

RESEARCH AGENDA 2021–2023

Economic Research Department



SOUTH AFRICAN RESERVE BANK



Research agenda 2021–2023

Economic Research Department

Table of Contents

Introduction	3
Theme 1: Enhancing monetary policy efficiency.....	4
Assess the effectiveness of the monetary policy transmission mechanism and the appropriate implementation framework	5
Structural drivers of policy transmission	5
The monetary policy implementation framework	6
Review the exchange rate policy and strategy for reserve use and accumulation	6
Enhancing the forecasting and policy analysis tools	7
Theme 2: Assess climate change and the implications for the Bank.....	9
Structural changes.....	9
Implications for monetary policy	10
Financial stability and regulation.....	10
Market development	11
Tools for analysis.....	11
Theme 3: Topics in macroeconomic policy coordination.....	13
The relationship between monetary and macro-prudential policy.....	13
The impacts of fiscal policy on monetary policy transmission and financial markets and stability....	14
Global economic and policy changes and implications for South Africa’s macroeconomic policy	15
Theme 4: Promoting financial inclusion and competition in the financial sector	17
References	19

Introduction

Policy design and effective implementation require high quality research, to identify unintended consequences of policy changes early and ensure policy decisions are based on accurate information.

This document sets out the South African Reserve Bank Research Agenda over the period 2021 to 2023. The agenda aims to generate research informing the three key policy areas of the Bank: monetary policy, macroprudential and micro-prudential policies.

The basic research questions are:

- how do endogenous and exogenous shocks affect sectoral and macroeconomic dynamics, and
- how do policies in each area impact on policy targets and economic outcomes?

Poverty, inequality and unemployment remain the three main interlinked challenges facing the South African economy and society. While structural reforms are required to address them effectively, macro-economic policy design and coordination should support structural changes by providing a stable, growth-friendly, macroeconomic environment (Loewald, Faulkner, and Makrelov 2020). The projects in this research agenda aim to enhance macroeconomic policy design and coordination across the Bank's policy areas, improve the depth, operation and stability of the financial sector, and work towards a stable, growth-friendly, macroeconomic environment.

The agenda has four main research areas, which are based on the 2020-2025 Strategic Plan. These are:

1. Enhancing monetary policy efficiency
2. Assessing climate change and the implications for the Bank
3. Macroeconomic Policy Coordination
4. Promoting financial inclusion and competition in the financial sector

We discuss each research area in detail.

Theme 1: Enhancing monetary policy efficiency

The research agenda will remain centred on a set of questions about monetary policy itself, the target, the policy framework and the effectiveness of communications.¹ Ongoing work is needed to assess monetary policy in the context of broader macroeconomic considerations, including the role of fiscal policy and other macroeconomic developments and the trajectory of the global economy and global conditions and policy settings.

A macroeconomic balance framework has been worked on and will be further developed to provide a broader context for assessing required policy frameworks and the setting of policy.²

Critical to that framework, and the utility of the Taylor Rule embedded in the QPM model, is the role of real exchange rate and its position relative to equilibrium. Equilibrium itself however shifts due to trends in relative prices, technology and productivity, and other structural factors, and needs to be assessed on an ongoing basis. Some work has been done on this in 2020 and will be taken forward in 2021.³

Global conditions, global and domestic policy and time preference of consumption, and relative productivity of the domestic economy, among other factors, jointly determine equilibrium neutral real interest rates. Assessing changes to the neutral real interest rates will remain central to the research agenda and the effectiveness of monetary policy.⁴

Finally, while a Taylor Rule provides a macroeconomic perspective for setting policy rates, the detail of inflation dynamics, trends, and secular developments are critical to understanding movements within the CPI and PPI series and appropriate policy setting, and will remain an ongoing and core area of research, analysis and commentary.⁵

¹ Recent work on effectiveness of communication includes Reid and Siklos (2020) and Coco and Viegli (2020).

The papers suggest that effectiveness of communication has improved and identify some important elements to be considered in the bank's monetary policy communication strategy.

² See Loewald, Faulkner, and Makrelov (2020)

³ See for example Rapapali and Steenkamp (2019) and Greenwood-Nimmo, Steenkamp, and van Jaarsveldt (2020)

⁴ For previous work on neutral interest rates, see Loewald (2018) and Kuhn, Ruch, and Steinbach (2019).

⁵ Several Reserve Bank working papers identify important structural drivers of inflation. For example, over the longer term, inflation dynamics in South Africa mainly reflect structural factors such as labour market rigidities and their impact on unit labour cost, growth in government expenditure, market power and terms of trade dynamics (Dadam and Viegli 2015; Fedderke and Liu 2016). Ruch, Rankin, and Du Plessis (2016) decompose goods inflation into a flexible and sticky-price inflation measure for South Africa at a product level from 2008 to 2015. They find that flexible-price inflation is more volatile, less persistent, and contributes the most to volatility in overall goods inflation. Sticky-price inflation is more persistent, less volatile and correlates well with future goods inflation. The relationship between the output gap and inflation is important for monetary policy analysis. The bank has improved its estimates of potential growth by using new and more advanced estimation techniques (Botha, Ruch, and Steinbach 2018; Fedderke and Mengisteab 2017). Philips curve estimates have consistently shown weak relationship between the output gap and inflation, mainly explained by labour market rigidities (Botha, Kuhn, and Steenkamp 2020; Dadam and Viegli 2015; Fedderke and Liu 2016; Kabundi, Schaling, and Some 2016). The relationship between the exchange rate and inflation has also been studied with the results suggesting

Assess the effectiveness of the monetary policy transmission mechanism and the appropriate implementation framework

Measuring and understanding the effectiveness of the transmission mechanism is critical to monetary policy. Transmission however changes over time and under the impact of various long-term developments, including in global and South African natural interest rates, shifts in inflation expectations, changes in exchange rate pass through, greater integration with global financial markets and the introduction of Basel III regulatory requirements. Cyclical and one-off factors can also play an important role, such as tightening financial conditions and heightened uncertainty since the GFC or the Reserve Bank's liquidity interventions and bond purchase programme since the Covid-crisis.

This research theme explores how these development have affected optimal monetary policy settings and the transmission of monetary policy, and develops recommendations to enhance the implementation framework.

The proposed programme is divided according to the following sub-themes:

1. Structural drivers of policy transmission
2. The monetary policy framework

Structural drivers of policy transmission

A key question in monetary policy is the degree of pass-through from changes in policy rates to lending rates, and understanding conditions under which transmission changes. There are several factors that affect and determine this relationship. For example, changes in risk premia, bank margins and demand for loans can affect the pass through. Rapapali and Steenkamp (2020) show a significant increase in the funding costs of banks that affects their lending rates but is unrelated to repo rate changes. In addition, market operations can also affect the transmission of repo rate changes. Another important driver of monetary policy transmission is competition among banks, in particular the way in which it affects the supply of credit and the sensitivity of supply to changes in policy. Structural factors such as labour markets dynamics also affect the transmission mechanism. For example the responsiveness of wage settings to economic shocks impact the transmission process (Bhattarai 2016).

The key questions to be addressed under this topic include:

1. What has been the pass through to different lending rates post GFC?
2. What factors have affected the transmission mechanism and how? The analysis will be split into three groups of structural factors:
 - a. Global factors such as cross border funding.
 - b. Domestic policy factors including government policy decisions and SARB interventions to sterilise or provide liquidity in domestic markets and,

a decreasing pass through (Botha 2014; Kabundi and Mbelu 2018; Kabundi and Mlachila 2018). New estimates of exchange rate pass through need to take into account how market structures of particular sectors, nature of domestic economic shocks, exchange rate hedging, government tax decisions, currency pricing of invoices and business cycle dynamics affect the pass-through.

- c. Other factors such as structural changes to financial markets driven for example by changes in competition and technological innovation.
3. What structural changes are required to improve the transmission mechanism?

The monetary policy implementation framework

Understanding the transmission mechanism and the efficiency of domestic liquidity management is key to assessing the effectiveness of the monetary policy framework and to further provide insight into how monetary policy should be implemented. In practice, policy is implemented through rate setting and actions across several connected but separate markets, including for repurchase agreements, other short-term money, and currency markets, obscuring the clarity of policy signals and from time to time generating inefficiencies and volatility in specific markets. In addition, the absence of representative benchmark rates makes it difficult to accurately assess the consistency of monetary policy implementation with the stance of monetary policy as decided by the Monetary Policy Committee or the extent to which overnight rates reflect repurchase rate settings.

This area of the research programme will assess the optimality of the SARB liquidity management policy and the current reference rate proposal and develop recommendations to enhance the monetary policy framework. It will draw on research produced across the research agenda, including, for instance, work coming out of the climate change research stream.

Key questions include:

1. Are the current liquidity management policies optimal?
2. What are the costs and benefits of the current reference rate proposal?
3. What changes are required to the monetary policy framework to increase its effectiveness?

Review the exchange rate policy and strategy for reserve use and accumulation

The exchange rate shapes macroeconomic outcomes and is impacted by endogenous and exogenous shocks. In a floating rate system, the exchange rate tends to be more volatile, but also less of a shock transmitter and more of a shock absorber. This is also reflected in higher short-term volatility but more stability over the longer term, which is important for trade and investment (Hassan 2015). Nonetheless, many countries seek ways to manage exchange rates to reduce costs of floating and enhance benefits of greater stability (such as very large currency swings and external sector pricing volatility), although success in these efforts depends critically on starting conditions and endowments, such as depth of local currency funding markets, savings-investment balances, patterns of trade and trade invoicing, degree of price rigidities, among other factors.

This part of the agenda will look at our floating rate policy empirically and in comparative perspective to understand how policy can be improved. It will develop policy recommendations on exchange rate policy and reserve accumulation.

Key questions include:

1. Should there be more intervention, and of what kind in exchange rate markets? What externalities or market failures can be identified and addressed by interventions?
2. Should reserve purchases and sales be conducted and should other interventions be considered, such as to address short-run currency volatility, preparing for asset sales by investors (insurance) and/or to increase financial stability?
3. What are the implications or unintended consequences of these interventions for other policy areas?

Enhancing the forecasting and policy analysis tools

Since the implementation of the inflation targeting framework almost two decades ago, the Bank has, in line with best practice, developed a suite of models as part of its modelling and forecasting strategy. Continuous review, development and enhancement of the existing suite of models is critical to ensuring their relevance. Globally, most central banks employ a suite of models to fulfil their mandates. Usually, the suite of models includes some short-term as well as assumptions models using ARIMA or now-casting techniques and medium term forecasting tools such as large econometric and DSGE models. Rapid development of storage capacity and increases in computational power have allowed for the creation of large data sets and their analysis, opening new frontiers in our ability to forecast and analyse economic activity and behaviour. Over the period 2021 -2023 , the Bank will develop capacity and build models based on large and high frequency data sets.

We propose steps to explore new model directions, strengthen our array of models to solve specific forecasting concerns, and ensure we have the technical capacity and processes to keep existing models, especially the QPM, up to date. The discussion below reflects learnings from the reviews conducted by ERD of research activities, the use of the QPM in the forecasting process, and a process engineering exercise of the forecasting process, all completed in the last two years.

As central banks began to shift across to Dynamic Stochastic General Equilibrium (DSGE) models, we developed a simpler policy model, the QPM model, that became the main forecasting model in September 2017. While this model has no direct “links” to the data (similar to the DSGE type), its strength rests in a more consistent theoretical framework with forward-looking expectations and a “Taylor-rule” to close the model in a general equilibrium system. The QPM generates medium-term projections which enable policy makers to communicate and quantify how policy rates impact on inflation and the economy generally.

The 2018 peer review recommended enhancements to the original structure of the model as well as extensions to the model. Recommendations were also made on improving the QPM forecast performance and on how it could be used to improve communication by the MPC. These enhancements include: improving the expectations channel in the model; improving the labour market channel to include some of SA’s labour characteristics; getting rid of some of the embedded AR processes; and subjecting the Monetary Policy Rule to sensitivity analysis and testing. These will be addressed over the next two years.

The Core model is a medium-term forecasting model, estimated using the Error-Correction Model (ECM) technique. The basic problem with the core model has been its lack of a monetary policy rule that shapes the trajectory of the economy through the forecast. Its strength has been the detail of the price formation channel, the disaggregation of the different drivers of expenditure components of growth (GDP), and a forecasted balance of payments. The core model also provides alternative simulations outside the scope of the QPM, such as the fiscal scenarios and is also used to perform stress testing. Core models are being superseded by next generation hybrid models, which more explicitly combine core components with long-run equilibriums, forward-looking expectations and policy rules. ERD intends to develop a hybrid model, using the core model as a foundation, and as a key initiative in the ERSA-run modelling network.

Rising fiscal risks and the 2008 financial crisis have highlighted the importance of incorporating fiscal and financial dynamics in economic models. These dynamics will be developed in the current and new models over the period 2021-2023.

Other models also need development, such as Integrated Assessment models to develop climate change scenarios and a dynamic stochastic general equilibrium model (DSGE) with fiscal and financial dynamics that will be pursued through support to the ERSA model network.

Theme 2: Assessing climate change and the implications for the Bank

Climate change mitigation and adaptation will have far-reaching, rapid, and most likely irreversible structural implications. Without concerted global mitigation policy, mean projected warming is expected to rise by 3 to 4 °C over pre-industrial levels by 2100 with great costs to human and ecological welfare and stress to economic and social systems (IEA 2014; IPCC 2014, 2018).

Price and quantity adjustments of various kinds – energy costs, pricing of externalities, growing demand for more energy-efficient products and services, revaluation of real and financial assets among others – will be far-reaching. Importantly, emerging and developing economies are almost invariably more exposed to climate change events because of the relatively large size of directly weather-dependent sectors (e.g., agriculture and food-processing). They also are typically less resilient to climate change events and more vulnerable to associated shocks (Farid et al. 2016).

Adaptation and mitigation measures need to be economically and financially manageable in the sense of minimizing damage and maximizing opportunity. This also requires dealing with possible adverse impacts on particular groups and ensuring that any transition to a lower emissions development path is inclusive.

“Green swan events” will be disruptive, with complex transmission mechanisms, including and perhaps primarily through financial systems, and as stress impacts on firm and household balance sheets and risk profiles, with implications for financial stability (Carney 2015).⁶ The breadth of policy risk faced by central banks in dealing with climate change and its consequences is becoming increasingly apparent.

The CDRC has initiated a structured programme into climate change and its implications for the Reserve Bank:

1. Understand the impacts and design policy responses to improve the bank’s ability to deliver on its key mandates and support the transition.
2. Engage more effectively in domestic and international forums, which aim to inform decision-makers and develop responses to climate change risks, and
3. Avoid bad solutions that might be imposed on the Reserve Bank due to lack of appropriate analytical work.

The programme is divided according to the following groups: structural changes, implications for monetary policy, financial stability and regulation, market development, and tools for analysis.

Structural changes

Climate change and its structural implications will generate transition and physical risks, changing the composition of growth and inflation dynamics in the economy. These, in turn, will generate balance sheets effects and impact the monetary policy and financial stability mandates of the Reserve Bank.

⁶ Bolton et al. (2020)

These structural changes will also be driven by policy decisions in other countries, which affect the global economy and the flow of capital into emerging markets. Understanding these structural changes and developing interventions to minimise negative impacts, while supporting positive developments, can improve economic and financial resilience and support low and stable inflation. Some of the key questions under this topic are:

1. What are the likely policy developments (in the areas of climate change) in the global economy and how would they affect the domestic economy?
2. What is the impact of climate change on particular sectors of the economy and the composition of economic growth?
3. How would mitigation efforts impact the economy?
4. What are the major technological developments over the next 2 to 10 years that are likely to generate large transition risks?

The economic literature on climate change is evolving rapidly and some of these questions are being addressed. In this case, the role of Reserve Bank staff will be to stay abreast of developments and identify implications for Reserve Bank policy.

Implications for monetary policy

The projects under this heading aim to inform the monetary policy responses to physical and transition risks, and identify possible mechanisms to support the transition.

1. What is the optimal response for central banks to large supply side output and price shocks, especially those which are long lasting or permanent?
2. How is inflation affected by different instruments that aim to facilitate the transition to a greener economy?
3. How can central banks use their balance sheets to support the transition?
4. How should the Reserve Bank support the flow of green funding?
5. What are the implications of using green assets as collateral in SARB's market operations?

Financial stability and regulation

Physical and transition risks will impact the balance sheets of financial sector institutions. Some of the key questions are:

1. How should banks and insurers manage physical and transition risks?
2. What are the impacts of different climate change paths and events on financial stability?
3. What changes are required to micro and macro-prudential policy to facilitate the transition and manage physical risks, particularly to reduce the relative cost of 'green' funding to 'brown' funding? What are their costs and benefits?
4. How should we manage currency risks (or macroeconomic and financial imbalances) associated with a large demand for foreign capital to finance investment in mitigation and adjustment?

5. What are the effects on financial stability arising from unevenness of climate change effects between global regions and countries and transmitted through exchange rates and international capital markets? How can financial stability policy take them into account?

Many of these questions are part of the research agenda of other central banks, the Network for Greening of the Financial Sector and the National Treasury. It is important for the Reserve Bank to develop its own thinking around these questions in order to engage effectively in local and international debates.

Market development

South Africa has had some success with developing green markets, which, from a central banking perspective, should be welcomed as a broadening and deepening of local debt markets.⁷ Market liquidity and reduced transaction costs should be supported, alongside strengthening green certification systems and issuers' accountability for the use of funds raised. Market development needs risk-sharing mechanisms to improve agents' risk/return calculations. South Africa has substantial experience of risk-sharing between the public and private sectors (through, for example, credit and debt guarantees, public-private partnerships). These mechanisms will be important in mobilizing private sector funding and providing appropriate insurance products.

Key questions under this area include:

1. How do we improve market liquidity and reduce transaction costs?
2. How do we develop green certification systems and issuers' accountability for the use of funds raised?
3. What mechanisms can be put in place to improve risk sharing?
4. What forms of market regulation will be appropriate for markets in green instruments?

Tools for analysis

Central banks will be required to develop new tools to assess the impacts of climate change related events on the economy as well as the resilience of the financial system. The Network for Greening the Financial System is already developing scenarios, using Integrated Assessment Models (IAMs). These, however, do not provide physical risk estimates and region-specific impacts. In South Africa, it is expected that climate change will impact different regions very differently. On an aggregate level, the impacts appear small, but at the regional level the impacts can be large.

The Reserve Bank needs to develop its capacity to analyse the transitional and physical impacts of climate change. As mentioned before, these cut across the different mandates of the Reserve Bank. IAM frameworks or other similar models, for instance, are complex and require specialised skills. This part of the agenda will aim to evaluate and develop these tools, or simpler alternatives, in

⁷ The JSE's Green Bond Segment, established in 2014, has raised finance for green investment by municipalities (e.g. Cape Town and Johannesburg) and corporations (e.g. Greenpoint and Nedbank).

collaboration with institutions that have relevant technical expertise, taking into account the approaches of other central banks.

Topics of interest include:

1. Modification of IAM frameworks to cater for the needs of central banks.
2. Linking central banks' models to climate change impact models.
3. Developing physical risk models.
4. Developing local modelling networks.
5. Micro level models to provide granular impacts on specific financial institutions.

Theme 3: Topics in macroeconomic policy coordination

Effective macro-policy coordination is required for strong and sustainable economic growth. Yet, this has not always been the case over the last decade with fiscal, macroprudential and monetary policies often working at cross-purposes (Loewald, Faulkner, and Makrelov 2020). Effective policy coordination requires understanding the impact of these and other policy interventions and ensuring or developing specific policy frameworks to respond in a coordinated way to changes in the economic environment.

Despite the strong links between monetary, fiscal and macro prudential policy, the bank has not always been able to identify how policy changes in one area affect other policy areas or develop frameworks to avoid working at cross-purposes. For example, there are hardly any empirical assessments of the impacts of macro prudential regulations on the effectiveness of monetary policy, or the real economy, more generally. CGFS (2016) argues that it is uncertain how the introduction of the various Basel III components will jointly affect the transmission mechanism of monetary policy; an uncertainty that is cause for concern by policy makers.

Recently, central banks have started to fill this research gap assessing the impact of macro-prudential regulations on the spillover effects of monetary policy in advanced economies as well as the transmission of domestic monetary policy decisions (Bussière et al. 2020). In South Africa, the phased introduction of BASEL III was completed in 2019. This provides a useful point to review the macro-prudential changes. There has also been little systematic assessment of the deteriorating fiscal environment for the transmission of monetary policy either directly or through the impact on financial sector institutions.⁸

Understanding these impacts can improve policy design and execution and support the bank in achieving its objectives. The research outputs will inform macroeconomic policy design as well as the development of frameworks to support policy coordination.

The proposed programme is divided according to the following sub-themes:

1. The relationship between monetary and macro-prudential policy
2. The impacts of fiscal policy on monetary policy transmission and financial markets and stability.
3. Global economic and policy changes and implications for South Africa's macroeconomic policy.

We discuss each of these areas.

⁸ The impact on the financial sector operates via the so called sovereign –bank nexus which highlights the interlinkages between the fiscal and financial side of the economy. For more information see Dell'Ariccia et al. (2018).

The relationship between monetary and macro-prudential policy

Monetary and macro-prudential policy have a complex relationship. The theoretical literature suggests that monetary policy affects macro-prudential policy through the bank lending, balance sheet and risk taking channels (Borio and Zhu 2012). At the same time, changes to capital regulation impact lending spreads and the transmission of monetary policy (Woodford 2010). These impacts, however, depend on the heterogeneity of banks in terms of their size, capital, access to funding, business model and other factors.

Different macro-prudential tools also have different impacts on the monetary policy transmission mechanism. Some affect liquidity, while other focus on maturity transformation. These interventions, for example, can increase the demand for reserve balances, change the turnover in various money markets or steepen the short end of the yield curve, affecting the monetary policy transmission mechanism (CGFS 2016). Maturity transformation interventions can also affect monetary policy through their impact on long-term investment and potential growth. In addition, macro-prudential regulations can reduce or increase the spillover effects of monetary policy in advanced economies (Bussière et al. 2020). The global literature presents various empirical estimates of the impact of Basel III regulations.⁹ South Africa's empirical research has lagged behind with only Rapapali and Steenkamp (2020) providing estimates of how funding costs have increased over the period.

Understanding the complex relationship between monetary and macro-prudential policy requires a comprehensive research programme covering the impact of different macro-prudential regulations on bank behaviour and financial markets, the price and volume of lending over the monetary policy cycle and the effectiveness of macro-prudential regulations in mitigating against fiscal risks and capital flows volatility.

Key questions under this research area include:

1. How has the introduction of Basel III affected the funding cost of South African financial institutions?
2. What has been the impact on particular financial markets, different types of lending and investment as well as specific monetary policy transmission channels?
3. How effective are macro prudential regulations in mitigating against fiscal risks and volatility of capital flows?
4. What are the optimal risk weights given South Africa's high fiscal risks?

The impacts of fiscal policy on monetary policy transmission and financial markets and stability

The impact of fiscal policy on the macroeconomic environment has been a central issue for several years in South Africa, with growing concerns about the impact of fiscal risk on financial markets in particular (Loewald, Faulkner, and Makrelov 2020). These risks affect the sovereign risk premium and the neutral interest rate. The increased bond issuance over the last couple of years has resulted in a steeper yield curve, offsetting the impact of the monetary policy stance on the real economy. There

⁹ See for example Noss and Toffano (2016) and Bussière et al. (2020).

is indeed already evidence that the South African sovereign yield curve is embedding a substantially higher term premium (Soobyah and Steenkamp 2020). Projected debt issuance over the medium term is likely to exacerbate these effects.

At the same time financial institutions hold considerable amount of government debt because of macro prudential regulations but also because of better bond returns. Banks are also affected indirectly by fiscal decisions to spend and tax through their impact on economic growth and asset prices. These are important parts of the sovereign bank nexus and also important drivers of financial instability (Dell'Araccia et al. 2018).

Monetary policy decisions impact inflation and growth, which in turn affect the fiscal framework. These strong interlinkages of macroeconomic policies suggest that lack of coordination can generate very large negative outcomes as policies work at cross-purposes.

In this area, we plan to address the following questions:

1. What has been the impact of fiscal policy on economic growth?
2. What changes to tax policy can improve economic growth and fiscal sustainability?
3. How does fiscal policy impact on the balance sheets of financial institutions?
4. What are the macroeconomic effects of SARB bond purchases?
5. What is the impact of lower inflation on the fiscus?

Gaspar et al. (2016) argue that macroeconomic and structural reform policies need to be comprehensive, consistent, and coordinated, especially when some of the policy tools are facing constraints.¹⁰ It is difficult to think about effective macro-policy coordination without considering the micro-policy environment. The bank's research will identify important micro-policy changes to improve coordination and support stronger and more inclusive economic growth.

Global economic and policy changes and implications for South Africa's macroeconomic policy

South Africa is a small open economy with high dependence on foreign savings.¹¹ The global economic and policy environment is changing rapidly. The Covid pandemic has changed the way we work. New forces of de-globalisation have emerged and new technologies continuously shift relative prices, generating new sources of economic growth and competitiveness. In addition, the global policy environment is changing with countries for example becoming more aware of climate change issues and imposing border tax adjustments for carbon intensive goods. In certain policy areas such as macro-prudential policy, decisions to modify regulations are discussed and taken at a global level. And policy decisions in advanced economies continue to be major drivers of capital flows into emerging

¹⁰Comprehensive refers to policy interventions across macro and micro policies in a way that these interventions reinforce each other. Policies are consistent when government sticks to its promises and policies are coordinated when they internalise the global economic environment.

¹¹ Previous research by Reserve bank staff provides assessment of how foreign saving inflows impact the economy and the implications for monetary policy. See for example Hassan (2015) and Makrelov, Davies, and Harris (2019).

markets.¹² Macro and micro policy design and coordination in South Africa need to take into account the changing global economic and policy environment.

Under this research area, we plan to address two broad questions:

1. What are the key global economic and policy developments over the next 5 years?
2. What are the implications for each macro policy area and policy coordination in general?

¹² See for example Eller, Huber, and Schuberth (2020) and Anaya, Hachula, and Offermanns (2017)

Theme 4: Promoting financial inclusion and competition in the financial sector

Competition is a fundamental driver of innovation, economic growth and consumer welfare (Howitt, 2009). Competition forces efficiency in production, competitive prices, better quality goods and services and variety for consumers. These virtues of competition apply equally to the banking sector, and perhaps even more so as banks occupy a privileged position in the economy. Banks not only intermediate between savers and borrowers, ensuring the efficient allocation of capital across the economy, but they are also central to the conduct of monetary policy. Competition is necessary in order for the banking sector to effectively discharge on these responsibilities.

While competition helps drive innovation and growth, too much competition can generate negative externalities, particularly in the banking sector where excessive competition leads to aggressive risk-taking and can harm financial sector stability (see e.g., Allen and Gale 2000). Analysis of the financial stability implications of competition is thus important. Closely related are potential financial stability issues arising from financial innovation. While fintechs bring about new opportunities to enhance financial sector efficiency and productivity, and thus the sector's contribution to economic growth, they also introduce new risks to the financial system. A calibration of the potential risks to financial system stability, and developing an understanding of the channels through which such risks could impact financial sector stability are policy imperatives for South Africa.

While South Africa boasts of the highest level of financial inclusion on the continent, sitting at 89% in 2016 (Abrahams, 2017), Matsebula and Yu (2010) find that "affordability limits poor households' access to formal financial services in South Africa".¹³ Financial inclusion - defined as access by enterprises and households to reasonably priced and appropriate formal financial services that meet the needs of enterprises and households -- is a critical dimension of financial development (Beck et al. 2016) and also a driver of inclusive growth. Given its importance to long-run growth prospects, financial inclusion remains a policy challenge.¹⁴

Our contribution in this research area is to answer the following research questions:

1. What is the impact of competition on financial stability?
2. What is the impact of financial innovation on financial stability?
3. What is the impact of enhanced efficiency of the payments system on the efficiency of the financial system as a whole?
4. How can fintechs and payments systems innovations and competition support financial inclusion?
5. How can a central bank digital currency (CBDC) enhance financial inclusion in South Africa?¹⁵We will also explore the implications of a SARB CBDC for banking sector competition, financial sector stability and monetary policy.

¹³ The WEF (2017) identifies at least 5 challenges to financial inclusion in South Africa, namely, (i) Perceptions of high fees limits the usage of banking services; (ii) mistrust in banks; (iii) concerns of fraud; (iv) cumbersome paperwork and slow response; and (v) informality of most business transactions by the lower income deciles.

¹⁴ Financial system development is necessary but not sufficient for financial inclusion.

¹⁵ In looking at financial inclusions questions, the role of financial literacy will be important.

6. What changes are required to micro and macro prudential policy to incorporate competition issues?

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