South African Reserve Bank

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at the Actuarial Society Banking Seminar

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Bank-wide stress testing as a risk management tool

Members of the Actuarial Society, ladies and gentlemen.

Thank you for the invitation to address you at this third Actuarial Society Banking Seminar. The South African Reserve Bank (SARB) would like to congratulate the Actuarial Society of South Africa on its efforts to build expertise in banking – and on becoming a world leader in this regard. Your initiative to introduce a Banking Fellowship coupled with allowing actuaries to qualify as banking actuaries is commendable and could make important contributions to improving the resilience and stability of the domestic banking sector.

My address today will focus on stress testing and how it is being applied as a risk management tool. I would also like to share the progress the SARB has made and the methodologies it has applied in its approach to stress testing the South African banking sector.

Stress testing forms part of the macroprudential monitoring framework applied by the SARB in fulfilling its now-expanded mandate of protecting and enhancing financial stability, in addition to its price stability mandate. As you are all aware, the mandate of the SARB, specifically its primary objective and independence, as entrenched in the Constitution, has come into sharp focus recently. The primary objective of the SARB is stated in the Constitution: “Protect the value of the currency in the interest of balanced and sustainable economic growth.” This objective and the independence

provided to the SARB in the Constitution can only be changed by a two-thirds majority of the members of Parliament; thereafter any such change would need to be ratified by the Constitutional Court. In this way, the courts protect the SARB against any unlawful encroachment of its independence.

Furthermore, the notion of a central bank as a public institution, with the goal of promoting monetary and financial stability in the interest of the general public, is remote from the traditional concept of a commercial company with a profit motive. Central banks have been structured by their respective governments to suit public-interest ends. The shareholding structures have been retained in some cases, including by the SARB and in various others, such as the central banks of Belgium and Switzerland. But the inconsistencies with the shareholding of private companies necessitated a realignment of the rights and powers of shareholders in central banks. Limitations were consequently built into the rights and powers of the shareholders in the SARB, such as no policymaking or management roles, a fixed return of R200 000 per annum on shares held, no claim on the reserves held by the SARB, and the election of a minority of the Board of Directors (Board). The management of the business of the SARB, including the setting of monetary and financial stability policies, vests in the Governor and Deputy Governors, appointed by the President after consultations with the Minister of Finance and the Board of the SARB.

The Financial Sector Regulation Bill, approved by Parliament in June 2017 and currently awaiting sign-off by the President, makes provision for an expanded mandate for the SARB, which includes financial stability. Financial stability aims to enhance resilience to systemic shocks and to mitigate the macroeconomic costs of a disruption in financial sectors. Financial stability is not an end in itself but is generally regarded as an important precondition for sustainable economic growth, serving the constitutional mandate of the SARB. Financial stability is not about preventing shocks or crises, but more about identifying and mitigating the build-up of risks and vulnerabilities in the financial sector. Neither is financial stability about preventing bank failures at all cost, as the failure of non-systemic banks ameliorates the risk of moral hazard and reinforces market discipline.

A stable banking sector is, however, crucial for financial stability as these risks and vulnerabilities often originate from systemically important banks and their clients in the corporate and household sectors. To identify the vulnerabilities that might be building up in the banking sector early enough and to ensure proactive mitigating action, stress testing has become an important tool in the toolkit of systemic regulators. It adds an important macroprudential dimension to the supervision of banks by assisting supervisors and macroprudential authorities in evaluating the aggregate capital position of the largest banking firms as well as their individual capital levels.

Internationally active banks have been applying stress testing at the level of individual institutions since the early 1990s; today bank regulators require the use of stress tests for monitoring both market and credit risks. Macro stress testing, as a tool to assess the vulnerability of entire financial systems, is instead much more recent. It has been an important component of the Financial Sector Assessment Programs (FSAPs) launched by the International Monetary Fund (IMF) and the World Bank in the late 1990s, and has become an integral part of the financial stability toolbox of policymakers. It was during one of these FSAPs that stress testing experienced severe criticism and major challenges as a technique to assess the soundness of banking systems. In its Financial System Stability Assessment after the FSAP on Iceland in August 2008, the IMF stated that the financial indicators of the Icelandic banking system were above the minimum regulatory requirements and indicated that stress tests had suggested that the system was resilient. As you all know, the Icelandic banking system collapsed soon afterwards.

To the uninitiated, what the IMF said then may sound astonishing. But it simply echoed the message of the stress tests carried out by authorities and banks around the globe ahead of what turned out to be one of the worst financial crises in world history, namely that the financial system was resilient, sound, and strong. This was the unyielding message confronting those who were deeply involved in assessing vulnerabilities during the years of the so-called Great Moderation, even as the cracks started to appear.

It is, of course, all too easy to criticise stress tests after the fact, but the most recent global financial crisis raised a key question: what can and cannot be expected of stress

tests, both now and in the future? It was only in 2009 – when bank regulatory agencies in the United States (US) applied their Supervisory Capital Assessment Program, or SCAP, popularly known as the ‘bank stress tests’ – that the technique regained some of its credibility. The SCAP marked the first time that the US bank regulatory agencies had conducted a supervisory stress test simultaneously across the largest banking firms.

In retrospect, the SCAP stands out for me as one of the critical turning points in the global financial crisis. It provided anxious investors with credible information about prospective losses at banks. Supervisors’ public disclosure of the stress-test results helped to restore confidence in the banking system and enabled its successful recapitalization. The resilience of the US banking system has greatly improved since then, and the more intensive use and greater sophistication of supervisory stress testing, as well as supervisors’ increased emphasis on the effectiveness of banks’ own capital planning processes, deserve some credit for that improvement.

Today, the US has two distinct but related supervisory programs that rely on stress testing. The first is the stress testing required by the Dodd-Frank Act, which has the purpose to quantitatively assess how bank capital levels would fare in stressful economic and financial scenarios. The second program, called the Comprehensive Capital Analysis and Review, combines the quantitative results from the stress tests with the more qualitative assessments of the capital planning processes used by banks in the US.

These supervisory programs, developed as part of regulatory reforms following the global financial crisis, have been strongly challenged by the new political regime in the US. The US Federal Reserve (Fed) conducted its first exercise in 2009 to increase confidence in the system. Today, bankers believe the tests have morphed into a mysterious, laborious, and time-consuming process from what was once a straightforward examination of financial strength. The outcome determines how much capital banks must hold, but experience shows that getting a passing grade can be tough. The tests also prove to be resource-intensive as some of the bigger banks have to call on hundreds of their employees to work on stress-test submissions each year.

Politicians and bankers argue that reducing the stress tests' complexity and frequency could not only save man-hours, but also help the US economy by stimulating more lending. They argue for a fresh look at how stress testing is conducted, making their case in meetings with legislators who are stewarding a financial overhaul by the current US administration. Regulators, however, remain sceptic, pushing back on the industry's pleas, arguing that it is crucial that a strong capital regime be maintained, especially as it applies to systemically important banks. Former Fed Governor Daniel Tarullo said in April: "Neither regulators nor legislators should agree to changes that would effectively weaken the regulatory regime."

Irrespective of what the outcome of the debate in the US might be, macro stress testing has become a tool of the macroprudential frameworks that authorities are implementing globally. It is, however, important to keep in mind that stress testing cannot address all the risk management weaknesses by itself. As part of a comprehensive approach, it has a leading role to play in strengthening bank corporate governance as well as the resilience of individual banks and the financial system. Whether macro stress tests will ever be able to act as effective early warning devices is an open question, given the analytical challenges.

By contrast, macro stress testing can be quite effective as a tool for crisis management and resolution, since in that context its messages may be more reliable. More generally speaking, macro stress tests can discipline thinking about financial stability risks. In the process, they can yield additional benefits, such as:

- helping to reconcile the widely different perspectives of the various stakeholders (banks, supervisory authorities, central banks, and the public at large);
- fostering better communication;
- cross-checking the performance of individual firms' risk models; and
- identifying important data gaps.

That said, in order to yield the hoped-for benefits, it is critical to design stress tests properly, tailoring them to the specific purpose. Furthermore, the tool can only be the beginning, never the end, of a conversation about financial stability risks. It can only be a complement, never a substitute, for other tools and processes. Stress testing plays a particularly important role in:

- providing forward-looking assessments of risk;
- overcoming the limitations of models and historical data;
- supporting internal and external communication;
- feeding into capital and liquidity planning procedures;
- informing the setting of banks' risk tolerance levels; and
- facilitating the development of risk mitigation and/or contingency plans across a range of stressed conditions.

Ideally, one would like to subject the whole financial system to a macro stress test. In practice, however, tests have considered parts of the overall system. The banking sector is the most common object of analysis, given its importance for financial stability. But stress tests have sometimes also covered other institutions, such as insurance companies and pension funds. These tests have tended to assess the strength of institutions in individual jurisdictions, although typically including their consolidated balance sheets worldwide. The only coordinated multi-country tests have been the recent exercises in the European Union. More recently, the European Banking Authority started the process of its 2018 stress testing of Europe's largest banks when it published its draft stress-test methodology. This test will again look at the effect of macroeconomic stress on a bank's viability, taking into account market risk and litigation risk. It will, however, be much tougher than previous tests, as it will include the International Financial Reporting Standard (IFRS) 9, which requires that banks model credit risk losses for loans even before they have defaulted. This is likely to result in higher levels of provisioning and may potentially impact somewhat on capital adequacy ratios. Incremental risk provisioning under IFRS 9 will focus on loans that show deterioration in borrowers' credit quality since the inception of the loan. It is therefore expected that banks that are challenged by low growth and persistent asset quality pressures will be more severely affected.

In the United Kingdom (UK), the Bank of England (BoE) announced the key elements of its 2017 stress test in March. The 2017 stress test includes two stress scenarios. Alongside the annual cyclical scenario, the BoE is for the first time running an additional exploratory scenario. The aim of this additional scenario is to consider how the UK banking system might evolve if recent headwinds to bank profitability persist

or intensify. It includes weak global growth, persistently low interest rates, and stagnant world trade; it has a seven-year horizon to capture these long-term trends.

As I have mentioned before, stress testing forms an important component of the financial stability framework in South Africa. As part of the 2014 FSAP for South Africa, the IMF conducted a full stress-testing exercise for the banking and insurance sectors. The focus of the exercise was on both solvency and liquidity stress testing. In its recommendations, the IMF proposed that the SARB develop a macroprudential stress-testing framework (following a top-down approach) to complement the existing bottom-up exercises conducted by banks.

In January 2015, the SARB established a Stress Testing Division within its Financial Stability Department. The division conducted a full stress-testing exercise on the domestic operations of the major banks in South Africa during the period from December 2015 to April 2016. Six major banks participated in the exercise, covering in excess of 80% of the banking sector's assets. The SARB requested the participating banks to conduct a bottom-up stress test focusing mainly on credit risk while the SARB conducted a top-down exercise using a common scenario.

The Stress Testing Division followed a formal risk identification and scenario design by developing a Risk Assessment Matrix, involving the identification of the most relevant risks from the global and domestic environments, an assessment of their likelihood, as well as a qualitative evaluation of their impact on the real economy, the banking sector, and the financial system. Major global risks were identified on which to base the scenarios; these included a surge in global financial market volatility combined with a prolonged period of slower growth in both advanced and emerging markets.

The results of the bottom-up stress tests were aggregated and validated against SARB's top-down stress-testing exercise. The participating banks were found to be adequately capitalised to withstand significant credit losses throughout the stress scenarios before taking into account any mitigating action by banks' management. This resilience stems from the high capital buffers already prevailing in the banking

system. The results of the exercise were published in the *Financial Stability Review* in May 2016.

This stress-testing exercise was subjected to two peer reviews, firstly by the Deutsche Bundesbank and secondly by the IMF, to ensure the robustness of the procedures and future stress-testing exercises. The contributions that emanated from the peer reviews have been actioned and incorporated into the refinement and expansion of the stress-testing model and framework. In line with the SARB's governance framework, full stress-testing exercises will be conducted once every two years or if and when they may be required. Work on the next cycle of the exercise is underway.

I would like to conclude by stating that banking systems are much stronger since the implementation of stress-testing frameworks – and this has contributed in part to the improvement of economies in many countries. Stress tests are forward-looking and focus on improbable but plausible risks, as opposed to common risks. As a result, they complement conventional capital and leverage ratios. The disclosure of the results of stress-testing exercises, coupled with firms' disclosure of their own stress-test results, provides market participants with deeper insight and confidence, not only into the financial strength of banks, but also into the quality of their risk management and capital planning. Stress testing is also proving highly complementary to supervisors' monitoring and analysis of potential systemic risks.

A very important benefit of regular stress testing is that it forces banks and supervisors to develop the capacity to assess the enterprise-wide exposures of their institutions to risks, and to use this information to ensure that they maintain adequate levels of capital and liquidity. The development and ongoing refinement of risk management capacity is in itself critical for protecting individual banks and the banking system, upon which the health of our economy rests.

I wish you everything of the best with your further deliberations today.

Thank you.

Reference

Borio, C., Drehmann, M. and Tsatsoronis, K. 2012. *Stress-testing macro stress testing: does it live up to expectations?* Basel: Bank for International Settlements.