Comment on:
“Design of Risk Weights” by Paul Glasserman and Wanmo Kang

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Across all developed economies, the capital of each regulated bank must be at least as much as a weighted sum of the amounts of each type of asset held on the bank’s balance sheet. These weights are called “risk weights” because they have been conventionally based on the riskiness of the respective asset types.

The results of Glasserman and Kang on the design of these risk weights are striking.

First, it is quite unexpected that any reasonable linear risk-weighting scheme for bank capital requirements would have such a clear conceptual foundation, given that the total risk of a portfolio of financial positions is obviously non-linear with respect to the amount of each asset in the portfolio. The authors show that a linear risk weighting scheme nevertheless arises naturally.

Second, the authors provide a risk-weighting scheme that not only ensures (at least in theory) that a bank has adequate capital, but also avoids causing demand distortion in asset markets, given the response of bank investment behavior to the risk weights. Ideally, one would not want risk weights to be out of line with the natural rewards that markets provide for risk bearing, along the lines of equilibrium theories of risk premia, such as the Capital Asset Pricing Model (CAPM) of Sharpe (1964). Indeed, Glasserman and Kang show, consistent with prior work by Kim and Santomero (1988), that the optimal risk weights are actually proportional to risk premia, that is, the excess mean rates of return earned by assets on financial markets.

Ironically, just as this research provides an improved approach to tuning risk weights to market risk premia so as to avoid causing asset market distortions, regulators are moving in the opposite direction! The new norm for bank capital requirements introduces a requirement that a bank’s total quantity of assets, irrespective of their riskiness, may not exceed a stated multiple of the bank’s capital. In other words, for any bank to which this new “supplementary leverage requirement” is binding, the risk weights will all be equal!

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This new “leverage requirement” is simpler than the conventional risk-weighted capital requirement. Conventional capital rules based on risk-weighted assets have not worked well in practice because the risks of some assets have been badly underestimated. That’s not surprising for those assets whose riskiness is measured by banks themselves, using their internal models. Banks typically prefer lower capital levels than regulators would judge sufficient, and thus have a moral hazard to understate the risks. While regulators are guided by the social costs of bank failure, they have their own incentive problems. For example, it is politically incorrect for regulators to announce that the sovereign debt of some nations, especially their own, is riskier than that of others. Regulators thus assign relatively undifferentiated and unrealistically low risk weights to sovereign debt. This is a particular problem in the Eurozone, where banks have been encouraged by capital rules to load up on bonds issued by riskier countries.

Putting aside these incentive problems, risks are often difficult to estimate. The simplicity of the new leverage requirement, which treats all assets as though equally risky, has thus promoted its heavy use in new capital rules, to the point that the capital levels of some banks, including some of the very largest U.S. banks, will be determined by the new equal-weighted leverage requirement rather than by risk-based capital requirements.

It is indeed simpler to put a floor on a bank's capital based on the total quantity of its assets, irrespective of their risks. The unintended consequence is that any bank constrained by this requirement can take more risk, without adding capital, merely by shifting from safer assets to riskier assets. This distorts incentives for portfolio choice, intermediation, and risk management, and in some cases could lead to excessive risk taking. This is exactly what the Glasserman-Kang approach avoids. Regulators could react to these shifts toward riskier assets with a further increase in the leverage-based capital requirement, leading to another shift by banks toward riskier assets, and even more distortions, including reduced incentives for banks to intermediate markets for safer assets. It is strange for a bank that is bound by the leverage requirement to be told by regulators: “It doesn’t matter if you move out of U.S. treasury bills into sketchy real estate loans, we will require you to have the same amount of equity to buffer your risk of loss.”

If we were to reform risk-weighted capital requirements in light of their complexity and past abuses, what would we do? Would we throw up our hands and say that we have no ability to distinguish when one asset is riskier than another? Surely not. Instead, we would make some differentiation, but be much more conservative. Perhaps we should have a risk-weighted scheme that differentiates the weights based on risk, but places a floor on risk weights.

An improved approach would recognize that, other things equal, banks are likely to invest more heavily in assets with lower risk weights. Even for an asset class that is fairly judged to be quite safe, concentrated investment increases the likelihood, given a bank failure, that this asset class is responsible for much of the loss. Some
research that I did with probabilists Amir Dembo and Jean-Dominique Deuschel, experts in the subject of “large deviations,” shows that it is relatively difficult for an adequately capitalized bank to fail from many small high-risk loans unless they are very highly correlated. Given a failure, the culprit is relatively likely to have been losses on very large loans to borrowers that had been judged safe. During the sub-prime crisis and the Eurozone sovereign debt crisis, large loans to ostensibly safe borrowers quickly became life threatening.

So, the lowest risk weights should not be as low as they are today. Moreover, as a bank’s investments become more concentrated in a given asset class, the associated risk weights for that asset class should go up. The same principle applies on a systemic basis, as suggested by the results of Glasserman and Kang. The most systemic assets are those with the highest risk premia (per unit of risk) in their mean asset returns, in excess of the risk-free rate. This is the essence of the CAPM. As investments by banks, in aggregate, become more concentrated in a given asset class, risk weights for that asset class should rise.

Further, assets whose risks are difficult to judge should be assigned higher risk weights. Here again, large-deviations thinking applies. If an extreme-scenario loss is heavily model dependent, and if we are uncertain about which to model use, we should not estimate the expected tail loss by picking a representative model or by averaging across the models. Rather, we should apply the model that is most likely to be relevant contingent on the event of a large loss. Yes, this is more complicated, and does require more effort on the part of regulators. But it can be done. When in doubt regulators should be more conservative, and in particular give less discretion to banks over the designs of their internal models.

Through improvements in risk-based capital requirements, we can push capital in the banking system up to safer levels without depending on rules that are blindfolded to the types of risk that banks take. The results of Glasserman and Kang represent a very important milestone on this path.

References


