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Comments on “Stressed Out: Macroprudential Principles for Stress Testing”
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Standard bank supervision is a snapshot of the financial position of a bank, including the risks inherent in the bank’s position. A stress test is a video, projecting the financial position of a bank or set of banks. The GKSS paper lays out clearly some roles for stress tests – both those that happened and those that are to come. I want to elaborate on some of the roles, and place some of the discussion in the paper in a slightly different perspective.

At a time of market uncertainty about the state of banks, a credible stress test, together perhaps with some capital increases, can reassure the market and improve the quality of the functioning of the capital market. Credibility is key here. At all times, stress tests can help inform bank regulation, both the level to be used for regulatory parameters and possibly identifying regulatory levers that might be useful to employ. Regulation requires balancing of the efficient functioning of the capital market in ordinary times and decreases in the likelihood and severity of possible adverse financial shocks.

Framework

While it does not seem to affect my reaction to their analysis, I want to begin by disagreeing with their apparent characterization that microprudential regulation should rest on government provided deposit insurance: “because banks have their deposits guaranteed – they must accept certain restrictions and regulations to limit the costs of these guarantees to taxpayers” (p. 2). And: “The fear that under-capitalized banks will use insured deposits to gamble on “heads I win, tails the taxpayers lose” strategies has been a central concern.” (p. 4).

I think this narrow perspective leaves out some aspects of a suitable role of microprudential regulation. First, for management, particularly management that holds shares, the incentive to gamble on “heads I win, tails the taxpayers lose” is not all that different from the incentive in the
absence of government-provided insurance to gamble on “heads I win, tails the depositors lose” as long as depositors are not in a good position to judge the risk to their deposits. Concern about both protecting depositors, and economic efficiency more generally, raise a concern about the abilities of depositors to monitor management in some settings with overwhelmingly small depositors. And small borrowers relying on the availability of lines of credit to continue their businesses may represent a similar efficiency issue. I think of this as similar to the role of building codes for homes – which protect against some of the expense of trying to find out about the quality of plumbing, heating, roofing, insulation, etc. in both newly constructed homes and older ones. Or the risk of not finding out. Concern with the efficiency of the capital market extends beyond limiting costs that fall directly on the government budget.

The much larger cost to the economy of systemic problems, rather than the cost from shortcomings in individual financial intermediaries, especially if addressed promptly, opens additional roles for stress testing. That is, careful attention is warranted to sources of systemic risk and regulatory interventions that could reduce that risk without excessive efficiency cost to the functioning of the capital market.

The paper usefully contrasts two models of individual banks – those with liabilities only to depositors and those with reliance on wholesale funds. The former is referred to as “a fair characterization of the microprudential philosophy and the practice of bank supervision prior to the global financial crisis of 2007-2009” and is illustrated in Exhibit 3.1 which has financing of assets through deposits and equity. The latter is illustrated in Exhibit 3.6 and has wholesale funds as well as deposits. The paper makes the telling point that wholesale funds (including commercial paper and repurchase agreements) lower the size of shocks to the value of assets that a bank can experience without triggering problems. This distinction seems relevant whether considering a small bank or a large one. The possibility of outside reactions that affect a bank quicker than it can respond to can also come from other sources. Borrowers with lines of credit can quickly draw on them if they fear that the lines will be shut down because the bank will be in
trouble. And collateral calls, based on the relevance of the status of the bank for collateral in derivative contracts, can require rapid responses.\textsuperscript{1}

I consider the contrast between Exhibits 3.1 and 3.6 to be an expansion of microprudential analysis, and reserve the term macroprudential for analyses that reflect the impact, either within a stress test or on inferences from a stress test, of interactions across financial firms that are significant for the capital market and so the economy. The paper recognizes particularly fire sales and wholesale funding run contagion. For this concern, the holdings of an institution relative to an important market matter, not solely the magnitude of total holdings. Perhaps some contracts between financial firms warrant attention as well. From this perspective, key to the analysis is responding to a shortfall of capital by increasing capital rather than decreasing assets. Indeed, the paper recognizes attention to the speed with which funding can decrease, and so the difficulty of responding in ways that limit the impact on other firms:

In the wake of the recent crisis, the Basel committee recognized this issue and proposed that banks should have a net stable funding ratio (NSFR) calculated by looking at the percentage of short-term funding to total funding. The idea behind the NSFR is that a bank should have adequate long-term funding so that it could operate even if some short-term funding was not renewed. This idea has been incorporated into the Basel III framework for further evaluation \ldots (p. 5-6).\textsuperscript{2}

Mattering for the risk is both the state of the economy and the feedback from difficulties at one financial intermediary affecting the viability of others through fire sales and contagion. The paper notes:

“Deleveraging by an individual institution is usually inconsequential if the overall economy is strong. In a strong economy, new lenders quickly replace old lenders and there are many potential buyers of assets. But in a weak economy, where many financial institutions are distressed, the attempt by a large number of intermediaries to delever may

\textsuperscript{1} In other words, when different parts of the financial system move at different speeds, then there are concerns which do not readily show up in a discrete time model where all sorts of actions are simultaneously coordinated.

\textsuperscript{2} The sentence quoted continues as “but in any event, the NSFR would be a time-invariant construct that is the same for all banks.” Of course it need not be time invariant nor the same for all banks. I note that New Zealand has a NSFR rule.
backfire as asset prices plunge in the fire sale. This “paradox of deleveraging” means that a common shock can lead to a credit crunch for some borrowers.” (p. 8-9).

And

“Even if an organization satisfies a microprudential standard of capital adequacy without deleveraging, the macroprudential standard of adequacy will be determined by the abundance and distribution of capital in the financial system as a whole.” (p. 11).

That is, GKSS recognizes that problems at a single firm are more important in a weak economy and are more important if the firm is not in a strong position in order to continue to do lending. They also recognize a role for stronger financing possibly to help with dealing with individual institutional difficulties. That is, a central bank can use mergers and sales of parts of firms as part of dealing with a crisis, as well as injecting more capital from government sources. The value of mergers and sales depends on the strength of potential merger partners and asset purchasers. The stronger the other firms are, the easier it is to arrange a merger, should that be the preferred route. Similarly, termination also depends on the strength of other financial firms, as part of a breakup of a firm will be sale of some of its component parts. And the success of both mergers and sales, both for the financial cost to the government and for the impact on the economy, depends on the strength of the other firms, the extent to which they have more than minimal viability so as to be able to take on a larger role in the capital market.

This process has a dynamic which warrants careful study. A process of government supported mergers or sales of individual components affects the distribution of firms in the economy. Indeed, this has been of heightened concern in light of increased concentration after the financial crisis. Whatever the mix of government funds, sales and mergers, after a crisis has passed, it makes sense to review the makeup of the financial sector relative to concerns about the distribution of firm sizes and the efficiency of the capital market. Of course a complication is an expectation that firms may be forced to shrink later is likely to affect willingness to take on the

3 “In contrast to this microprudential motivation, requiring intermediaries to have the capital needed to continue to serve as providers of credit implies a broader set of concerns. An intermediary may pose no threat to the taxpayer because of potential default on its guaranteed deposits, but may not be adequately capitalized to maintain (or expand) its lending.” P. 2.
activities of firms being merged or shut. If shrinking is done in a way that strengthens a firm, then this may not be so much of a concern when actions are undertaken.

Consideration of whether this view of dealing with risks, put forth by GKSS, warrants further regulatory changes needs to consider how the interactions would play out and the impact on the efficiency in the capital market at all times from regulatory change.

Stress Tests

The empirical analysis in GKSS supports the view that the 2009 US stress tests helped heal the financial system, presumably by being a credible source of reassurance for would-be lenders and investors. This appears to have been very valuable.

As an outside observer, it seems to me that the goal of the second US stress test is to inform supervision in order to reduce the probability that a bank’s financial condition would jeopardize its access to funding so that deleveraging might again become a problem for the economy, given uncertainty about the evolution of the world economy. This appears to have been approached by considering rules such that, if circumstances were no worse than the analyzed macro scenario, and if the projections at the firm level were accurate, then no firm would need to significantly delever. That is, rather than examining firm interactions, the stress tests aim at a sufficient margin of safety that the interactions are not likely to occur.

Both of these stress tests might be considered microprudential tests since they did not incorporate interactions through, for example, fire sales. Yet they both served important macroprudential goals by providing information that would limit the risk of the interactions being important. It seems to me that an appropriate next step would be to extend the structure of the stress tests to incorporate interactions. That is, it is possible that there could be an outside shock that would result in a worse macro scenario than the stress tests were based on. And it is possible that a large financial firm will have to delever for reasons not incorporated in the projections. We should not expect a zero probability of failure. The anticipated costs of failure, and the regulatory inferences, depend on anticipated methods of dealing with a large institution in
trouble, which methods and how they affect other firms and future structure should be part of an extended stress test. Doing the projections needed for stress tests with more interactions would be very difficult because of uncertainty about reactions to a potential crisis, as opposed to measuring the elasticity of price to changed supply from standard historic data. We have some evidence of past reactions to crises, but it is limited in pinning down magnitudes. This sense that a changed perception of the capital market generally can occur with a real surprise makes it difficult to interpret the relationship between data before the global crisis and data after.

GKSS look at equity market correlations to consider whether the market perceived an opportunity for a fire sale merger between a strong firm and a weak one – Case 2 versus Case 3 in their vocabulary. Assume a strong firm could absorb a weak one at a fire sale price if nothing else changes - Case 2. Movement in equity prices reflecting a rise in the fire sale opportunity could come about in different ways. It might arise because the weak firm weakens further, on its own. Alternatively, perhaps the whole economy weakens, raising the need to do something for the weak firm. While the former would have a negative correlation of stock prices of the two firms, the latter could have a positive correlation without contradicting being in region 2.

Thus I see three potential roles for stress tests. One is to limit the risk of contagion by providing support for the view that not all firms are in difficulty. Second is to identify firms that should be strengthened in order to be able to continue their lending function in a poorer economic environment. And third is to form a basis on which even worse scenarios can be examined as part of supervision and designing regulation. In other words, there are three 3 questions:

Are you sound today?
Would you still be sound under the following macro scenario?
Would you still be sound if that macro scenario were accompanied by a crisis for some firm or group of firms?

It is important both to hold down the risk to the financial institutions and to be prepared for the possibility that some will fail nevertheless.