

## DIRECTED RISK RESEARCH PROBLEM STATEMENT

<b>Risk Theme</b>	Bank Liquidity Risk	<b>Problem Nr.</b>	PS19005
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<b>PS Status</b>	Open	<b>Date</b>	10 Oct 2019	<b>Revised PS</b>	(Office use)
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**PROJECT TITLE:** Top-down stress testing of the South African banking system

### PROJECT GOAL

Develop top-down bank stress test methodologies and models that can be used by banks to test their bottom-up models and regulators to investigate the drivers of risk to banks and to test the stress test result submissions from banks.

### HIGH LEVEL DESCRIPTION OF PROBLEM

Banks are complex entities that are exposed to many interrelated risks. The continued occurrence of crises over time highlight the need for further improvements in the macro-prudential tools used by regulators. Even though stress testing has been around since the early 1990's, it only became more sophisticated and widely used after the 2008 global financial crisis.

The purpose of stress testing is to warn regulators of bank vulnerability that could lead to a financial or credit cycle downturn. The length of the financial cycle is uncertain and also longer than the typical business cycle driven by economic activity. Recent history that includes the Asian financial crisis of 1998 and the global financial crisis of 2008 shows that multiple uncertain contributors can cause a downturn and highlights the importance of macro-prudential tools that can strengthen bank resilience or highlight specific vulnerabilities that can be proactively addressed. A top-down stress testing model that evaluates systemic risk (risk of failure of a large proportion of financial institutions) can help regulators make informed decisions around discretionary capital add-ons, direct interventions, bail-outs and crisis resolution. Stress testing models can be used to investigate the risk of contagion between banks in a period of crisis and guide remedial actions once a crisis hits. It is therefore a useful tool even if a crisis might not be averted or pre-empted by stress testing. Banks can also benefit from top-down models that can be used to run ad-hoc stress scenarios in an efficient manner or as a cross check on detailed bottom-up models.

Stress testing is one macro prudential tool that banking regulators such as the Prudential Regulatory Authority (PRA) in the United Kingdom (UK), the United States of America Federal Reserve (FED) and the Prudential Authority (PA) within the administration of the South African Reserve Bank (SARB) to exercise regulatory oversight. A search through published papers and SARB publications have not revealed a clearly documented top-down modelling methodology that is used for macro-prudential regulation. There is therefore scope for the development of a centralised top-down methodology based on the USA and UK systems. It can be used by the SARB in the South African market to inform macro-prudential decision making or to assess the accuracy of bank specific ICAAP macro-economic stress test submissions. More stringent bottom-up modelling requirements based on detailed modelling guidance would also drive improvements in these models developed and maintained by the individual South African banks. Although this may not prevent the next banking crisis, it will allow more equitable and accurate discretionary capital requirements through an improved assessment of

vulnerabilities in the system. Stress testing conducted by the PA can be refined based on best practice examples set by the Bank of England (BoE) and FED. The current stress testing conducted by the PA is based on the Internal Capital Adequacy Process (ICAAP) requirements outlined in Basel. The PA can benefit from a top-down stress testing model similar to the BoE and FED models to investigate wider market impacts and to provide a cross-check for the bottom-up results submitted by banks.

## **PROJECT OBJECTIVES**

The objectives of this project are:

- Investigate the links between macro-economic factors and the key drivers of bank asset and liability values.
- Develop proof of concept models that link macro-economic factors to key bank balance sheet items such as:
  - Loan assets
  - Deposits
  - Investments

## **OUTPUTS REQUIRED**

- A paper submitted for publication, as part of Masters research requirements.
- Proof of concept models based on publicly available data
- Masters dissertation

## **STRATEGIC VALUE TO DIRECTED RISK RESEARCH**

This research will contribute conceptually and possibly also materially to the prudential supervisory activities of the PA (SARB) in the field of bank stress testing.