other mechanisms set forth in the Dodd-Frank Act. I hasten to add that this is not an exhaustive list, but one designed to be suggestive of the directions in which systemic regulation should be heading.

First, and fundamentally, it is important to recognize that the purpose of this special regulatory regime is macroprudential. It would be unrealistic, even dangerous, to believe that asset bubbles, excessive leverage, poor risk assessment, and the crises such phenomena produce can all be prevented. The goal of the regulatory regime should be to reduce the likely incidence of such crises and, perhaps more importantly, to limit their severity when they do occur. This argues for fostering a financial sector capable of withstanding systemic stresses and still continuing to provide reasonably well-functioning capital intermediation through lending and other activities. The aim is not to avoid all losses or any retrenchment in lending and capital markets. It is to prevent financial markets from freezing up as they did in the latter part of 2008.

A second principle is that achieving the aim of preserving reasonably effective intermediation even in a period of significant stress requires steps to ensure that market actors are, in the main, willing to deal with another by providing the liquidity necessary to support intermediation functions. During the last crisis this willingness essentially disappeared. It was restored – and then just partially – only through extensive government programs that provided liquidity and capital to broad segments of financial firms and markets.

Much of the subsequent reform impulse has been animated by a determination to avoid a repeat of this result. But while ex ante restrictions on ex post government assistance may increase market discipline and thus mitigate somewhat the amounts of risk and exposure in the system, such restrictions alone will not make financial actors willing to deal with one another when a serious dislocation nonetheless occurs. A characteristic of a financial crisis is that the bursting of asset bubbles, shortage of liquidity, and sudden fragility of leverage combine with the opaque nature of the balance sheets of financial firms to produce high – sometimes extreme – levels of uncertainty as to how to value assets and assess the soundness of counterparties. It is precisely that uncertainty that freezes markets and, historically, has induced governments of many countries and ideological persuasions to buttress the system through some combination of loans, guarantees, capital infusions, and nationalization.

If these heights of uncertainty are to be avoided, and intermediating activity is to continue even at the peak of a stress event, financial actors must have a basis for believing that their counterparties can survive. Thus, it is important to set capital requirements such that the institutions designated by Congress or the FSOC could reasonably be expected to absorb losses associated with systemic stress without extraordinary government assistance, and still be well enough capitalized to serve as sound intermediaries. Note that this is important both in order to preclude the need for government assistance and also to give assurance to those who might fund these institutions in a period of stress.

Third, systemic risk supervision and regulation must be forward-looking. The capital ratios familiar in banking regulation are at best a snapshot of the present and, if reserving for losses has lagged, not even that. Actual and potential counterparties are less interested in a firm's capital ratio at the moment they extend liquidity than they are in the ability of the firm to return those funds in the future, as called for in their contractual arrangements. That is why, in the Supervisory Capital Assessment Program (SCAP) conducted in early 2009 and again in the Comprehensive Capital Analysis Review (CCAR) conducted early this year, the Federal Reserve focused instead on the common equity ratio that firms would maintain following losses that could be expected in an adverse scenario.

A forward-looking, macroprudential perspective also requires attention to the co-movement of firms' asset valuations and revenues in a stressed environment. This perspective reflects the fact that some losses are likely to be realized only in a systemic event. For this reason, in our recent CCAR exercise we required the six largest firms to estimate potential losses from

trading and related activities using the same severe global market shock scenario that was applied in the SCAP. In fact, we actually required the firms to assume an instantaneous revaluation of their positions based on the change in market risk that occurred during the entire second half of 2008. In future supervisory exercises of this sort, we will need to find additional ways to take account of co-movement effects.

The unfinished agenda

Even this brief and selective sketch of some elements of a regulatory regime for systemic risk reveals important issues that have yet to be tackled in the reform agenda. Mindful of my time constraints, I will limit myself to identifying two.

The first issue arises from my suggestion that, to a considerable extent, potential contagion effects are best contained by directly addressing them, rather than by trying to indirectly address them through designating large numbers of nonbank-affiliated institutions under section 113 of the Dodd-Frank Act. This direct approach would, I believe, yield maximum financial stability benefits at the lowest cost to financial intermediation, financial firms, and financial supervisors. But these benefits obviously depend on these better targeted forms of regulation actually being developed and implemented.

In this regard, it is noteworthy that while the term "shadow banking system"[6] has taken its place in the lexicon of policymakers alongside "systemic risk" and "financial stability," comparatively little has been done to regulate the channels of capital flows in which one or both transacting parties lie outside the perimeter of prudentially supervised institutions. This despite the often considerable degree of leverage and maturity transformation associated with many of these channels. In part, the relative lack of reform directed at the shadow banking system is a result of the fact that it was substantially disrupted by the financial crisis, and that some of its more unstable parts have fortunately disappeared. Yet there are certainly significant pieces that have survived and that serve important purposes in financial markets. I have already mentioned money market funds as one example. Although many broker-dealers are parts of bank holding companies, the breadth and significance of the repo market suggest that it may be another.[7]

Just as important as dealing with systemic risks that might be posed by vestiges of the pre-crisis shadow banking system is the ability to monitor and, where necessary provide oversight for, the new conduits that are almost surely to develop in the future. In fact, it may be useful to require some systematic and standardized reporting by some classes of nonbank-affiliated firms, even without a designation under section 113.

With respect to both old and new channels, there is an important and growing academic literature on various aspects of the shadow banking system. There is now a formal exercise sponsored by the Financial Stability Board to identify policy approaches and options for ensuring that the shadow banking system does not again grow so as to pose a threat to financial stability. My hope is that these sources will serve as a catalyst for more active policy discussion and, eventually, action. In the absence of appropriate regulatory, and possibly legislative, action, the section 113 designation tool will inevitably bear more of the weight in policies crafted to contain systemic risk.

The second issue to which I would draw your attention is the absence of a deep body of analytic work on which to form judgments about the social utility of very large, complex

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[6] For a survey of the entire shadow banking system, see Zoltan Pozsar, Tobias Adrian, Adam Ashcraft, and Hayley Boesky (July 2010): "Shadow Banking (878 KB PDF)," *Federal Reserve Bank of New York Staff Reports*, no. 458.

[7] See Daniel K. Tarullo (2010), "Comments on 'Regulating the Shadow Banking System,'" remarks delivered at the Brookings Panel on Economic Activity, Washington, September.

financial institutions. This issue surfaced during the debates over financial reform in 2009 and early 2010, when some argued that the only way to counteract TBTF and its attendant risks for society was to break up these institutions.& Advocates of this approach asserted that there was little or no academic support for the proposition that the largest firms needed to be their current size in order to provide whatever efficiencies were achievable. While this is true enough, it is obviously the case that the failure to find such efficiencies does not mean they do not exist. Given the surprisingly small number of studies on this issue, one might reasonably be reluctant to draw conclusions in either direction.

While proposals to break up large, complicated financial firms did not win the day, the issue of what economies and, possibly, diseconomies of scope and scale attach to these institutions remains very relevant today. Consider, for example, that measures designed to contain systemic risk associated with these firms will create incentives and disincentives for them. Agencies will be much better positioned to make cost-benefit assessments of different regulatory approaches if they have a solid foundation of analytic work that helps them understand when and why firms do or do not need a certain size or scope to serve useful capital allocation roles. There is also need for more study of the dynamics by which stress at large, interconnected institutions can have negative effects on national and global financial systems. In fact, what may be needed is a new subdiscipline that combines the perspectives of industrial organization economics with finance. Without work of this sort, it may be difficult to fashion the optimally strong, sensible, post-crisis regulatory regime.

Conclusion

Even when the crisis was at its apex, students of history recognized that the momentum for reform of the financial system that was then so strong could fade quickly. Legislators and officials move on to other issues, as does the public. There is some reason to believe this waning of interest and support has already occurred. The reform agenda that variously includes Basel III, administrative implementation of the Dodd-Frank Act, and other initiatives continues, to be sure. But, particularly with respect to the shadow financial system, there is much that remains to be done.