

Expert Forum on Advanced Techniques on Stress Testing:

Applications for Supervisors

Opening Remarks by Charles Enoch

I would like to welcome you to this expert forum on stress testing techniques. This gathering, and the information that we will be sharing, would not be possible without the participation of the central banks, supervisory agencies, and private institutions, you represent. I would like to thank you and your institutions for your participation.

This forum responds to the need of policy makers and supervisors to understand and assess the vulnerability and resilience of financial systems and institutions to exceptional but plausible adverse shocks. The economic costs associated with episodes that many of the IMF's membership have experienced in the past, such as those experienced during financial crisis, highlight the importance of ensuring the robustness of financial systems to shocks.

Moreover, understanding the impact and spillover potential of these shocks beyond the institutions affected in the first round is increasingly recognized to be critical, given the rapid integration and globalization of capital markets and

the stronger linkages across financial institutions in part resulting from their increased usage of risk-transfer instruments.

As many of you are aware, one key component of our Financial Sector Assessment Program (FSAP), has been the use of stress tests to identify common vulnerabilities across institutions that could undermine the stability of the financial system. Indeed, the introduction of the stress testing technique has arguably been one of the most important contributions of the FSAP to assisting global financial stability. We have had much feedback from member countries seeking to internalize what they have experienced regarding stress testing during the FSAP process. This seminar is one response to such feedback.

Reflecting our own perceived comparative advantage and in many instances limited data availability on individual financial institutions' trading and investment portfolios, the FSAP stress tests often emphasize the design of adverse macroeconomic scenarios and the impact of these scenarios on the creditworthiness of financial institutions and the stability of the financial system as a whole.

These tests are an example of the “top-down” approach to stress testing, often favored by central banks, since their primary focus is on understanding how major changes in the economic environment can affect the overall financial system and not only a particular financial institution.

In contrast, supervisory agencies and risk managers in private institutions tend to adopt a “bottom-up” approach to stress testing. The bottom-up approach focuses on understanding how the values of the trading and investment portfolios of a financial institution change in response to changes in selected market risk, credit risk, and liquidity risk factors. Usually, a statistical analysis of historical data is used to specify the potential negative shocks to the risk factors considered in the stress test. From a supervisory perspective, the bottom-up approach is useful for assessing whether financial institutions would remain adequately capitalized in the face of adverse shocks to the identified risk factors. From a risk management perspective, the bottom-up approach is useful for risk budgeting.

While both approaches have particular advantages, they also may have inherent limitations.

The top-down approach offers a framework for understanding and identifying potential sources of vulnerability to the financial system arising from changes in economic conditions. The top-down approach can be especially useful for capturing latent risks associated with structural breaks that might have remained undetected if only historical data were analyzed.

The top-down approach however has limitations, among which are:

- (a) the aggregation and comparison of heterogeneous portfolios that are often based on different assumptions and methods of calculations may make the results unreliable. In particular systems that may look sound in aggregate may not be so sound if decomposed to the individual institutions.
- (b) the problem of aggregation is compounded by the increased use of off-balance sheet instruments among financial institutions. The exposure created by off-balance sheet instruments may not be correctly accounted for in the single aggregate model or balance-sheet.
- (c) realistic modeling of the linkages between changes in economic conditions and changes in risk factors is imprecise and the dynamic interaction between economic variables and risk factors captured by these models may not be the relevant one that would actually take effect.

By contrast, the bottom up approach benefits from addressing a narrower and much better defined problem, assessing changes in the value of a portfolio. This task is facilitated for supervisory agencies by greater access to information about the composition of the trading and investment portfolio of a single institution. Furthermore, private financial institutions may have access to proprietary databases that help assess better potential changes in the portfolio value under stress scenarios. In recent years considerable efforts have been put into the development and adoption of sophisticated risk management tools in private institutions, with stress tests as an integral element..

Bottom up tests, however, have the limitations that:

- (a) they are usually formulated without explicit reference to an economic scenario. Moreover, where tests rely on historical events, these may not capture effectively the future changes in the economic environment that will affect the portfolio performance.
- (b) The use of sophisticated modeling techniques could also create a false sense of security and complacency without a thoughtful analysis of the current and prospective economic conditions.

In total therefore, there are likely to be three approaches to stress test a particular financial system. First, the top down approach, often employed by those such as central banks focusing explicitly on financial stability. Second, the bottom up approach of the supervisor. And third, the bottom up approach of the financial institutions themselves. Employing the three approaches together, as has become preferred in conducting an FSAP, can lead to important cross-checks and provide a more reliable result than any individual approach on its own

I hope this forum, which gathers together representatives from public and private institutions representing the state-of-the-art in stress testing practices, will be an important step towards the continuous dialogue and cooperation among policy makers, supervisors and private sector practitioners that will enable us to maximize the value we can derive from this approach.

The presentations that you will be hearing have been structured around actual country applications. I hope these, and the discussions that follow, can go some way towards opening our respective “black boxes”. I look forward to two days of productive discussions.