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Industry Structure and Systemic Risk Regulation

Remarks by

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It is a pleasure to be at Brookings today for this forum on the industrial organization (IO) of the financial industry. As I have suggested previously, when one considers the significance of issues concerning industry structure for the design of an effective and efficient regulatory system to contain systemic risk, it is surprising that relatively little research has been undertaken in this area, even in the aftermath of the financial crisis.¹

Of course, good empirical research takes time, and I welcome this opportunity to contribute to a discussion of an agenda for research on industry structure. I will begin by briefly explaining why this agenda is both important and challenging. Then I will address one issue of particular significance--that of scale and scope economies, especially as they relate to policy proposals directed at the too-big-to-fail (TBTF) problem in financial markets.

The Promise and Challenge of an IO Research Agenda for the Financial Industry

The value of an IO research agenda for shaping a regulatory system to protect financial stability lies both in ascertaining costs that may result from specific regulatory measures and in revealing industry dynamics that may suggest how regulatory measures may be more effective.

The importance of understanding the costs of various regulatory measures is self-evident. As I will discuss shortly, IO can help determine the circumstances in which firm size or industry concentration is associated with economies of scope and scale that carry

¹ There is work at the Federal Reserve Board on some relevant topics. See, for example, Li and Schüroff's (2012) working paper, which shows that about 30 large and highly interconnected "central dealers" provide valuable forms of liquidity to hundreds of smaller periphery dealers while simultaneously offering more immediate, but more expensive, execution to investors relative to those offered to periphery firms. Dan Li and Norman Schüroff (2012), "Dealer Networks," Social Science Research Network Working Papers Series, March 15, <http://ssrn.com/abstract=2023201>.

social benefits. Any reduction in such benefits would be an unintended cost of financial stability policies. Conversely, if firm size or industry concentration is found to stem only from market power or from funding advantages associated with too-big-to-fail policies or perceptions, then some policies aimed at diminishing systemic risk would have the added benefit of mitigating market failures.

Less obvious, perhaps, is the potential for IO research to inform financial stability regulation by illuminating industry dynamics that may not be intuitively apparent. For example, unlike firms in most other industries, large financial institutions transact with one another on a nearly continuous basis and regularly maintain contractual relationships carrying substantial future obligations. The daily operations of most firms in the financial industry depend to a much greater extent on the conditions of their competitors than do such operations of firms in other industries. By extending work on patterns of cooperation and competition among firms in other industries to the financial sector, IO might help shape regulatory structures that can reduce the potential for contagion during periods of financial stress.²

As important as IO research can be in developing financial regulation, the financial sector is in key respects sufficiently different from other industries as to limit the relevance of at least some existing research. In addition to the just-noted contractual interconnectedness of competing firms, the combination of correlated asset holdings, maturity transformation, and mark-to-market accounting means that distress at one firm leading to asset fire sales can create problems at competing firms. Finally, the presence

² This topic is addressed at somewhat greater length in Daniel K. Tarullo (2011), “Industrial Organization and Systemic Risk: An Agenda for Further Research,” speech delivered at the Federal Reserve Board Conference on the Regulation of Systemic Risk, Washington, September 15, www.federalreserve.gov/newsevents/speech/tarullo20110915a.htm.

of systemic risk in financial-sector intermediation adds an important consideration not normally present in IO analysis of other industries. Thus, as noted earlier, too-big-to-fail problems can affect the analysis. Also, prudential regulation can create opportunities for arbitrage both among products and practices in the regulated sector and between the regulated and unregulated sectors.

Although the characteristics of the financial sector may limit the relevance of conclusions from IO research in other sectors, they do not limit the relevance of the questions about industry structure and relationships asked by IO economists. They argue, instead, for combining the IO approach with the specialized learning of finance, a part of economics that has grown so important precisely because of the manifold ways in which the financial sector differs from other industries.

Scale and Scope Economies in the Financial Sector

There are few topics within IO more familiar than that of scale and scope economies.³ And there are few reform proposals that have been put forward more regularly since the start of the financial crisis than those to limit in some manner the scale and scope of financial firms. Notwithstanding the coincidence of these two facts, there is relatively little recent academic research on scale and scope economies in the financial sector and almost none pertinent to the operations of large financial conglomerates.

The sources of scale and scope economies in the financial sector are generally similar to those found in other industries. Cost-reducing scale economies are available in areas where fixed costs are reasonably high, such as in information technology and other infrastructure systems. Network-effect economies are seen in the large distribution

³ *Scale economies* exist where average costs decline as a product or service is provided in larger quantities. *Scope economies* exist where average costs for a product or service are lower if it is produced jointly with another product or service.

networks that allow securities dealers to offer clients wider sources of funds for issues of debt and equity instruments. Broad geographic reach allows firms to offer integrated global payments, collection, or other services to internationally active clients. There may be scope economies for banks and their customers when a variety of services is provided, thereby reducing information and other transactions costs. A range of relevant economies can be illustrated with a simple example.

A firm engaged in merger and acquisitions advisory work needs to assemble a team with many areas of expertise. A scale economy may be available because the average cost of advising on a single transaction will be lower if the firm is involved in more transactions, thus fully employing the team and facilitating greater spillovers of sector-specific information across transactions. By providing financing for the transaction, the firm may also be able to achieve a scope economy because its financing activities can leverage off the information developed by the merger and acquisition adviser, thereby reducing due diligence costs. Moreover, a client's own transactions costs may be lowered when the firm is able to provide most or all of the financing because its balance sheet is large enough to fund the acquisition without breaching applicable internal or regulatory lending limits. Similarly, a client may lower its transactions costs by using a single firm for both advising and financing.⁴

The paucity of empirical work means we can only hypothesize these scale and scope economies, though intuition and observation may make some hypotheses stronger

⁴ The mergers and acquisitions example suggests a somewhat different source of competitive advantage for certain firms, arising from the fact that a firm may, over time, acquire sufficient experience that it can provide, in essence, a more sophisticated product to its clients, which may also choose such a firm in part because they can be assured they have retained the most experienced and knowledgeable advisers. This phenomenon, familiar in IO studies of a range of service industries, can lead to a "natural" concentration in certain subsectors, even where scale and scope economies do not suggest that such concentration is driven by cost efficiencies.

than others. Even assuming, as I think reasonable, that most or all the economies I have identified would hold up to empirical assessment, the crucial questions would remain as to *how* big or *how* integrated financial firms need to be in order to attain these economies. The relative dearth of work that would help answer these questions can be attributed to a number of factors.⁵ First, the sample size of the very largest firms is obviously small, limiting the ability of researchers to derive precise statistical relationships between cost, on the one hand, and firm scale and scope, on the other. This problem of sample size is exacerbated by the fact that there has been tremendous growth in the size, complexity, and concentration of the financial sector over the past 15 years or so. Second, there are serious limitations on the data available to researchers, and thus any useful discussion of an analytic agenda for research on financial industry structure must include an agenda for overcoming proprietary and other constraints on developing appropriate data sources. For example, data on the use of a variety of financial services by specific customers is generally unavailable to researchers. Third, even if appropriate data become available, it may be quite difficult to isolate costs for particular banking activities, given the number of products and activities offered by even moderately complex financial institutions.

Two additional considerations bear mentioning in mapping out the issues associated with scale and scope economies in the financial sector. The first is a well-known qualification to the proposition that scale and scope can be beneficial--the possibility that firms may grow so large as to face *diseconomies* of scope and scale.

⁵ A recent study conducted on behalf of The Clearing House tackles some of these questions. This study makes a useful effort to estimate separately scale and scope economies for a variety of financial activities, rather than inferring such economies from firm-level consolidated data. However, the study exemplifies some of the challenges mentioned in this speech, relying as it does on proprietary data for a small sample of firms, as well as case studies and interviews, for the empirical analysis. The Clearing House (2011), "Understanding the Economics of Large Banks" (New York: The Clearing House, November 7), www.theclearinghouse.org/index.html?f=073048.

Although existing empirical work is again scant, one often hears the suggestion that complexity and agency problems may lead to diseconomies for financial firms under certain circumstances, a proposition that should be considered alongside the hypotheses for positive scale and scope effects.⁶

The second point is that the size and composition of a financial firm's balance sheet play a complicated role in producing economies of scope and scale. To be sure, a large trading book or custody business might produce social benefits by allowing a bank to match or clear both sides of transactions at lower cost. And large balance sheets would appear to enable banks to diversify or hedge their positions and to access a variety of funding sources, thereby reducing their cost of capital. But conventional IO-type analysis, which would tend to interpret lower funding costs as evidence of scale economies, is potentially misleading.

Consider, in this regard, my observation of a moment ago that a large balance sheet may reduce a bank's cost of capital. If lower funding costs do result from the diversification of risks and funding sources made possible by a large balance sheet, they would indeed suggest the existence of scale economies. But they may also result from the belief of some counterparties that a firm with a very large balance sheet is TBTF, and thus at least some liabilities of that firm will be backed by the government in a time of financial stress. In this instance, lower funding costs actually suggest a market failure

⁶ There is some research that could provide useful starting points for more focused IO work. For example, a 2010 paper by Klein and Saidenberg finds a discount on profitability and market value for more complex banks. Because the authors control for bank size, the paper does not squarely address scale and scope issues, but it pursues the kinds of questions that could usefully be asked in that context. Peter G. Klein and Marc R. Saidenberg (2010), "Organizational Structure and the Diversification Discount: Evidence from Commercial Banking," *Journal of Industrial Economics*, vol. 58 (March), pp. 127-55.

"Agency problems" refers in this context to divergences in the incentives of management and shareholders that create possibilities for management to make decisions in their own, rather than shareholders', interests, as well as for potentially expensive monitoring mechanisms for shareholders seeking to limit agency costs.

induced by the distortion arising from the implicit government guarantee. In practice, both scale economies and market failure may play a role.

Although the moral hazard associated with TBTF funding is a significant issue, it is also reasonably discrete and susceptible to countervailing policy measures such as capital requirements and credible resolution mechanisms. Some strands of finance research suggest more profound implications for certain configurations of financial industry structure. For example, numerous papers suggest that the very large balance sheets of very large financial firms tend to be highly correlated, such that a shock to certain asset classes is likely to reverberate quickly on the balance sheets of most large firms as fire sales and subsequent mark-to-market effects affect even stronger firms.⁷ If this conclusion is valid, then the apparent economies associated with very large balance sheets may be transitory or, more precisely, contingent on the absence of serious shocks to certain asset classes.

It is precisely at this intersection between questions of industry structure and of the behavior of financial markets that a joint venture between IO and finance is most important. As I noted earlier, such an effort could not only help fill out an assessment of the social benefits associated with the size and industry structure of financial firms, but it could also lend insight into the kinds of measures that may be most effective in containing systemic risk.

⁷ See, for example, the following two papers and the references therein: Franklin Allen, Ana Babus, and Elena Carletti (2012), “Asset Commonality, Debt Maturity and Systemic Risk,” *Journal of Financial Economics*, vol. 104 (June), pp. 519-34; and Andrei Shleifer and Robert Vishny (2011), “Fire Sales in Finance and Macroeconomics,” *Journal of Economic Perspectives*, vol. 25 (Winter), pp. 29-48.

Application to Specific Policy Proposals

To illustrate more concretely how analysis of scope and scale economies is relevant to the development of a regulatory system designed to safeguard financial stability, I want to turn to three proposals currently being debated in policy circles: (1) breaking up large financial institutions by reinstating Glass-Steagall restrictions or by imposing other prohibitions on affiliations of commercial banks with certain business lines; (2) placing a cap on the nondeposit liabilities of financial institutions; and (3) requiring financial institutions above a specified size to hold minimum amounts of long-term debt available for conversion to equity to avoid or facilitate an orderly resolution of a troubled firm.

Breaking up firms by business line

Proposals to reimpose a Glass-Steagall prohibition on affiliations between commercial and investment banks have been met with the rejoinder that the origins of the financial crisis do not trace back very clearly to these affiliations. Many firms at the center of the crisis would have been essentially unchanged had Glass-Steagall been in effect. Bear Stearns, Lehman Brothers, and Merrill Lynch did not have sizable insured depository institutions, while Countrywide and Washington Mutual had few if any activities that could be termed investment banking. Wachovia did have a securities affiliate that was sizable, though hardly an industry leader, but its downfall seems pretty clearly connected to its exposure to subprime mortgages that it had written directly or acquired through mergers with other institutions.

Proponents of breaking up firms by business line may reply that the next financial crisis will not likely have the same genesis as the last, and that separating commercial

from investment banking could at least mitigate the risks of extending the safety net provided depository institutions to underwriting, trading, and other activities of very large firms. But an IO perspective suggests that the proposal could entail substantial costs. The reinstatement of Glass-Steagall would mean that bank clients could no longer retain one financial firm that would have the capacity to offer the whole range of financing options--from lines of credit to public equity offerings--depending on a client's needs and market conditions. Moreover, many banks that are far too small ever to be considered TBTF do provide some capital market services to their clients--often smaller businesses--a convenience and possible cost savings that would be lost under Glass-Steagall prohibitions.⁸

With the present state of research, it is virtually impossible to quantify the social benefits of these economies. However, what seems the likelihood of nontrivial benefits from current affiliations is a good reason to be cautious about adopting this proposal.

Capping nondeposit liabilities

Proposals to place a cap on a bank's nondeposit liabilities as a fraction of U.S. gross domestic product (GDP) have been promoted as more directly responsive to the sources of systemic risk than are proposals to reinstate Glass-Steagall or to cap the total assets of a bank. Many studies of the financial crisis demonstrate that the reliance of large financial firms on nondeposit funding made them, and the financial system as a whole, susceptible to the dramatic runs that peaked in the fall of 2008. For the largest

⁸ A variation on the Glass-Steagall reinstatement proposal is to prohibit only securities trading by affiliates of insured depository institutions. This proposal may also negate certain economies of scope, which seem quite likely to exist in firms that make markets in securities that they have underwritten, and thus also economies of scale, which may be realized by making markets in other securities once a firm is in that business. Note in this regard that the so-called Volcker rule, included in the Dodd-Frank Act, prohibits only *proprietary* trading, not all trading. Whatever the practical difficulties of distinguishing proprietary from nonproprietary trading, the distinction in the legislation rests on the apparent assumption that there are efficiencies to be gained in having underwriting firms trade.

U.S. financial firms, nondeposit liabilities today are highly correlated with the systemic risk measures used at the Federal Reserve Board to measure interconnectedness and complexity for purposes of evaluating the financial stability effects of mergers.

Another attraction of this form of proposal is that, even as it places constraints on the potential size and composition of a firm's balance sheet, it allows relative flexibility to the firm in meeting that constraint, particularly when compared with proposals for prohibitions on commercial bank affiliations with other financial firms. A firm could shrink its balance sheet by shedding less profitable assets of its choosing. It could also shift its funding model more toward deposits (assuming, of course, it does not exceed applicable deposit caps). There are also ways to refine the proposal further, such as by weighting the nondeposit liabilities in the numerator of the ratio based on their duration. In short, as I have previously noted, there is considerable conceptual appeal in these proposals.⁹

Nonetheless, there are several important questions raised by the nondeposit cap idea. Foremost among these is the decision about the appropriate percentage of GDP that would constitute the cap. The determination of this limit would presumably be based on a number of considerations, including an evaluation of the capacity of the U.S. economy and financial system to absorb the losses resulting from the failure of a large firm. Several salient considerations are also suggested by a combined IO-finance perspective. First, of course, is the key issue of how the functioning of funding markets is affected by the participation of very large counterparties using very large amounts of short-term wholesale funding, particularly under conditions of financial stress. This issue falls more

⁹ See Daniel K. Tarullo (2012), "Financial Stability Regulation," speech delivered at the Distinguished Jurist Lecture, University of Pennsylvania Law School, Philadelphia, October 10, www.federalreserve.gov/newsevents/speech/tarullo20121010a.htm.

on the finance, rather than the IO, side of the merged perspective. But it may be that aspects of industry structure, including some of the competition/cooperation issues mentioned earlier, affect this analysis. Also, an IO-finance perspective might identify possible alternatives to a nondeposit liability cap that achieve much the same financial stability goals at lower potential cost.

Second is the question of scale and scope economies associated with nondeposit funding, the answer to which would help determine the limit at which significant social benefits might be lost, to be balanced against the avoidance of social costs arising from systemic events. Even with the flexibility noted earlier, a firm might have to sacrifice certain economies of scope or scale to meet a cap. If analysis finds scale and scope economies unlikely to be realized beyond a certain level of activity, then policymakers would have a point of reference for setting the cap.

A third question is how second- and third-tier institutions might respond as the largest firms reposition, and perhaps shed, parts of their balance sheets. These institutions may well be purchasers of assets sold by the largest firms. They may also choose to take advantage of the lower demand, and correspondingly lower prices, for short-term funding by increasing their own short-term borrowing. Research might cast light on the extent to which various forms of a liability cap would affect market structure, the degree to which reduced activities by some firms would be taken up by others, and how such changes might affect the stability of the financial system.

In sum, the IO-finance perspective could contribute significantly to an elaboration and evaluation of this policy proposal. In the process, it could advance what I regard as the most important remaining task of financial regulatory reform--determining the most

effective and efficient ways to deal with short-term funding markets, often characterized as the shadow banking system, that are inherently subject to runs.

Requiring minimum levels of long-term debt

Proposals to require large financial firms to hold minimum levels of long-term debt are offered as a way to facilitate the orderly resolution of such firms. Variations on this general theme have gathered momentum as the Financial Stability Board, the Basel Committee on Banking Supervision, and other groups have explored ways to make large financial firms more readily resolvable, thereby giving national authorities a third choice between the unattractive options of bailout and disorderly failure.

The basic idea is that the maintenance of minimum levels of long-term debt at the top holding company level will allow a resolving authority to transfer operating subsidiaries of the failed firm to a functioning bridge entity, while leaving behind in a receivership the equity and sufficient long-term debt to absorb the original firm's losses. Eventually, the resolving authority could recapitalize the bridge entity by exchanging claims of the long-term unsecured creditors of the parent for equity, long-term debt of the bridge, or both. In the United States, this approach is consonant with the Federal Deposit Insurance Company's stated preference for a "single-entry" strategy in dealing with the resolution of systemically important firms under the orderly liquidation authority of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act). But it is also consistent with variants on resolution mechanisms being implemented in other jurisdictions around the world.

A minimum long-term debt requirement could lend greater confidence that the combination of equity owners and long-term debt holders would be sufficient to bear all

losses at the firm, thereby counteracting the moral hazard associated with taxpayer bailouts while avoiding disorderly failures. To the degree the orderly resolution mechanisms established in the United States and elsewhere thus command greater credibility, the result should be enhanced market discipline, which in turn could enhance financial stability.

As with the two other policy ideas, the details of a minimum long-term debt proposal matter when it comes to assessing costs and benefits. There will surely be some costs associated with such a requirement (though it is notable that, at present, large U.S. firms have substantial amounts of long-term debt on their balance sheets). Like a capital surcharge for the largest, most complex institutions, these costs will fall only on the largest institutions. But this is by design, in accordance with the principle--reflected in the Dodd-Frank Act--that the largest, most complex institutions should be subject to stricter regulation precisely because they are more complex and because their failure would have greater negative externalities for the financial system and the economy more generally. Thus, if there is a modest effect on industry structure, it would be an intended --rather than unintended or undesirable--consequence of the regulation. In general, at least at the levels of minimum long-term debt that are being discussed in various international forums, the proposal would not seem to carry significant hurdles to realizing available economies of scope and scale.

Conclusion

My very brief review of these three proposals has tried to show how a combined IO-finance perspective can contribute to the policymaking process and what priorities for research might be. For the proposal to reenact Glass-Steagall, that perspective suggested

the potential for considerable social costs. Application of the perspective to the proposal for a nondeposit liability cap revealed a number of important questions, an analysis of which could help determine the elements of such a proposal that would be most effective, identify costs, and possibly suggest alternative means to the same policy goals. In the case of the third proposal, for minimum long-term debt requirements, the perspective did not immediately suggest any unfavorable unintended consequences, thereby perhaps strengthening its appeal as a near-term policy priority.

I have only grazed the surface of useful work that may spring from this hybrid subdiscipline. And, as with policy-relevant areas in which considerable work has already been done, we will never have all the analysis we might like before deciding whether to act and, if so, how. That is the condition that usually prevails in policymaking. But I am encouraged that Brookings has assembled this forum, which I hope will be a catalyst for much more academic activity in this area.