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Sailing into the Wind: evaluating the (near)future of Monetary Policy in South Africa *

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Abstract

This paper evaluates the main challenges facing South African monetary policy. We focus on three main issues: the external environment, the growth potential of the economy and its fiscal balance. The external environment will remain uncertain and volatile and South Africa monetary policy should increase the number of tools available to deal with external volatility. Low growth puts pressure on monetary policy, but monetary policy can help in promoting growth only if there are corresponding reforms in South Africa's labour market, investment climate and growth strategy. Finally, the fiscal balance represents the most immediate risk to the country's macroeconomic stability but monetary policy can provide the necessary support to the economy in a context of a credible commitment to fiscal stabilisation and longterm economic reforms. Inflation targeting provides the necessary flexibility and can accommodate new instruments and monetary practices.

JEL classification: E52, F41, O23, E61

Keywords: South Africa, monetary policy, fiscal-monetary policy coordination, risk premium, economic growth.

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1. Introduction

Sailing against the wind requires travelling in a zig-zag path, changing direction with seemingly little relation to the final destination, with a keel under the boat to counteract the force of the wind and propel the boat forward. Monetary policy in South Africa has to contend with a series of crosswinds not dissimilar to a boat trying to sail against the wind. The direction of travel will undoubtedly need to be adaptable and new instruments and monetary strategies could become necessary. But monetary policy will be effective in the short-run only if it continues to commit to long run monetary and financial stability and maintains a strong and credible institutional setting to provide the keel to counteract the wind. Alternatively, the wind will determine the direction of travel.

A few years after South Africa adopted inflation targeting, Aron and Muellbauer (2007) reviewed the performance of the regime and the evaluation was certainly positive. The economy was growing at a healthy 5% per year and inflation was under control, even when facing some significant external shocks. Inflation and output volatility had declined and the only preoccupation was the increasing private sector debt. The consensus was that a combination of sound fiscal policy, exchange rate flexibility and inflation targeting would anchor the long-term growth of the economy. Fifteen years later, the prospects of the South African economy and of its monetary policy are much more uncertain, after two large global shocks and 10 years of very weak economic performances which are expected to continue in the foreseeable future. The objective of this paper is to discuss the main challenges that monetary policy will face in the near future, especially after the COVID-19 crisis has accelerated the underlying trends of low growth and high public debt.

South African monetary policy has received considerable attention and there is a large body of literature on its historical development. Aron and Muellbauer (2007) reviews monetary policy in the first 10 years of democratic South Africa and describes the change in the policy approach from an eclectic combination of monetary and exchange rate targeting to the adoption of inflation targeting that made policy more transparent and predictable. Nowak and Ricci (2006) covers similar ground, but with a longer historical view that shows the difficulty of breaking the inflationary patterns developed in the 1980's and beginning of the 1990's. After that the literature focuses on the performances of the inflation targeting regime (Du Plessis et al., 2007; Frankel et al., 2008), its effect on private sector expectations (Reid, 2009; Kabundi et al., 2015), its credibility (Kabundi and Mlachila, 2018), its transparency and communication (Reid and Du Plessis, 2010). Following the global financial crisis (GFC), the independence of the South African Reserve Bank and its mandate as expressed in article 224 of the constitution¹ and the policy framework of the South African Reserve Bank have come under scrutiny

¹ Article 224 of the constitution states: The primary object of the South African Reserve Bank is to protect the value of the currency in the interest of balanced and sustainable economic growth in the Republic. The South African Reserve Bank, in pursuit of its primary object, must perform its functions independently and without fear, favour or prejudice, but there must be regular consultation between the Bank and the Cabinet member

(Padayachee, 2014), mainly as a response to continuing economic stagnation.

The main aim of this paper is to locate South African monetary policy in the context of the economic structure in which it has to operate. The main argument is that to understand monetary policy and to evaluate the policy regime, one has to understand the constraints a central bank faces. This is particularly true after the GFC, when monetary policy had to confront an unprecedented international shock and a structurally weakening national economy. This will be more so after the COVID-19 crisis, when monetary policy will have to contend with a critical fiscal position and possible continuing economic stagnation.

In the next section we review the evolution of the SARB's monetary policy framework and its policy rule. We then review three underlying structural constraints that affect monetary policy making, i.e., the external environment, long-term growth and the fiscal balance. The last section concludes by emphasising the importance of considering inflation targeting as a robust policy framework that has demonstrated the ability to adapt and take on new roles and new instruments while maintaining a strong long-term stability anchor.

2. South African monetary policy: a brief review

The monetary policy consensus of the last 30 years sees short-term business cycle management inside a framework of strong long-term anchors of monetary and fiscal stability (Woodford, 2003). The ability to operate short-run countercyclical policies is stronger when the long-term objectives are also strongly defined. Operationally this means:

- an emphasis on central banks institutional independence, to minimise the influence of short-run political pressures, and build credibility by the pursuit of long-term price stability (Fischer et al., 1994);
- a clear policy framework, captured by well-defined intermediate policy objectives and procedures, which allow the central bank "constrained discretion" to react optimally to the economic cycle while maintaining a strong nominal anchor (Bernanke and Mishkin, 1997)
- transparent policy making, implemented through publication and distribution of the information set used in the decision-making process (inflation forecasts, modelling strategies, assumptions) and a clear demonstration of accountability (publication of minutes, regular appearance before parliamentary committees and regular press conferences)(Geraats, 2002)

This consensus is the motivation behind the constitutional provisions that guarantee the SARB's independence and define its long-term objectives and it is the rationale for the adoption of inflation targeting.

This policy framework is based on the acknowledgement that monetary policy in the long run

responsible for national financial matters

can only influence nominal variables such as inflation and the exchange rate. In the longer term, monetary policy cannot increase the average level or the growth rate of real variables such as gross domestic product (GDP) and employment. It is therefore appropriate for monetary policy to define a long-term desired inflation level as an expression of what monetary policy can and should achieve. Inflation targeting is the technical expression of the recognition of the limits of monetary policy (Svensson, 2010)².

Monetary policy can have an effect on temporary deviations of real quantities from their long-term trends. The weight monetary policy gives to its temporary real effects defines the monetary policy framework. A policy of strict inflation targeting would focus only in controlling inflation at the shortest possible horizon. In an open economy, this would mean that the policy would concentrate on the variables which most directly affect inflation, almost exclusively the exchange rate. This will stabilise inflation at the cost of a highly variable interest rate and real variables .

A correct consideration of the negative welfare effects of real fluctuations requires instead that monetary policy takes a longer view of its role, by exchanging in the short-run an increase in inflation variability for a reduction in real variability. A policy of flexible inflation targeting takes a more gradual approach to monetary policy, aiming to achieve the inflation target at a longer horizon that is technically possible (two to three years). The convergence of a large number of central banks towards this policy framework and the persistence of the framework even after the GFC show that it provides the best available combination of flexibility around a well defined objective based on sound general understanding of how the economy functions.

The basic framework to interpret monetary policy can be represented by a standard New Keynesian model, where inflation and output processes are driven by expectations about the future path of the economy and by its underlying structural trends. This reflects a monopolistic competitive market structure in goods and labour markets together with assumptions of price and wage rigidities. The basic structure can be summarised by the following four equations system in deviations from exogenous trends.

- The **aggregate demand** equation is a standard forward demand equation where the monetary instrument enters in the equation in deviation from a time varying natural rate of interest.

$$y_t = E_t y_{t+1} - a_2(i_t - i_t^n) + a_3 s_t + \varepsilon_t \quad (1)$$

- The **Phillips curve** describes the dynamic of inflation. .

$$\pi_t = b_1 E_t \pi_{t+1} + b_2 y_t + \eta_t \quad (2)$$

² This view of monetary policy does not exclude that monetary policy can have long-term consequences on the real economy, (see for example Jordà et al. (2020)) but rather that the best that monetary policy can do to promote growth is to maintain a stable monetary environment. We discuss this debate in section 4 of the paper

- The **nominal exchange rate** is a standard Uncovered Interest Parity condition augmented by a time varying country risk premium.

$$E_t s_{t+1} - s_t = i_t - i_t^* - prem_t \quad (3)$$

- Finally, **monetary policy** is expressed by a standard policy rule, where policy responds to deviation of inflation from a target and deviation of output from its long-term trend, with a parameter α_1 indicating a preference for smoothness.

$$i_t = \alpha_1 i_{t-1} + (1 - \alpha_1) [i_t^n + \phi_\pi (E_t \pi_{t+1} - \pi^*) + \phi_y y_t] \quad (4)$$

In this framework, the formulation of monetary policy is an essential part in determining the stability of the system. For this reason the literature has concentrated on estimating policy reaction functions like equation (4) and evaluating its changes through the years. Aron and Muellbauer (2002) were the first to analyse South African monetary policy using a Taylor rule specification, although they showed that the latter was not very suitable for periods dominated by exchange rate management policies and financial repression. The Taylor rule approach has become more popular in evaluating monetary policy after democratization, financial liberalisation and the adoption of inflation targeting. Ortiz and Sturzenegger (2007) use a dynamic stochastic general equilibrium model to estimate the SARB policy rule, showing that the SARB anti-inflation stance was somewhat moderated by a greater weight on output than what is typically found in inflation targeting central banks. Klein (2012) confirms this result, by investigating the dynamics of the implicit inflation target since the adoption of inflation targeting. He finds that the implicit inflation target tended to drift towards the upper level of the target band (6%), implying that the SARB had relatively high tolerance for inflation, especially after the outbreak of the GFC. Naraidoo and Paya (2012) explain these results by using a non-linear specification of equation (4) that shows significant policy inertia when when inflation is inside the target range.

Coco and Viegi (2020) review these results by considering the underlying change in potential output and natural interest rate. The regression results in Table (1) show that monetary policy has always maintained a strong inflation stabilisation stance with a Taylor coefficient (ϕ_π in equation (4)) consistently above one.

The results also show that, after the GFC, the SARB has followed the downward trend in the natural interest rate which has diminished the policy focus on the cyclical output variations. In fact, the output gap coefficient ϕ_y is insignificant for the period 2010-2019 and the policy rate reacts one-to-one to changes in the natural rate.³

³ The estimation in Table 1 uses ex-post data, using the SARB estimation of output gap and of the natural rate of interest. Using real time data would probably produce different results (Alton, 2018). For this reason we interpret the lack of response to the output gap after the GFC as indicating an uncertainty on the natural rate

Table 1: SARB reaction function 2000-2019

Variable	Sample		
	2000-2018	2000-2009	2010-2018
Constant	0.880	1.159	-1.093
Neutral real interest rate	0.428	0.566	1.122
Lag interest rate	0.665	0.547	0.808
Inflation	0.390	0.562	0.280
Output gap	0.232	0.340	-0.018
Taylor Coefficient	1.164	1.240	1.462
R-squared	0.976	0.966	0.954
Akaike info criterion	0.895	1.053	-0.424

This can reflect a change in preferences or an increase in uncertainty about the output gap estimates (Orphanides, 2002). This shows the main problem in the practical implementation of this approach to monetary policy. The history of the world economy in the year after the GFC has shown that a correct institutional environment, a correct application of policy rules and a transparent and credible policy communication are necessary but not sufficient conditions to provide macroeconomic stability. Three further elements need to be considered:

- the external environment and its effect on the country's access to international financial and real markets;
- the economy's potential growth and the evolution of the natural real interest rate; and
- the country's fiscal balance and its effect on long-term private sector expectations.

Formulating monetary policy, i.e. stabilising the economic cycle, requires paying close attention to these critical aspects of the economy's evolution. In what follows we will review each of these aspects.

3. Monetary policy and the external constraint

3.1 The external environment

South Africa is a small open economy with most of its macroeconomic dynamics conditioned by external factors over which it has little or no control. The evolution of the international economy is, therefore, the backdrop of national macroeconomic policies.

What are the expectations for the near future of the world economy? The main characteristic is uncertainty. Figures (1a) and (2a) plot the nominal interest rate and inflation rate for the United

estimation and of the output gap, rather than a more "hawkish" monetary policy.

States (US) and the euro area, respectively. The combination of the evolution of expected nominal interest rate and inflation expectations gives the evolution of the real interest rates for the two economic blocks. The figures also include the projections for the two variables as derived by indexed swaps at various horizons that span 30 years into the future. While any markets beyond 10 years are rather thin, and therefore not very informative, they do provide an indication, at least, of the level that markets expect the equilibrium to be.

In the US the interest rate is expected to remain around 1% for the foreseeable future, an expectation reinforced by the Average Inflation Targeting framework adopted by the Federal Reserve, as announced by Chair Powell in August 2020. This change in strategy and the overall effect of the COVID-19 crisis has clearly solidified the expectations that low for long policies will continue. This has not affected inflation expectations, which remain well anchored at the 2% target. The combination of these two observations clearly indicates long-term market expectations of a negative real interest rate for the US.

The situation is even more striking for the euro area, where the nominal policy rates are expected to be negative for the next 10 years and thereafter hover around zero. But as markets expect inflation to climb up towards 2%, they also expect very negative real interest rates, at roughly -2% , for a protracted period of time.

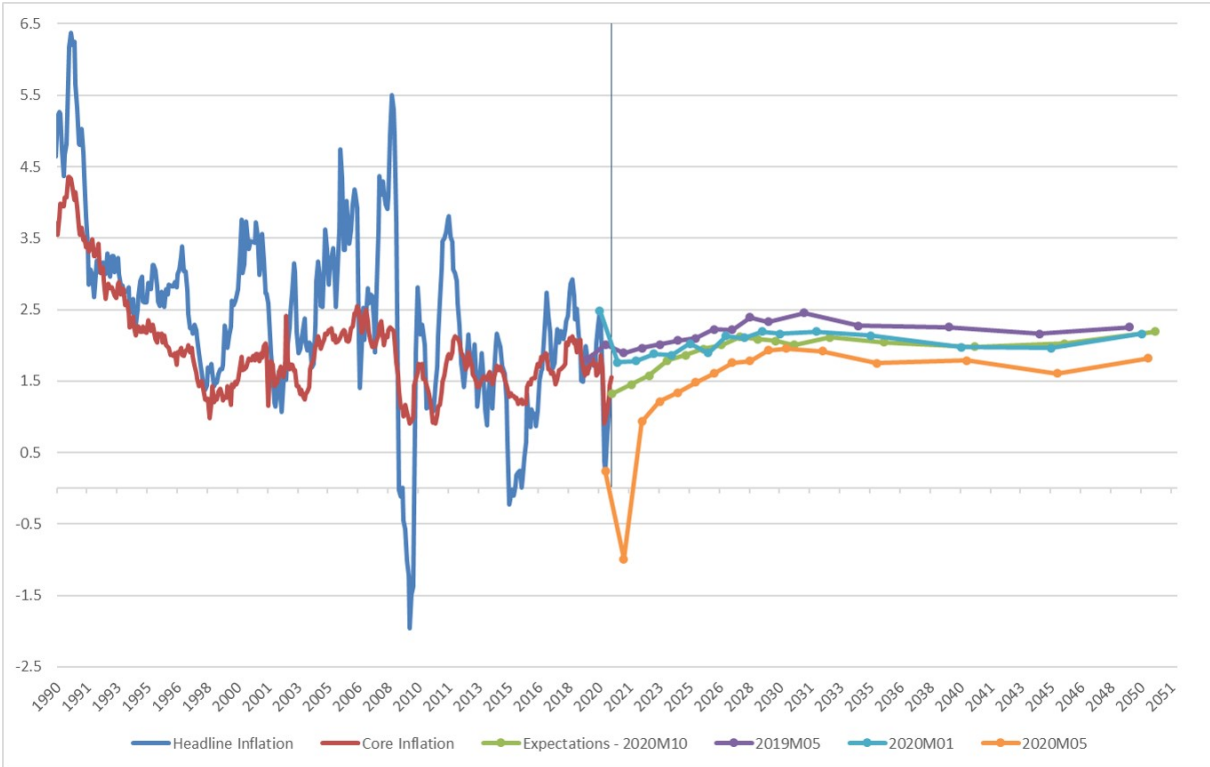
What drives these long-term expectations? One useful way to organise our thoughts is to use the basic linear risk-free real rate definition (with lognormal consumption growth and power utility), where the rate is related to the growth of consumption and its volatility, i.e. :

$$r^f = \delta + \gamma E_x(\Delta \ln c_{t+1}) - \frac{\gamma}{2} \sigma_t^2(\Delta \ln c_{t+1}) \quad (5)$$

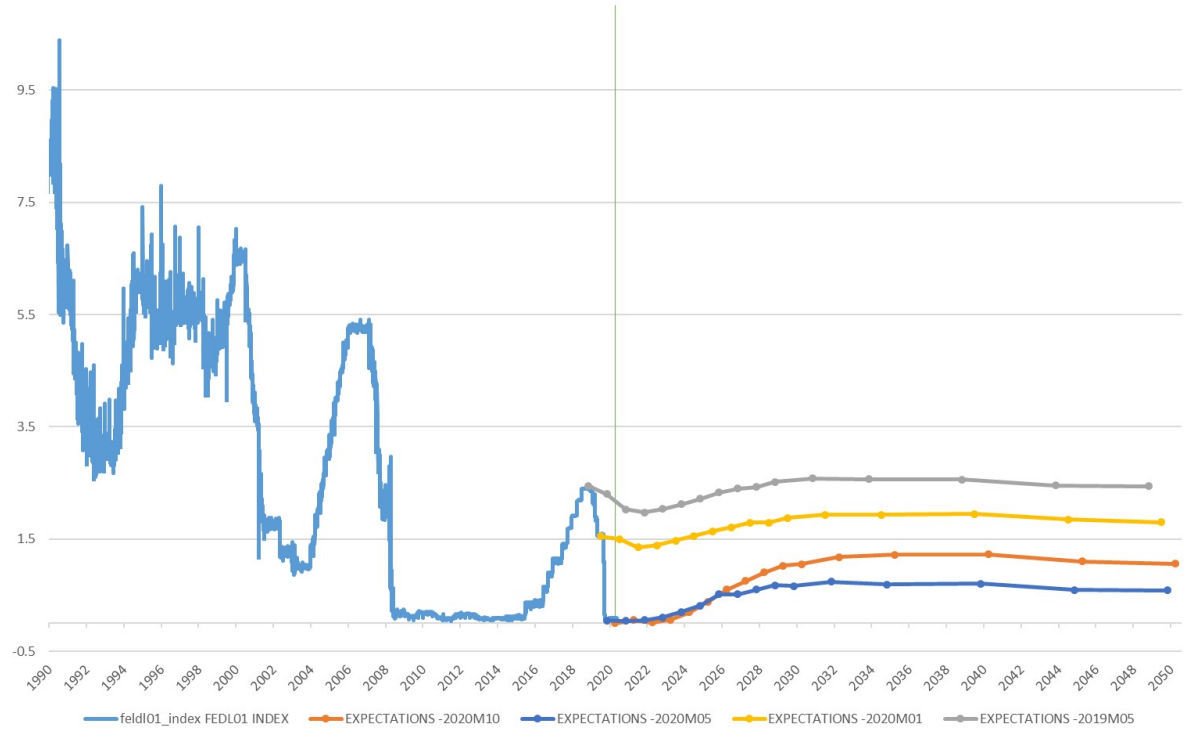
The risk free rate is driven by the discount rate (δ), the expectations of future consumption growth ($\Delta \ln c_{t+1}$) and the uncertainty around future growth ($\frac{\gamma}{2} \sigma_t^2(\Delta \ln c_{t+1})$) which determines the level of precautionary savings. A persistent negative real rate (when inflation expectations are anchored to the target) indicates long-term pessimism of a country's growth prospects matched by significant uncertainty. There is a wide and increasing literature discussing the source of these negative real rates, starting from the "secular stagnation hypothesis" of Summers (2015). Each contribution stresses one of the elements described by equation (5). For example, Farhi and Gourio (2018) show the importance of increasing macroeconomic risks and the reduction in productivity induced by an increase in concentration. While the debate is ongoing, the implications for a small open economy are clear:

- there is no expectation that developed economies will regain a stable economic growth path in the near future;

Figure 1: US long term inflation and nominal policy rate expectations

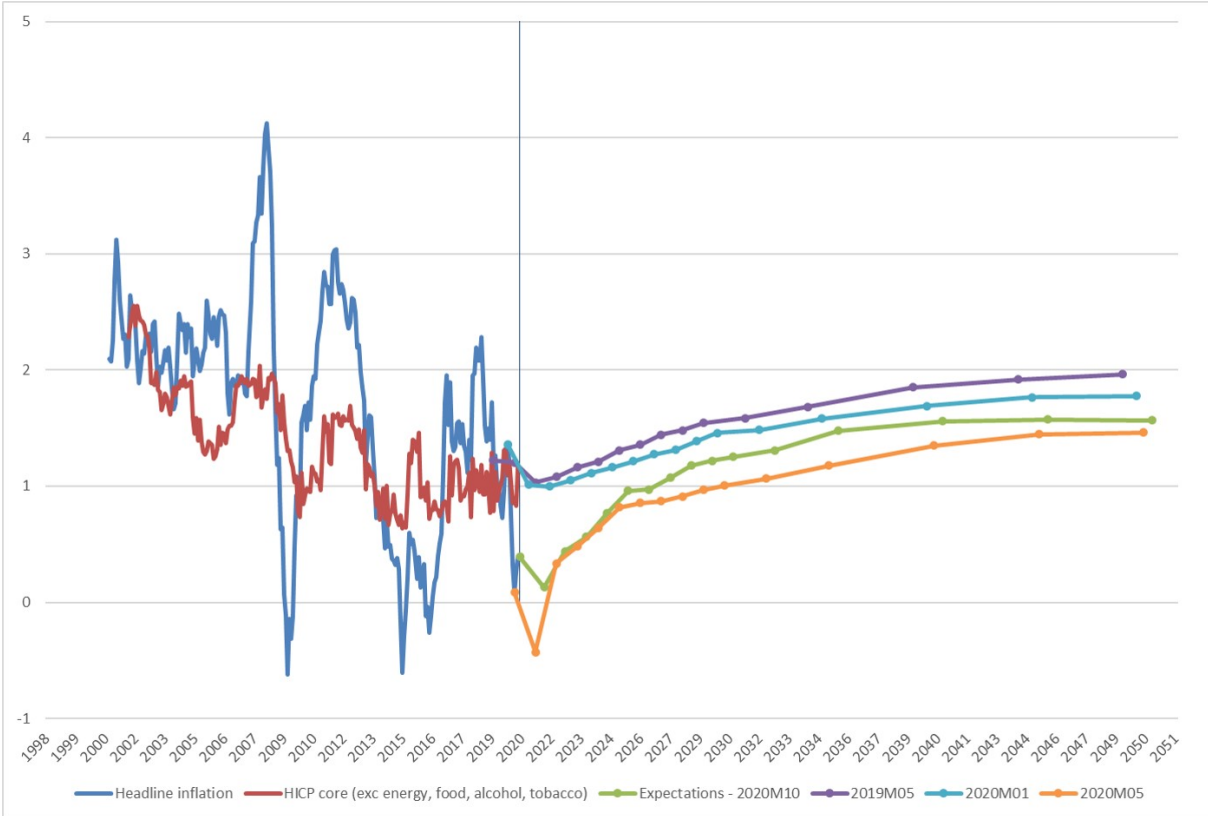


(a) US inflation expectations (derived from inflation zero-coupon swaps of different terms - 1 to 30 years - which provide information on market expectations of average yearly inflation over the contract term)

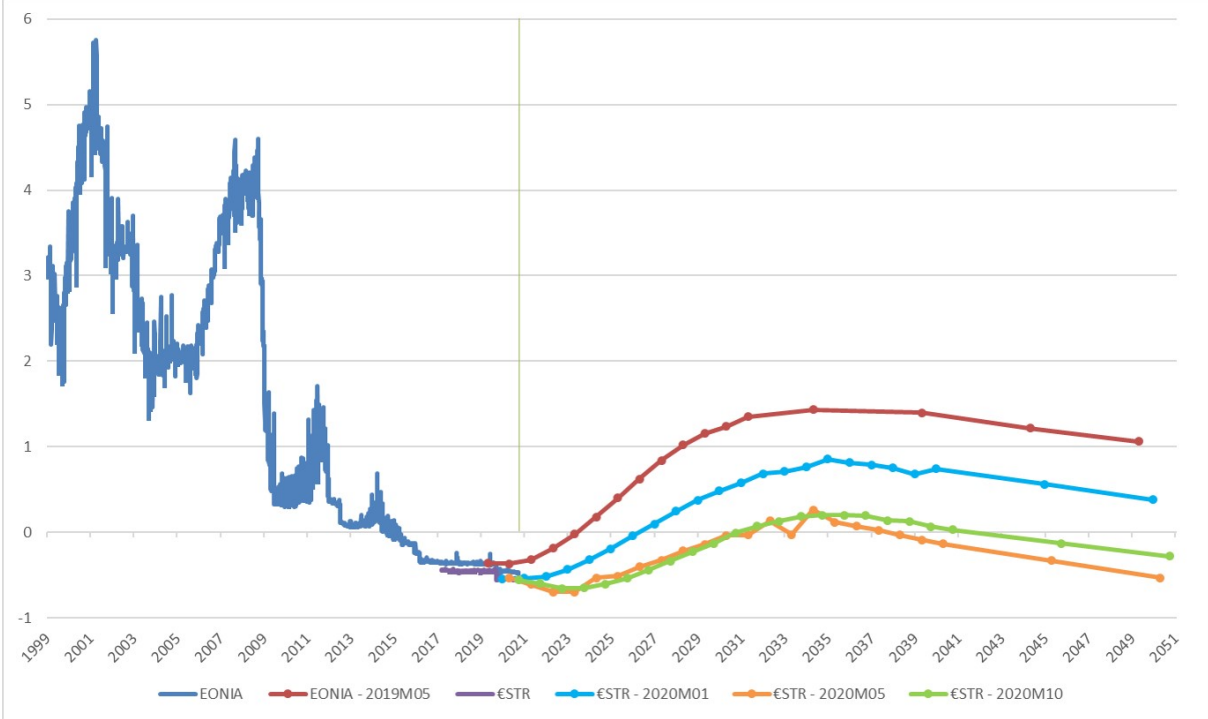


(b) US policy rate expectations (derived from Federal Funds Rate zero-coupon Overnight Indexed Swaps of different terms - 1 to 30 years - which provide information on market expectations of the compounded overnight Federal Funds Rate over the contract term)

Figure 2: EU long term inflation and nominal policy rate expectations



(a) EU inflation expectations (derived from inflation zero-coupon swaps of different terms - 1 to 30 years - which provide information on market expectations of average yearly inflation over the contract term)



(b) EU policy rate expectations (derived from zero-coupon swaps of different terms - 1 to 30 years - of overnight benchmark market rate published by the ECB. In October 2019, the Euro Overnight Index Average - EONIA - was replaced by ESTR. In practice, EONIA is now fixed at ESTR + 8,5bps)

- this implies that the current combination of zero or close to zero monetary policy rate and the use of central bank balance sheet policies is the new normal of monetary policy, at least in developed countries;
- these two facts imply that international financial markets will continue to be characterised by excessive sensitivity to news, bubbles and rapid flow reversal. This will be the main source of transmission of international economic conditions to the national economy, together with its effect on commodity prices;
- South Africa will continue to experience volatility of the exchange rate and of the country risk premium, with significant macroeconomic consequences, amplified by the structural weakness of the country.

In practical terms these observations mean that the country risk premium will continue to fluctuate sharply, that capital flows will overheat or suddenly contract the economy and that monetary policy will be strongly advised to build buffer stocks, macro-prudential policies and other balance sheet instruments to protect the development of the national economy (Rey, 2015)

3.2 Risk premium as external interface

South Africa is a peculiar emerging country in that, compared to countries at the same stage of development, it does not suffer from the original sin of past debt default or hyperinflation (Calvo and Reinhart, 2002). This has favoured the development of a large and well connected financial market which provides the country with relatively easy access to international capital markets. Until now, the South African government could always borrow in domestic currency and at long maturity, thus reducing the effect of short-run fluctuations on the country's balance sheet. These characteristics have favoured a consumption led growth strategy that has relied on international capital inflows to finance the economic expansion of the country. The current account has persistently remained negative, A consumption led growth model has two consequences relevant for monetary policy:

- If no other instrument targets the external balance, monetary policy is constrained by the need to keep open access to international capital in order to finance a persistent current account deficit
- The economy becomes more sensitive to international financial flow direction, with higher volatility of exchange rate.

This strong financial link between South Africa and the global economy is the first channel of transmission of global shocks to the South African economy. The variable that most captures this relationship is the country's risk premium, which is the excess return that the country has to provide to borrow from abroad. The risk analysis of the risk premium and its determinants provide the following headlines:

- South Africa is particularly sensitive to world "risk cycles" (Hassan et al., 2015; Gabaix and Maggiori, 2015)
- While government debt determines the trend level of the risk premium (as shown later), external factors determine its fluctuations, which can be large and unpredictable.
- Given the expected international environment of low growth, low global safe rates, and pervasive uncertainty, the risk premium is one of the most dangerous threat to the country's macroeconomic stability

The first point is well illustrated by Hassan et al. (2015). They analyse the emerging market exchange rates response to the so called taper tantrum triggered by a speech on 22 May 2013 to the United States Congress by Ben Bernanke, then Federal Reserve (Fed) chairman, signalling a gradual reduction in the monthly volume of Fed stimulus. Because the announcement was a surprise to the global market, it represented an "natural experiment" to evaluate the external vulnerability of countries and its determinants.

Figure (3) shows the macro variables used in the analysis and their correlation with the exchange rate response to the taper tantrum. The strongest correlates are the level of foreign exchange reserves, the current account balance in the previous years and the level of external debt.

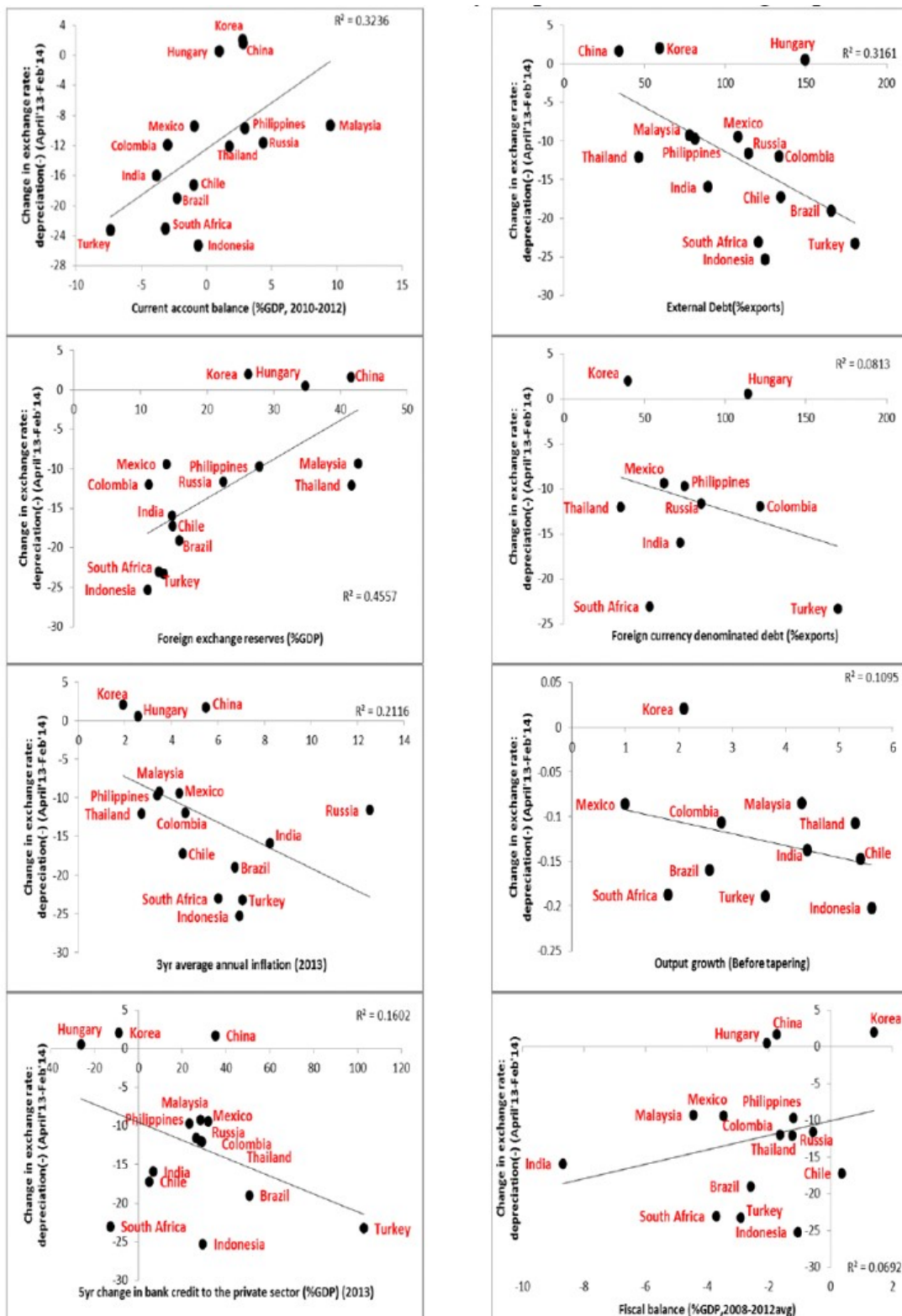
These results are confirmed by Abiad et al. (2015) who give a wider analysis of the determinants of resilience in emerging market economies. The first determinant of resilience is flexibility in policy instruments to respond to shocks, represented by inflation targeting and fiscal countercyclical measures. But the underlying determinants are the overall policy space, represented by low inflation, low public debt, current account surpluses, low external debt and high reserves. Low inflation and accumulation of reserves are also the most direct instruments to reduce speculative financial flows because they allow for the reduction of the interest rate differential with the US dollar thus reducing the currency speculative appeal and the cost of reserve accumulation.

Moreover, socio-economic conditions affect the long-run resilience of a country to external shocks. In particular, the level of inequality and the level of education influences a country's ability to respond to shocks by worsening the political economy trade-off (Alesina and Drazen, 1991) and reducing the country's ability to adapt to change (Aizenman et al., 2018).

South Africa is weak in all these dimensions: dependent on foreign capital, with low buffer stocks, high inequality, and high public debt. The COVID-19 crisis has accelerated these trends.

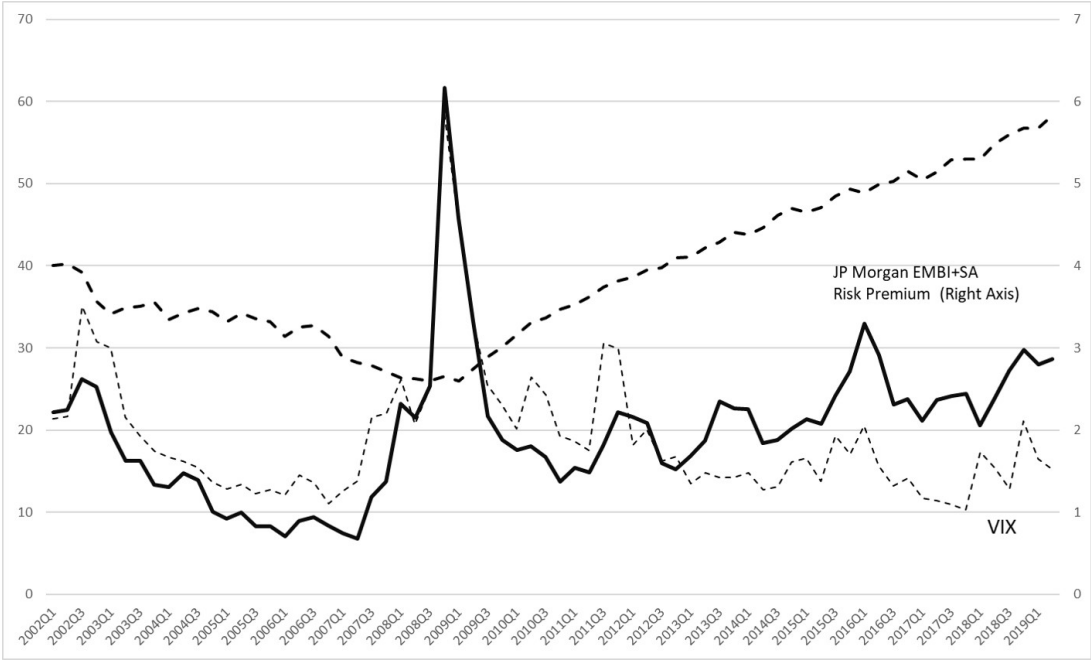
The relationship between the country risk premium and its determinants is well illustrated by Figure (4). The figure shows the level of South African government debt, the country risk premium, as measured by the JP Morgan EMBI+SA index, and the VIX as a proxy of global uncertainty, from 2000 to 2019.

Figure 3: Macro variables and currency depreciation during taper tantrum (source: Hassan et al. (2015))



The figure suggests that at least in the last 10 years, the risk premium of the country has followed a growing trend parallel to the growth of the stock of debt, but its fluctuations are strongly correlated with the ability of international financial intermediaries to absorb risk. Table (2) shows the evolution of the relationship between the country risk premium, the level of

Figure 4: Determinants of risk premium 2002-2019



government debt and the VIX during the inflation targeting period ⁴. We use a simple OLS with structural breaks identified with a sequential Bai-Perron test. The structural break is found to be just after the GFC, when government debt entered a growing trend.

Table 2: Determinants of South African risk premium (OLS with Bai-Perron tests of L+1 vs. L sequentially determined breaks)

Regressors	2002-2008		2009-2019	
	Coefficient	Prob.	Coefficient	Prob
Constant	-0.066	0.845	-1.143	0.001
Risk Premium (-1)	0.297	0.039	0.526	0.000
Government Debt	-0.017	0.104	0.036	0.000
VIX	0.089	0.000	0.032	0.000
Adjusted R-squared	0.906485			

To get better insight into the underlying causes of the changes in the risk premium, we ran a series of OLS regressions searching for other determinants, correlated with VIX and government debt, to provide a narrative behind the above correlations. These regressions are shown in Table (3). We found that debt-to-GDP ratio and foreign debt-to-GDP ratio variables explain changes in the risk premium over the sample considered. Using the dummy variable to control for the GFC, we found that using a debt variable alone allows us to explain 78.3% and 84.1% of risk premium movements. When the VIX index as a measure of global risk attitude is considered together with either of the debt variables, 90% of risk premium fluctuations

⁴ We analyse the sample starting from the beginning of 2002, as this is when the risk premium series has some non-negligible variability.

Table 3: Determinants of South African risk premium: OLS regression results

LHS variable - risk premium, EMBI+SA	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Govt debt, % of GDP	0.062*** (0.006)			0.071*** (0.004)					
Total foreign debt, % of GDP		0.052*** (0.004)			0.054*** (0.004)				
Primary balance, % of GDP			-0.192*** (0.058)						
Govt debt-to-GDP growth, year-on-year, pp						0.080*** (0.025)			
VIX			0.029*** (0.009)	0.060*** (0.006)	0.050*** (0.008)				
Primary balance *VIX			0.008*** (0.003)						
Commodities							-0.001 (0.006)		
Labour productivity							-0.067** (0.028)	-0.065** (0.027)	-0.046** (0.023)
Foreign growth							- 0.271*** (0.078)	- 0.283*** (0.065)	-0.037 (0.071)
Risk premium (-1)			0.461*** (0.080)						0.545*** (0.101)
GFC 2008Q1-2009Q4	1.377*** (0.199)	1.019*** (0.163)	0.011 (0.211)	1.113*** (0.131)	0.575*** (0.149)	0.619** (0.259)	-0.011 (0.317)	-0.049 (0.285)	0.055 (0.238)
GFC 2008Q4-2009Q1	3.053*** (0.342)	2.816*** (0.301)	0.924* (0.478)	1.474*** (0.268)	1.509*** (0.325)	3.029*** (0.493)	1.881*** (0.524)	1.899*** (0.516)	1.797*** (0.431)
Constant	-0.695** (0.271)	0.042 (0.162)	0.513** (0.222)	- 2.128*** (0.224)	- 0.830*** (0.196)	1.760*** (0.080)	2.927*** (0.299)	2.968*** (0.260)	1.045** (0.417)
Q3 dummy			-0.125 (0.133)						
Adjusted R-squared	0.783	0.841	0.762	0.909	0.900	0.530	0.582	0.588	0.713
Sample (adjusted)	2002Q1- 2019Q1	2004Q1- 2019Q1	2002Q1- 2019Q1	2002Q1- 2019Q1	2004Q1- 2019Q1	2002Q1- 2019Q1	2002Q1- 2019Q1	2002Q1- 2019Q1	2002Q1- 2019Q1
Observations (adjusted)	69	61	69	69	61	69	69	69	69
RMSE 2002-2019	0.406	0.355	0.532	0.255	0.279	0.585	0.544	0.544	0.614
RMSE 2010-2019	0.316	0.312	0.552	0.284	0.267	0.499	0.476	0.480	0.469

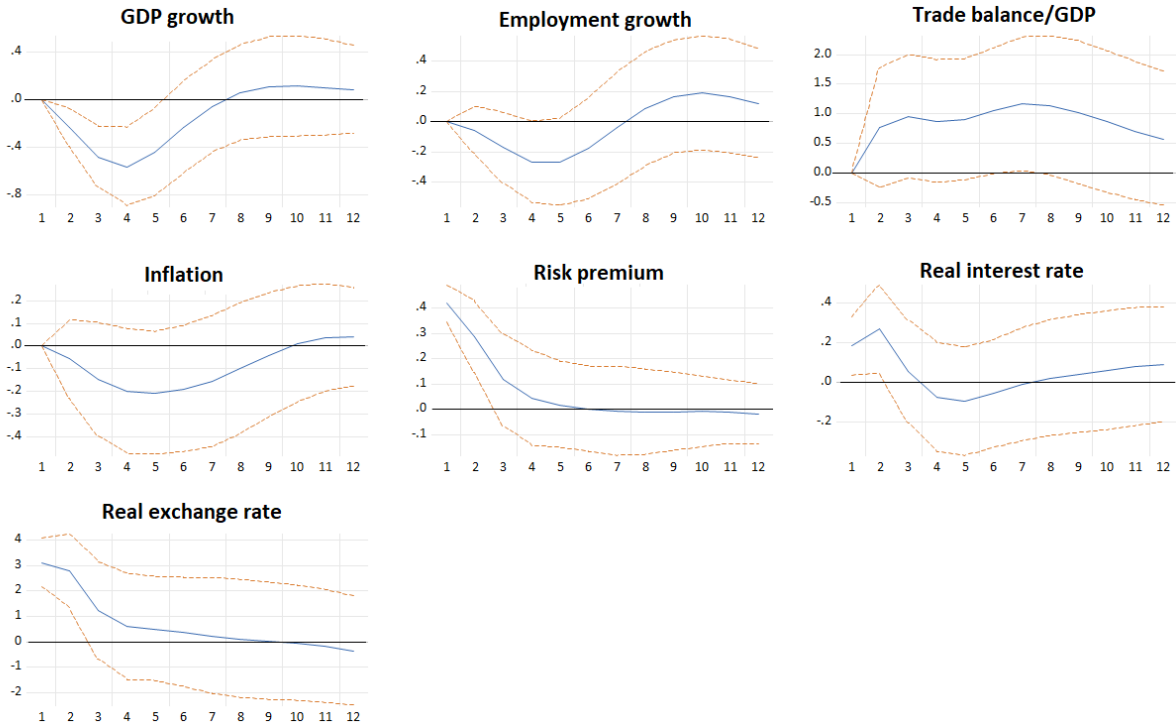
are accounted for, which is the highest adjusted R-squared coefficient obtained. Hence, this combination of factors that captures the international and domestic aspects of the country risk premium appears to provide a useful way towards a structural interpretation.

When both world commodity prices and productivity are accounted for, 54% of the country's risk premium movements are explained. We used foreign growth to control for the foreign demand conditions in these regression specifications. We found that only labour productivity and foreign growth are the significant explanatory variables in these specifications. Allowing for an autoregressive component in the regression reduces the significance of foreign growth with the negative effect of labour productivity still being significant. An autoregressive term improves the explanatory power of the regression with commodities and productivity by 13% - it reaches 71.3%. The best in-sample fit measured by the root mean squared error (RMSE) is gained by specification with the debt variable and the VIX index. Also the RMSE increases at least twice when the debt variable is not controlled for. This could indicate a case of omitted variable bias in equations (6)-(8) of Table 3, and emphasises the importance of employing debt series for the relevant country risk premium explanation in South Africa.

Risk premium has a significant effect on the country's economic dynamics and therefore on the conduct of monetary policy. Figure (5) shows that a positive risk premium shock has a contractionary effect on GDP growth that lasts for two years. Employment growth also drops signifi-

cantly. The effect of a positive risk premium shock on inflation is negative, but non-significant. Real interest rate and real exchange rate respond to the positive risk premium shock by a significant increase and by the exchange rate depreciation, respectively. Importantly, the key result of the contractionary effect on GDP growth, real exchange rate depreciation and the increase of real interest rate (significant or insignificant depending on the identification order) holds for all the alternative model specifications. We thus have some evidence of a pronounced financial channel in South Africa - financial conditions tightening, i.e. increased cost of borrowing, as a result of a positive risk premium shock.⁵

Figure 5: Impulse response functions to a positive risk premium shock in a SVAR



This significant macroeconomic effect of fluctuations of the risk premium and the experience of many developed central banks in using quantitative easing for controlling the long-term government bond yields suggests that South Africa monetary policy could use some form of quantitative easing to reduce the long-term interest rate and the interest cost of debt. The next section discusses quantitative easing in the context of a small open economy not at the zero lower bound of the policy rate.

⁵ We estimate a SVAR model using South African quarterly data on GDP growth, employment growth, trade balance to GDP ratio, inflation, country risk premium, real interest rate and real exchange rate. The series are taken from the QPM database for 2002Q1-2019Q2, and the GFC period is controlled for. Cholesky ordering is used to identify the risk premium shock; a country risk premium variable is placed after the slow-moving macroeconomic variables - GDP, employment, trade balance and inflation, - under the assumption that the country risk premium shock does not have an effect on macro variables on impact. At the same time it is assumed that an exogenous innovation to risk premium variable has a contemporaneous effect on the fast-moving financial variables - real interest rate and real exchange rate. For the robustness check we also consider alternative specifications, placing risk premium variable first and last in the VAR.

3.3 Is quantitative easing an instrument for external stability?

What is the role of monetary policy in dealing with external stability? In an inflation targeting framework, monetary policy targets internal objectives, inflation and output, while the external equilibrium is a product of a combination of long-term fiscal stability and institutional credibility. In an inflation targeting framework there is little room for dealing with external fluctuations driven by global shocks affecting international financial markets.

The COVID-19 crisis has seen central banks in almost every emerging country experimenting with the use of the central bank balance sheet as an extra instrument deployed rapidly to deal with a large external shock that was putting pressure on domestic bond markets and hampering efforts to deal with the pandemic. In March 2020, the SARB announced the purchase of government securities in the secondary market, across the entire yield curve, to ease liquidity strains observed in funding markets. The operation successfully overcame the short-run spike in the country’s risk premium which rapidly returned to or below the level before the COVID-19 crisis, as the historically large monetary and fiscal response around the world eased market fears.

Figure 6: Determinants of nominal long-term rates in small open economy

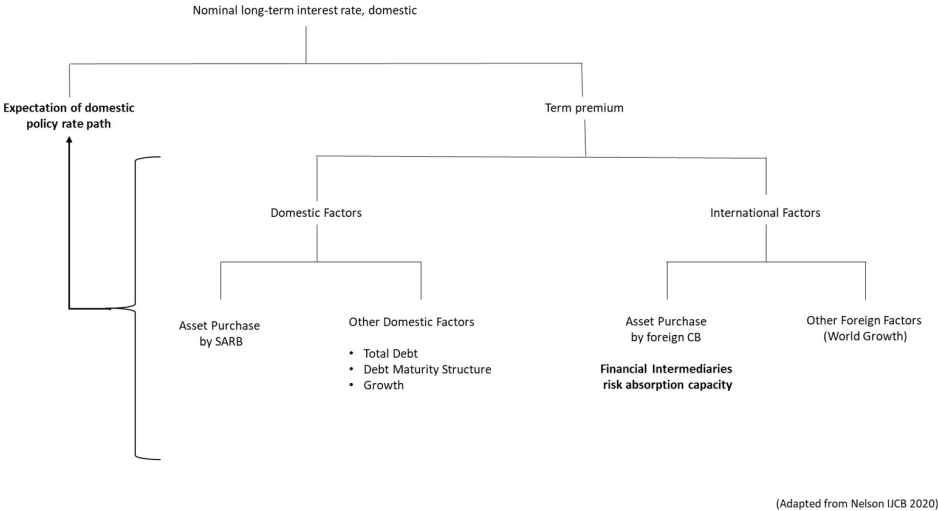


Figure (6) illustrates how the SARB affects the long-term nominal interest rate and how its actions interact with other factors influencing long-term rates. The first way the SARB influences the long-term interest rate is via the private market expectations of the future path of the policy rate. The SARB tries to control this direct influence by maintaining a predictable policy path and by controlling inflation expectations.

Beyond the SARB policy rate, the term premium is influenced by domestic and international factors illustrated on the right side of Figure (6). Domestically, the main determinants are expected growth, the stock of government debt and its maturity structure. Internationally, the main determinants are world growth, foreign central bank policies and financial intermediaries’ risk absorption capacity.

The SARB can certainly use its own balance sheet to control the long-term interest rate. Many South African commentators have called for "yield curve management" to reduce the cost of government debt and reduce the cost of long-term investment. The problem of trying to use quantitative easing to deal with the trend growth in long-term nominal rates is that this policy will affect the expectations of the domestic policy path, the left side of figure (6), pushing the nominal interest rate in the opposite direction than desired by inducing higher inflation expectations. While this is the objective of quantitative easing in countries in a liquidity trap, it would not solve the South African problem by steering the country towards higher inflation expectations and higher inflation. It is critical for the success of any new monetary policy intervention that it should not affect the long-term objective of monetary stability.

On the other hand, quantitative easing has proved to be useful in smoothing external shocks affecting the domestic bond market. Because the shock is transitory, the intervention does not signal a change in long-term policy objectives and does not affect inflation expectations. It is also a policy fully included in the SARB mandate. The advantage of using quantitative easing to deal with external shocks is that:

- it is relatively easy to deploy;
- it does not try to influence the exchange rate by using limited reserves but stabilises a domestic market using domestic currency;
- it is reversible once the shock has passed and the market stabilises, and it can be used symmetrically for positive and negative risk shocks; and
- together with a credible long-term plan of debt reduction (which induces a trend increase in South African bond prices), it is without significant risk for the SARB balance sheet as the trend price of government bond would be increasing with the reduction in government debt.

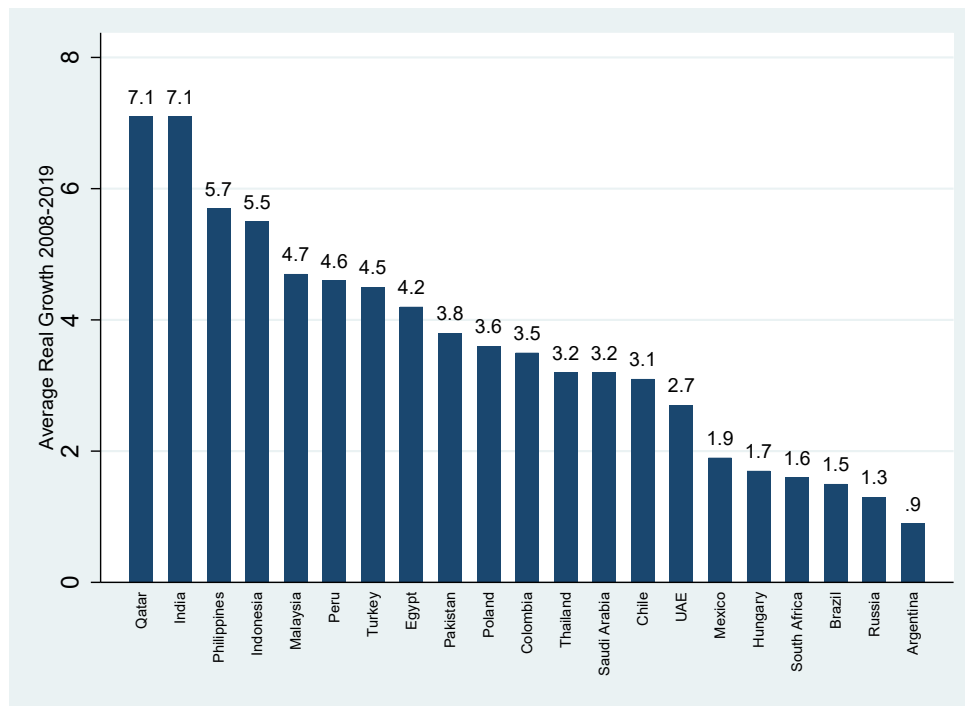
It is critical that quantitative easing is not seen as an instrument of yield control. That would carry a significant risk of distorting the central bank objectives with a consequent loss of the long-term anchor of prices. Quantitative easing can be considered only as an instrument to stabilise the fluctuation of the risk premium. In this context balance sheet use should operate symmetrically, i.e. quantitative easing when capital outflows dry liquidity in the bond market and quantitative tightening - i.e., selling government bonds - when there are large capital inflows in the bond market.

4. Monetary policy and economic growth

The importance of the external environment in determining the country's macroeconomic dynamics should not make one forget that the first constraint to monetary policy in South Africa is the persistent low economic growth, particularly in the years since the GFC. Figure (7) shows the average growth in the 10 years after the GFC for countries in the MSCI Emerging Market

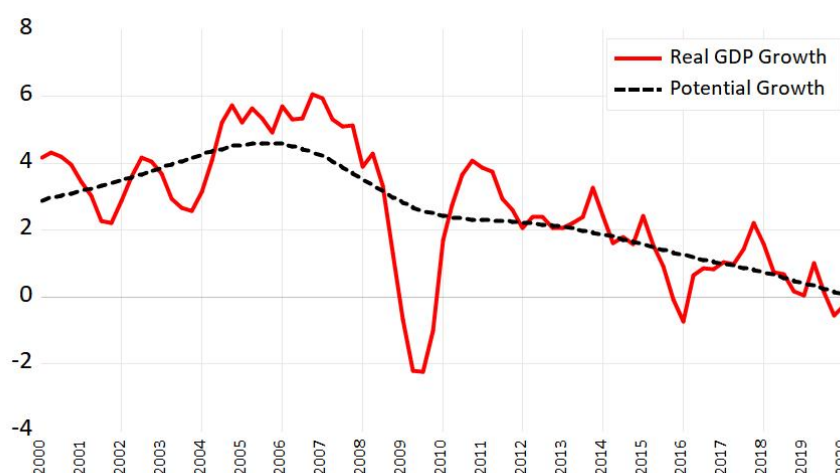
Index. South Africa had an average real growth of 1.6%, with only Argentina, Russia and Brazil having a worse performance in the period.

Figure 7: Average Real Growth 2008-2019 - MSCI Emerging Markets Index (source: IMF WEO Database 2020)



This growth performance has been driven by a decline in the potential output of the economy, shown in Figure (8), which we estimate to be below 1% at the beginning of 2020⁶ and it is driven by a level of investment barely enough to cover the depreciation of capital.

Figure 8: Real growth and potential output (source: authors calculation on SARB data)



This downward trend in potential output puts two kinds of pressure on monetary policy. Firstly, the uncertainty in potential output increases short-run volatility and policy uncertainty, inducing

⁶ see also, for example, Anvari et al. (2014) and Fedderke and Mengisteab (2017)

delayed response or difficult targeting⁷. Secondly, it reignites a long standing discussion about the long run effect of monetary policy and the possibility that monetary policy could play a more direct "developmental" role (Epstein and Yeldan, 2008).

4.1 Is monetary policy responsible?

The first question that arises from the country's low growth after 2008 is whether monetary policy is responsible for this outcome and whether it could play a significant role in pushing the country out of the current stagnation trap. Stiglitz (2008) notoriously argued that inflation targeting is not the right policy framework to deal with large external shocks and that it has imposed more restrictive conditions than would have been necessary if the policy was inactive. This line of reasoning has been followed by many South African commentators. For example Kantor (2017) has argued that "the insistence on inflation targeting regardless of the causes of inflation has made South African monetary policy highly procyclical" (p.34), inducing a credit bubble during the expansion phase and worsening the recession after the GFC. Match this procyclicality with a strong hysteresis effect, and short-run over-reaction becomes long run stagnation in capital accumulation and growth (Jordà et al., 2020). The argument is twofold: it is an issue of determining, firstly, if monetary policy has been pro-cyclical during the inflation targeting period, and, secondly, if any other monetary policy framework would have done better.

The evidence seems not to support the idea that monetary policy in South Africa is pro-cyclical, or that the average real interest rate after the adoption of inflation targeting has been on average higher than in other regimes. Du Plessis et al. (2007) show the stabilising effect that monetary policy played before the GFC. Alton (2018) finds that monetary policy is strongly countercyclical only when real time estimates of the output gap are considered. Considering instead the ex-post realisation, monetary policy was strongly procyclical, especially during the expansion phase between 2000 and 2007. The reason for this difference is not the source of shocks but rather the uncertainty around the trend growth rate of the economy (Orphanides (2002). In the period leading up to the financial crisis, the acceleration in growth was interpreted as a structural improvement, not a cyclical boom. When inflation accelerated faster than expected, real interest rate become negative, reinforcing the cycle. After the GFC interest rates were cut rapidly to support growth and then kept low as growth continued to disappoint, assuming that the growth slowdown was largely cyclical. Instead most of the growth slowdown has been attributed to a slowdown in potential output, thus making monetary policy inflationary.

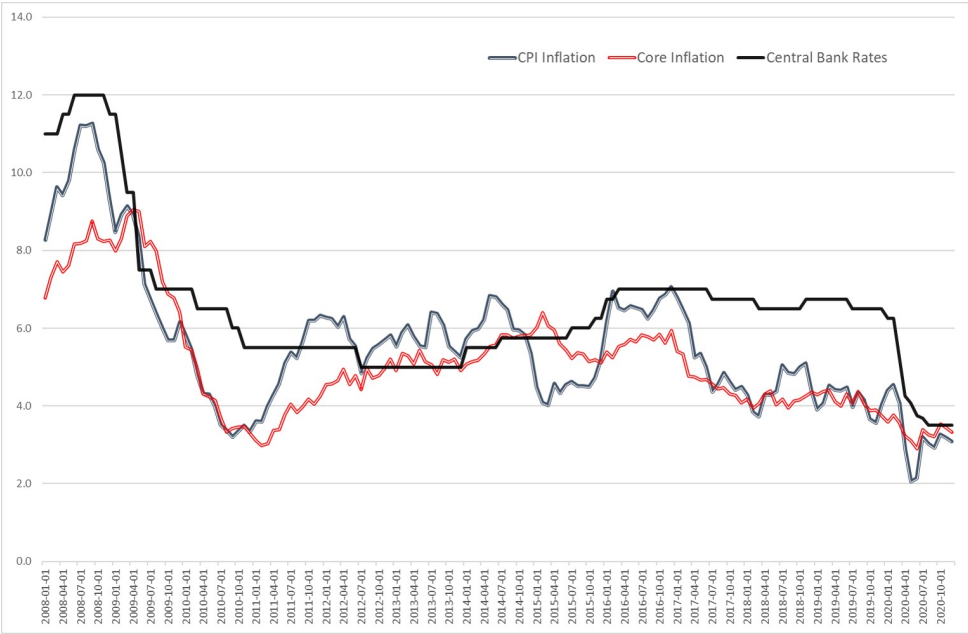
Loewald et al. (2020) present a strong defence of the SARB policy after the GFC, focusing on the structural nature of the South African crisis. They point out that monetary and fiscal policy in South Africa has been expansionary for 10 years after the crisis but that this could not stop the negative trend in potential output and the country natural rate .

Looking at the path of inflation and the policy rate in Figure (9) for the post-crisis period, it is

⁷ Orphanides and Williams (2002) and Taylor and Williams (2010)

quite clear that monetary policy has maintained an expansionary stance at least until 2016. In 2016, growing inflationary pressures and an explicit aim at the middle of the target band at 4.5% convinced the SARB to raise the policy rate, but the change was not long lasting (Coco and Viegi, 2020).

Figure 9: Inflation and policy rate in South Africa 2008-2020 (source: SARB)



In fact, the most salient characteristic of monetary policy, especially after 2016, is how little the SARB has used the policy rate, preferring to wait for better information and using more active communication tools to control private sector expectations. This is a reflection of the uncertainty faced about the underlying real trends.

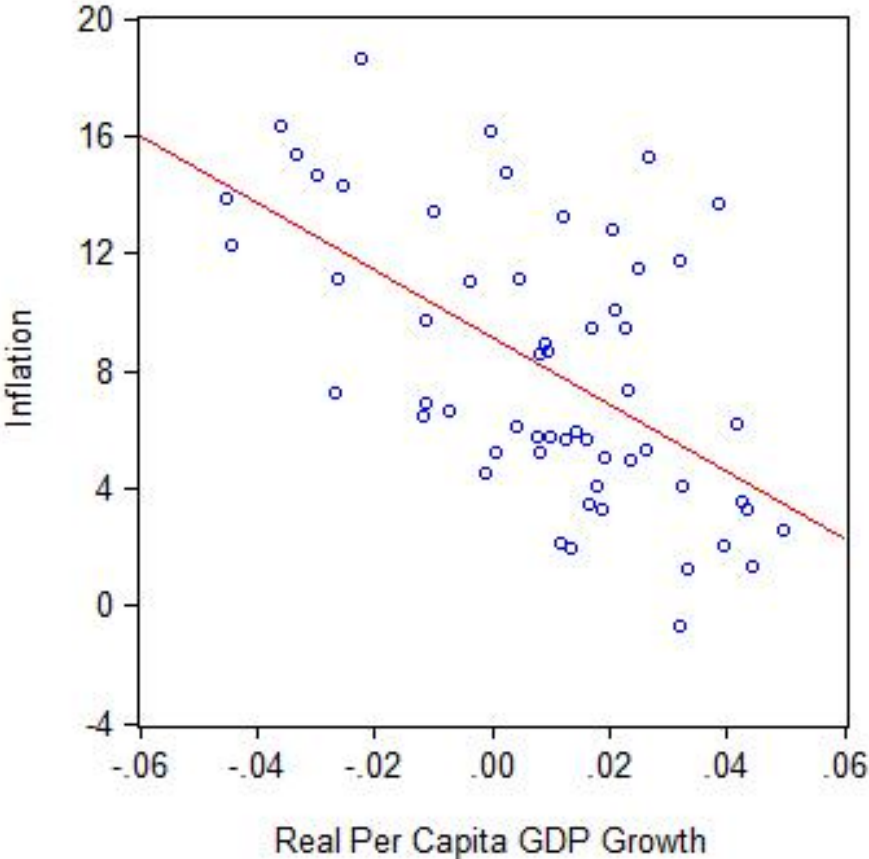
4.2 What can Monetary Policy do?

A more general question is to what extent monetary policy can be used to target real growth. According to the proponents of growth targeting (Epstein, 2015), by employing a more expansionary monetary policy or using a higher inflation target, or by using the central bank as a "creditor of last resort" for emerging enterprises, monetary policy could permanently affect the growth path of the economy with an insignificant price of higher inflation. This argument focuses the attention on the relationship between inflation and growth that has been on the research agenda for a long time, starting from Sidrauski's *Journal of Political Economy* paper "Inflation and economic growth" (Sidrauski, 1967) where the author elaborated on the Tobin hypothesis that inflation would induce faster capital accumulation by penalising money savings.

The question is ultimately an empirical one, i.e., if it is possible to find a positive long run causal relation between monetary policy stance and economic growth. There are a few papers looking at the inflation-growth relationship in South Africa. Mariotti (2002) uses cointegration techniques to investigate (among other things) the impact of different levels of inflation on long run economic growth. Her results suggest that the impact of inflation on growth is in

fact negative at levels over 1%. Similar results are obtained by Hodge (2006) who uses OLS regressions to show that higher inflation is associated with lower growth in South Africa over the long and short-term. The negative relationship is clearly evident in the data, as shown in Figure (10).

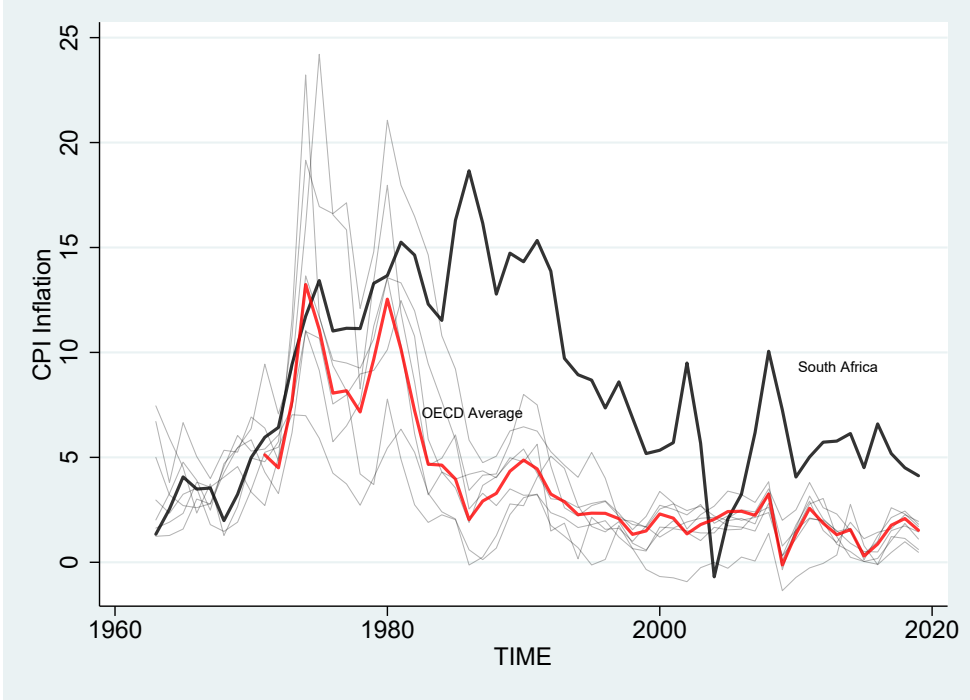
Figure 10: Inflation and growth in South Africa 1960-2018



Neither cointegration nor OLS is an identification strategy of a causal relationship that can be used for policy purposes. In order to identify the role that monetary policy plays in the country’s long run growth we should find episodes where monetary policy was purposefully, or accidentally, used to promote growth and evaluate its impact. Unfortunately (or fortunately) South African monetary history does not provide a good test case for this hypothesis. Figure (11) compares the historical record of inflation in South Africa from 1960 to the present with the record of a sample of G7 countries. We can only use G7 countries as every other emerging country, from South Korea to Brazil, experiences inflation of several order of magnitude higher than South Africa, making the comparison meaningless. In fact, until the 1980’s inflation in South Africa was in line with that of any G7 country: moderate and increasing inflation was the combination of negative external supply shocks and limited policy response, as discussed in Orphanides (2002). The stagflation period in South Africa persisted during the 1980’s, when shocks become mainly internal and in many ways more dramatic than during the previous decade. The policy response was difficult given the dimension of the shock, but inflation was

never out of control and there is little evidence of a systematic expansionary bias in SARB policies. Not only was inflation never out of control, but South Africa's inflation peak was also lower than the peak inflation in almost any OECD country.

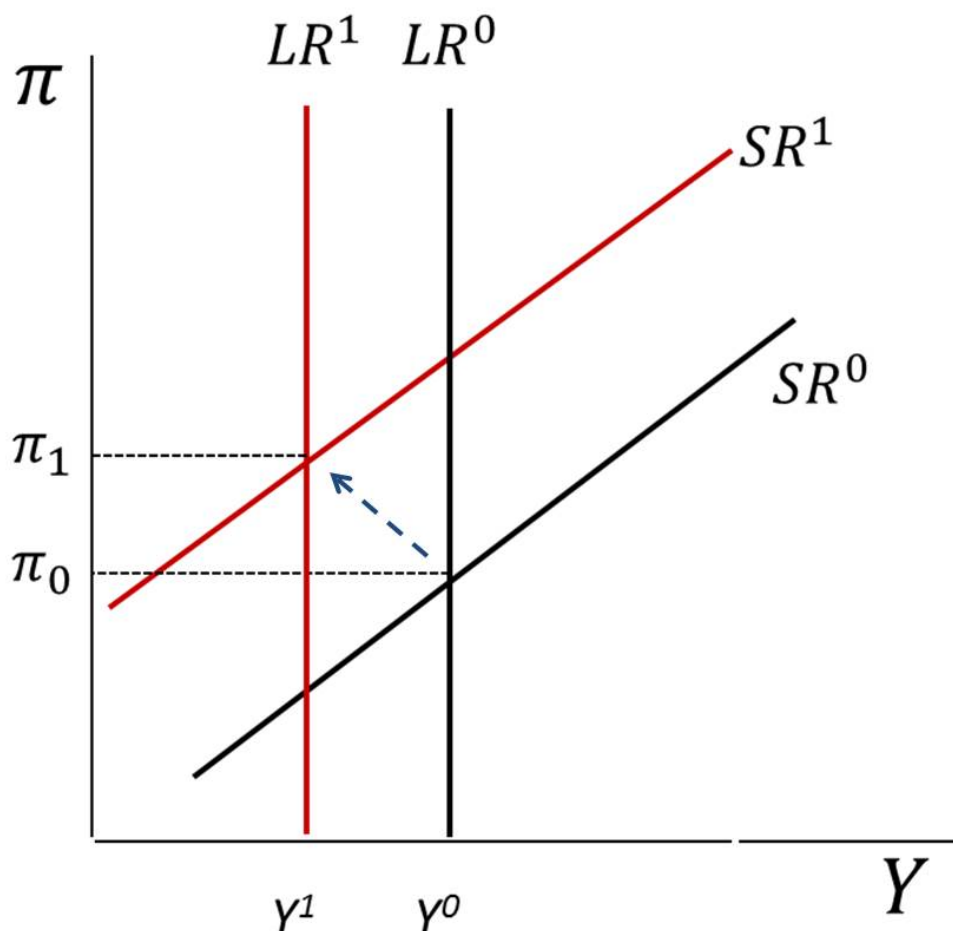
Figure 11: Inflation in South Africa and G7 countries 1960-2018 (source: OECD)



After South Africa democratisation in 1994, the SARB's main effort was to control inflationary pressures and inflation moves downward, stabilising around just below the upper band of the 6% inflation target. There are still a few shocks to contend with, and the aftermath of the GFC has seen an increasing pressure on the SARB to expand the economy beyond the mandate of price stability. But the Bank has largely resisted this pressure and monetary policy has been fairly orthodox across the whole sample, while fighting large supply and fiscal shocks. If monetary policy was never used autonomously to promote growth then South African aggregate data cannot be used to identify the relationship between voluntary inflationary policies and growth. An alternative approach is to extrapolate from a cross section of countries, as in the panel analysis of Barro (1995), Sarel (1996) and Khan and Ssnhadji (2001) or to analyse the history of countries that tried to use active monetary policy to promote growth, as in De Gregorio et al. (1992) and Dornbusch and Edwards (2007) for Latin America populist policies. In all this work, the relationship between inflation and growth is negative, generally for level of inflation higher than the South African experience.

What, then, is the source of the negative correlation between inflation and growth in South African data? The right response must be in the nature of the shocks and the policy response that followed. Actually, the results of cointegration between inflation and the level of income can be derived in a traditional Phillips curve framework where permanent negative supply shocks are accommodated by neutral monetary policy.

Figure 12: Traditional Phillips curve and permanent supply shocks



Consider Figure (12) where a permanent supply shock moves both the short-run and long run Phillips curve to the left. If monetary policy does not react, the new equilibrium will be a permanent lower income and a higher level of inflation. If instead monetary policy reacts as in an inflation targeting framework, it will generate a short-run deflation, to bring expectation in line with the target and the short-run Phillips curve will go back to a level consistent with initial inflation. In the first case, inflation and growth are negatively correlated; in the second case, inflation is stationary and cannot be correlated with the growth of income. This is exactly what we can find in the data: the negative correlation between inflation and growth weakens significantly after the introduction of the inflation targeting regime⁸. This also helps to interpret

⁸ The example above invites one to take the "Lucas critique" seriously, even when using a data driven methodology. The data generating process of some macro variable is not invariant to the policy regime followed. If a country is successful in implementing inflation targeting, inflation will be a stationary stochastic process, and the interest rate becomes the non stationary variable because it has to absorb any long lasting shock hitting the economy. GDP will not have a different stochastic representation as it will still be driven by technological innovations, i.e. a series of permanent supply shocks. Therefore we cannot see cointegration between inflation and GDP in an inflation targeting regime. There might be a cointegration between the level of prices and GDP, but it is not obvious. The point here is that the Data Generating Process of nominal variables are likely to be influenced by the policy regime used. If there is a strong nominal anchor, nominal variables are stationary. If there is not a strong nominal anchor, inflation will be driven by the same shocks than output. This is consistent with Orphanides (2002) that analyses the conduct of the FED monetary policy in the 1970's

the critique of the SARB's monetary policy by Stiglitz (2008) and Kantor (2017). For these authors, monetary policy should not respond to supply shocks and accept a permanent, one-off, increase in inflation. In contrast, the SARB's view is that, by anchoring inflation expectations to the target, monetary policy can break the linkage between inflation stabilisation and growth and thus reducing the need to generate recessions to control the inflation rate.

A different approach is to identify the relationship between monetary policy and growth by exploring the mechanism of this relationship. Recently Jordà et al. (2020) have used an instrumental variable identification of monetary policy shock that exploits the trilemma constraint in international finance. They find a strong long-term hysteresis effect of exogenous monetary shocks on capital and total factor productivity. They present a microfounded model to show that these long run effects can be generated in a New Keynesian model with nominal rigidities and insufficient stabilisation in an endogenous growth model. Monetary policy can affect long-term growth by affecting firms real costs, profits and willingness to invest. This can happen if monetary policy can permanently affect real wages (Blanchard and Summers, 1987), the real exchange rate (Rodrik, 2008) or firms' credit conditions. The question then arises of whether these three channels are active in the South African economy.

4.2.1 Monetary policy and real wages

Monetary policy can affect firms' marginal costs if nominal wages are not responsive to inflation. One mechanism is the hysteresis effect in insiders-outsiders models like Blanchard and Summers (1987). In this framework, real wages and unemployment are random-walk processes linked by the trade union objective to maximise the employment of those currently working. Thus, a monetary policy shock that reduces real wages and increases employment in the short-run is locked in by subsequent wage negotiations. We should therefore expect nominal wages that are strongly linked with employment fluctuations and little correlation between nominal wages and inflation.

The weak connection between wages and employment can be easily seen in the data. Dadam and Vieggi (2015) estimate a reduced form New Keynesian wage Phillips curve (Galí, 2010) for South Africa for the period 1970-2014. The main results are shown in Table (4). Private sector wages are becoming progressively less sensitive to labour market conditions, which affects wage bargaining across the economy.

Table 4: Estimated wage inflation: private sector wage

	(1)	(2)	(3)	(4)
	1970 – 2014	1994 – 2014	1970 – 2014	1994 – 2014
n_t	0.19*** (0.05)	0.07 (0.04)	0.13** (0.04)	0.06 (0.04)
π_{t-1}			0.55*** (0.05)	0.25* (0.12)

*** denotes significance at the 1% level, ** at the 5% level and * at the 10% level.

This increasing lack of responsiveness of real wages implies a very flat Phillips curve relating inflation and unemployment and thus resulting in a very high sacrifice ratio. Kabundi et al. (2019) confirm these results, showing a slow reduction in the Phillips curve slope following the GFC. They focus on the relation between inflation and output. But this result is also confirmed by the difficulty of finding a strong Phillips Curve relationship between the output gap and inflation in South African data (Fedderke and Liu, 2018).

On the other hand, Kabundi et al. (2019) show a reduction in inflation inertia and a reduction in inflation volatility. They attribute that observation on an increase in anchoring of expectations to a time varying inflation target and an increase in the SARB's credibility. This is reflected by a strong correlation between wages and expected inflation, as shown in Table (5)

Table 5: Estimated wage inflation

	(1)	(2)	(3)
	$E\pi_t$	$E\pi_{t+1}$	$E\pi_{t+2}$
u_t	-0.37** (0.18)	-0.35** (0.19)	-0.37** (0.18)
$E\pi$	0.73*** (0.23)	0.72*** (0.26)	0.82*** (0.29)

*** denotes significance at the 1% level, ** at the 5% level and * at the 10% level.

Therefore, a monetary policy that increases inflation expectations will have a rapid effect on nominal wages without any significant long run boost of firms' profitability and investment. Conversely, an increase in anchoring of wages to inflation expectations allows the SARB to use its credibility and communication to minimise the cost of inflation stabilisation⁹.

4.2.2 Monetary policy and the real exchange rate

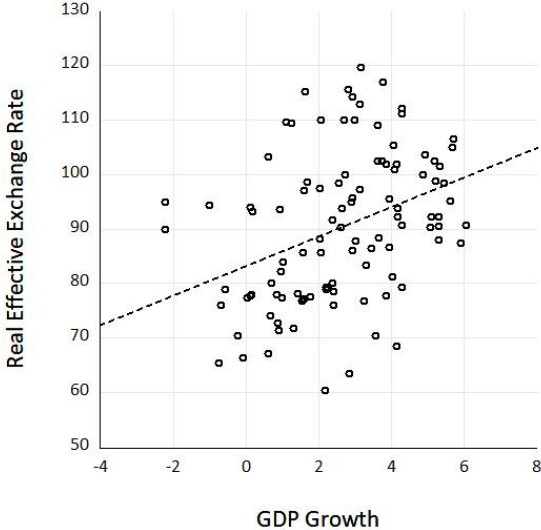
The role of the real exchange rate in a growth strategy has been emphasised widely in the literature, especially as one of the building blocks of an export promotion strategy. Rodrik (2008) shows that the undervaluation of the currency (a high real exchange rate) stimulates economic growth via its effect on the size of the tradable sector. Brunnermeier et al. (2018) discuss how consumption led growth, by relying on imports and expansion of the non-traded sector, cannot be the base for a long-term growth strategy, as it limits the technological and management spillovers that the traded sector provides.

In the South African debate, this growth strategy is often translated as requiring monetary policy to devalue nominal exchange rates from whatever the current level is or to react to a devaluation of exchange rate with an increase of interest rate, i.e. to accommodate the devaluation.

⁹ The increasing convergence of inflation expectations to the inflation target and a increase in credibility of the SARB is consistently shown across the literature (Miyajima and Yetman, 2018; Kabundi and Mlachila, 2018; Chen and Creamer, 2019)

In reality, the real exchange rate is determined by the real expenditure patterns in the country and, as such, is more a fiscal phenomenon than a monetary one. A devaluation of the nominal exchange rate that is matched by an increase in nominal wages and prices will not have any effect on the overall real value of expenditure. Moreover, a devaluation of the real exchange rate must be matched by a move of resources from the non-traded to the traded sector.

Figure 13: Real effective exchange rate and GDP growth - 1994-2020



The real effective exchange rate has been in decline for the past 10 years in the aftermath of the GFC. Monetary policy in this period has been largely expansionary, as has been fiscal policy. At no time in this period did South Africa experience any growth acceleration or an expansion of its export sector. The structural nature of the South African low growth experience is clearly shown in this correlation.

Monetary policy can help in a concerted effort to move the economy towards an export oriented growth model but it can only play an ancillary role.

4.2.3 Monetary policy and credit conditions

Finally, Epstein (2015) proposes a wider role of central banks as the "creditor of last resort". In this framework, a central bank should intervene directly in the credit market, expanding access to credit and using instruments of credit control and credit subsidy to direct resources towards industrial development, employment creation and economic growth. This approach raises two questions:

- Are the development objectives of central banking compatible with macroeconomic stability in a small open economy?
- Is credit constraint an important limit for South African economic growth?

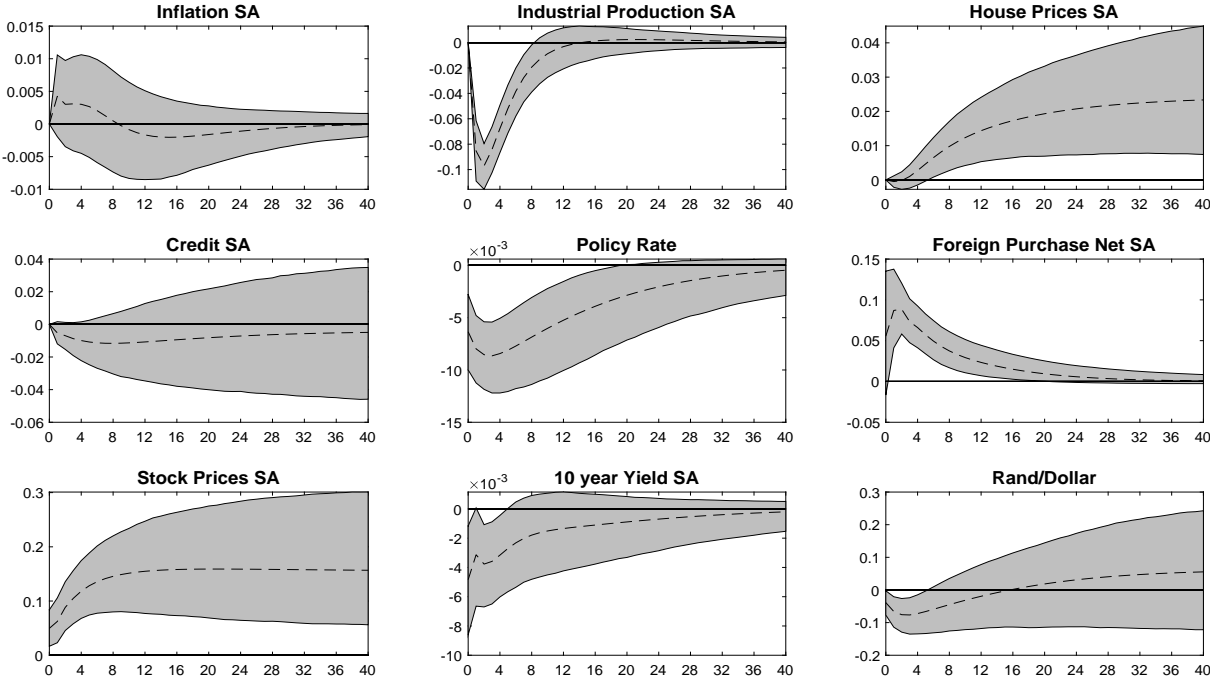
The answers to both questions are likely to be negative. Firstly, a direct developmental role

gives the central bank a direct fiscal role. It is theoretically possible to have "good policies and appropriate policy coordination, together with appropriate checks and balances, so that central banks can play a positive role in fostering both macroeconomic stability and development" (Epstein (2015), p. 11). However, with good policies, it would not be necessary to change the objective of the central bank as other institutions (such as, in South Africa the Development Banks of Southern Africa, Land Bank, the Industrial Development Corporation and the Public Investment Corporation) would be successful in their developmental finance mandate. The reason central banks do not engage in development finance is that the power and privilege of producing fiat money is conditional on maintaining public trust that the value of the currency will not be compromised. Once this trust is lost, the power of central banks can only be preserved with financial repression, price controls and capital controls. Giving a developmental role to central banks is not necessary to establish an effective growth strategy.

Secondly, it is doubtful that credit constraint is the main source of the disappointing growth experience of the last 10 years. When looking at external expansionary shocks that would relax a national credit constraint by providing a new inflow of capital in the economy, we do not find any evidence that the credit market is the main source of constraint to industrial production and development. In Figure (14), the impulse responses show the effect of the Fed's quantitative easing policies on the South African economy in the 10 years after the GFC ¹⁰. As expected, the inflow of capital had an expansionary effect on asset prices, has reduced long-term interest rates and was accommodated by an expansionary monetary policy. Nevertheless, the effect on industrial production and growth was negative, with new credit going to the housing market while firm demand for credit remained stagnant.

¹⁰ The impulse response are calculated using a medium scale Bayesian VAR model as in Kabundi et al. (2020). The model consists of 20 variables. As is standard in the medium to large Bayesian VAR literature, we order the slow moving variables first, and then the fast moving variables last. We assume the following ordering structure, $Y_t = (X_t^{us}, X_t^{sa}, r_t^{us}, Z_t^{us}, r_t^{sa}, Z_t^{sa})'$, where X_t^{us} and X_t^{sa} represent the slow moving variables for the US and SA respectively, r_t^{us} is the monetary policy in the US, Z_t^{us} represents the fast moving variables in the US, r_t^{sa} is the monetary policy in South Africa and lastly Z_t^{sa} is the fast moving variables in South Africa. With this ordering structure, we assume that the slow moving variables in both the US and South Africa do not respond contemporaneously to US monetary policy. In addition, we assume that the fast moving variables respond contemporaneously to everything. We treat the South African monetary policy as a fast moving variable, but put it before the South African variables. This ordering allows us to maintain the ordering of slow and fast moving variables within the South African block as $Y_t^{sa} = X_t^{sa}, r_t^{sa}, Z_t^{sa}$. That is, within the local economy, monetary policy authorities can only respond with a lag to fast moving variables.

Figure 14: Response of South African variables to US quantitative easing shocks after the GFC



5. Monetary and fiscal policy interdependence

The main constraint to monetary policy, going forward, is the fiscal dynamic that is developing in South Africa. Following the GFC, South African debt has entered a growing path, which has worsened significantly with the onset of the COVID-19 shock. Government debt is expected to exceed 100 % percent of GDP by 2024-2025.

The level of debt, and the connected risk of default, significantly affects the dynamic interaction of fiscal and monetary policy.

- Firstly, at a high level of debt, fiscal policy becomes a less powerful instrument (Perotti, 1999). At the limit, the effect of fiscal policy can be reversed, with the negative effect on the risk premium and exchange rate outweighing the short-run typical Keynesian demand effect (Giavazzi and Pagano, 1990).
- Secondly, the fiscal position becomes more sensitive to monetary policy actions, via the relationship between the policy rate and the government bond rates. This generates political economy pressures on monetary policy to internalise government solvency in its policy objectives.

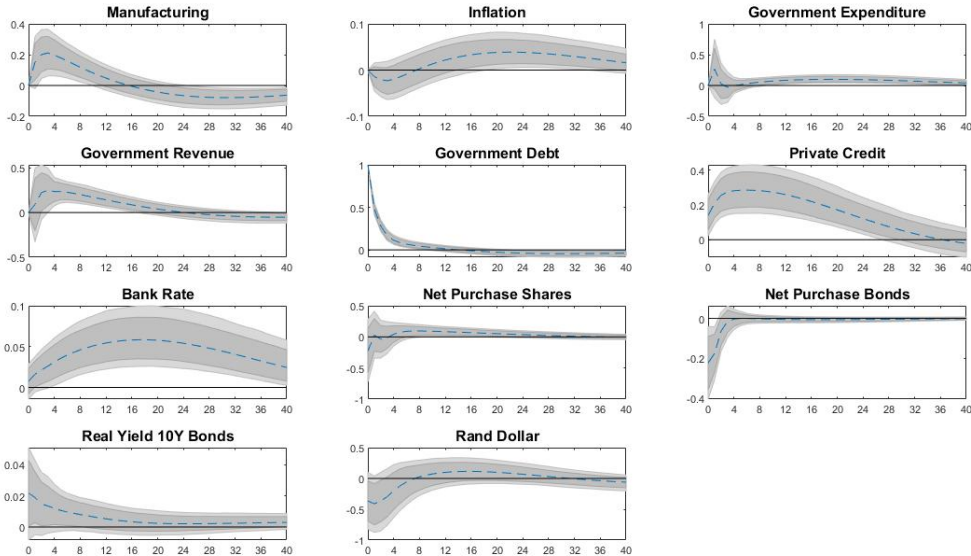
Example of this perverse effect of fiscal policy are often discussed in the literature. For example, Blanchard (2004) in the early 2000 Brazil monetary policy was constrained by the need for fiscal solvency so that a monetary contraction would induce real depreciation of the currency and an increase in inflationary pressure because of the effect it had on the country risk premium. The question is therefore whether South Africa has reached a debt level where the

normal monetary - fiscal policy interaction is on a critical path of instability.

5.1 Contractionary fiscal expansion?

We investigated whether the accumulation of debt is changing the economic effect of fiscal policy. We looked at the effect of debt shocks using a medium scale Bayesian VAR model (Bańbura et al., 2010). In Figure (15) we see the impulse response function to a 1% debt shock for the whole sample. The figure is typical of standard fiscal policy expansion: expansion in output and credit, delayed inflationary response to which the SARB responds with an increase in the policy rate. The long-term yield increases and the exchange rate is revalued.

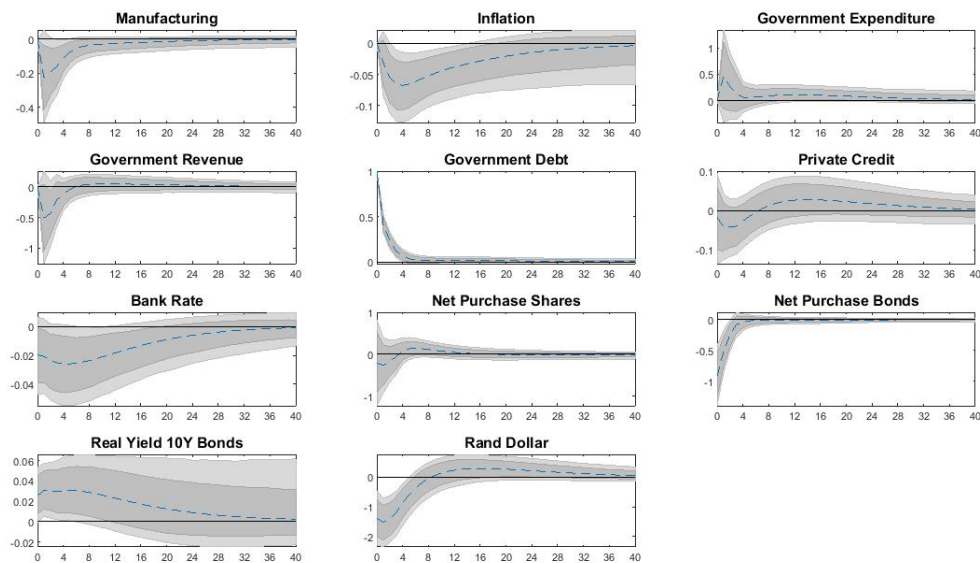
Figure 15: Fiscal policy shock 2003-2019



The picture changes dramatically if we focus only on the last five years of our sample, which includes the period of loss of credibility in the country’s fiscal plan. Currently the same fiscal shock induces a much stronger response in the long-term yields and has a contractionary effect on manufacturing and inflation and capital outflows from the bond market. Monetary policy counteracts these negative effects of the fiscal shock by reducing the policy rate, partly mitigating the contractionary effect of fiscal expansion.

This result is suggestive of the critical state of the national finances. The main effect of fiscal expansion at this stage is an increase in the country risk premium with the negative consequences that we have analysed previously. Fiscal stabilisation, therefore, is not only necessary to avoid a fiscal crisis, but, according to this analysis, is also necessary to reactivate fiscal policy itself that at the moment has lost any macroeconomic efficacy.

Figure 16: Fiscal policy shock 2014-2019



5.2 Monetary policy and government debt repayment

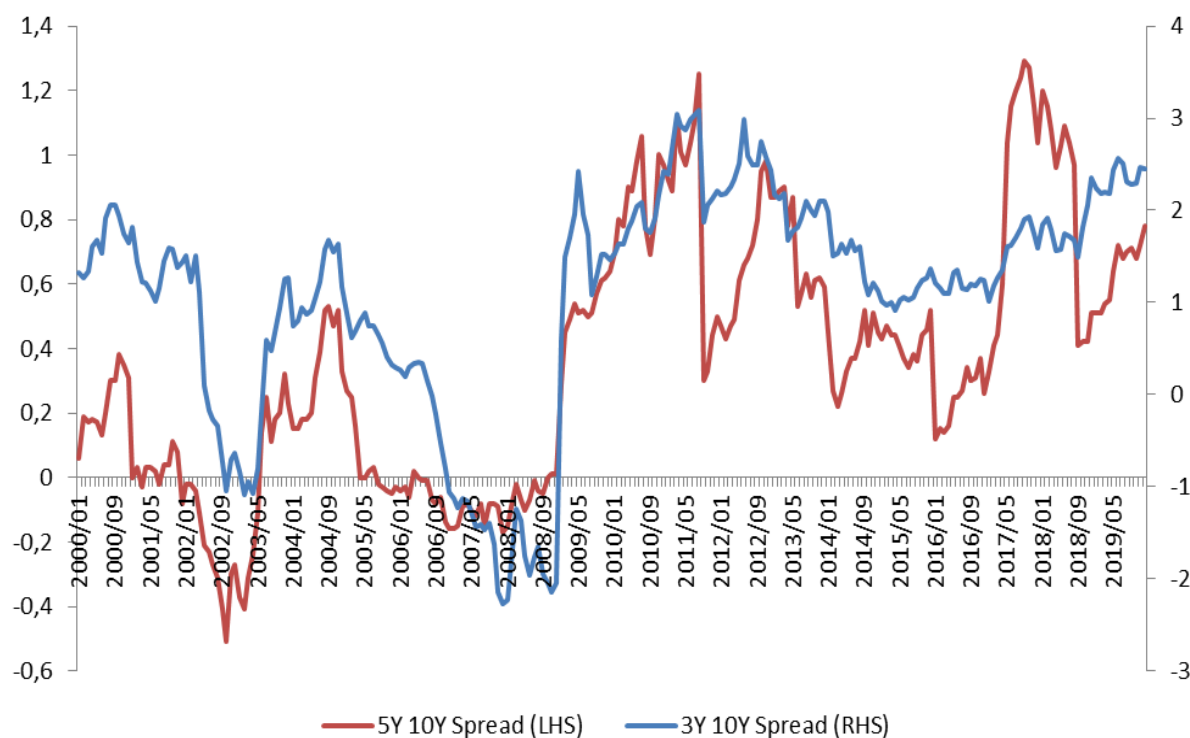
The effect of monetary policy on long-term interest rates is important given the high share of long-term government debt. We used both monthly and quarterly data for the period from January 2000 to December 2019. Furthermore, we analysed two sub-sample from January 2000 to August 2008 and from October 2009 to December 2019. The second sub-sample corresponds with the start of the sharp increase in South African public debt to GDP, (Fedderke, 2020). In contrast, the first sub-sample captures a period of strong economic growth and fiscal consolidation that began at the end of the 1990's. During this period, both the yield on 10 year bond and the term premium were on a declining trend, (Soobyah et al., 2020; Fedderke, 2020). Figure 17 shows the spread between 0-3 year and 10 year bonds and 5-10 year and 10 year bonds. Both spreads remain at elevated levels after the end of 2008.

Figure 18 presents the impulse response functions of a 100 basis point increase in monetary policy rate from a standard medium-size B-SVAR ¹¹ for the whole sample. Similarly, Figures (19) and (20) show the results for the two sub-samples. For the whole sample, the results indicate that a contractionary monetary policy has a negative and lagged effect on industrial production and inflation¹². Credit to the private sector also decreases. The effect on assets holdings by non-residents is mixed. While the net effect on bonds purchases by non-South

¹¹ Our B-SVAR model consists of 10 variables. As standard in the literature, we order the slow moving variables first, followed by the fast moving variables. Given $Y_t = X_t, r_t, Z_t'$, where X_t represent the slow moving variables, r_t is the monetary policy instrument and Z_t represents the fast moving variables. X_t includes domestic government loan debt and revenue, industrial production, inflation and total credit extended to the private sector, r_t includes the interest rate and Z_t includes net shares and bond purchases by non-South African residents, yield on 10 year bonds and Rand/US Dollar exchange rate. We use the zero restrictions to identify monetary policy shock with lag length of 6 months.

¹² The light and dark shaded-areas in the figure are for the 68% and 90% posterior coverage intervals respectively.

Figure 17: South Africa Yield spreads 2000-2019



African residents is insignificant, there's a positive (albeit initially insignificant) and significant net effect for shares. In response, the rand appreciates against the US dollar. For fiscal policy variables, government revenue decline due to a decline in economic activity. The yield on long-term bonds increase, indicating a decline in demand for bonds. Government debt increases with a lag reflecting the need to finance the budget deficit following the decline in revenues.

For the sub-samples, we noted a significant difference in government debt dynamics. While in both periods the yield on long-term bonds increase, government debt decreases in the first period despite the decline in revenue. This shows that monetary and fiscal policy are moving in the same direction, or at least that they are not counteracting each-other. In the second period, government debt increases. The response of government debt could be explained by the differences in fiscal and economic positions. It also can raises the question of whether a contractionary monetary policy induces an expansionary expenditure-driven fiscal policy.

Lastly, we looked at the effect of a contractionary monetary policy on the spread between 0-3 year and 10 year bonds and 5-10 year and 10 year bonds. The results are presented in Figure 21. The results show that the 0-3 year bonds and 10 year bonds yield spread was more responsive to monetary policy shock in the first sub-sample. The contrary is true for the 5-10 year and 10 year bonds yield spread.

5.3 Two ways out of debt

The reduction of the government debt burden is therefore the first policy priority for the next decade. There are two main approaches to reduce the debt burden (Reinhart et al., 2015):

Figure 18: Response to a monetary policy shock - whole sample

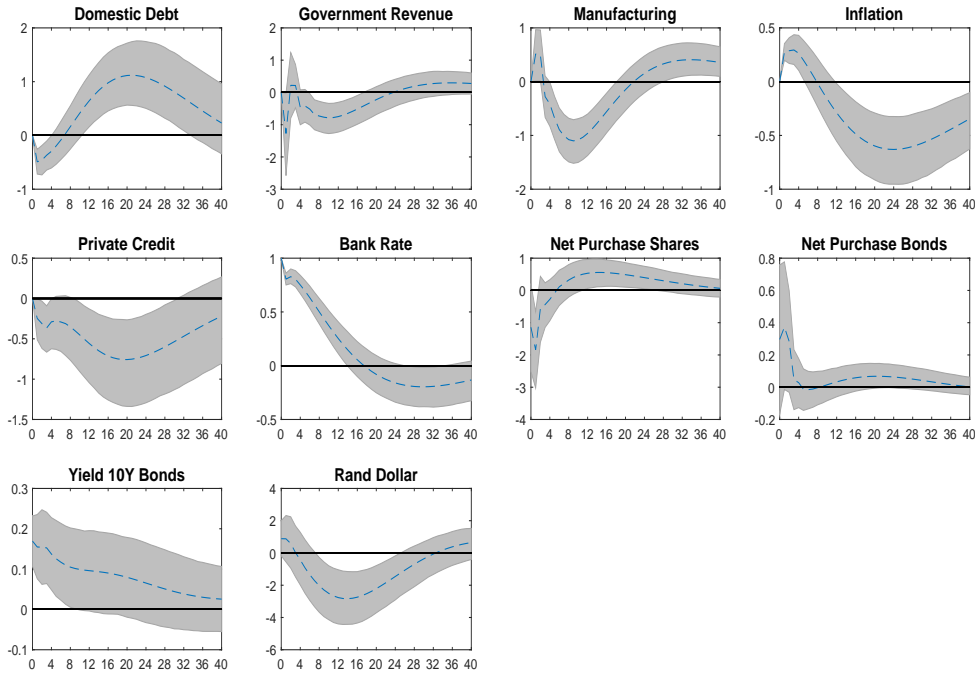
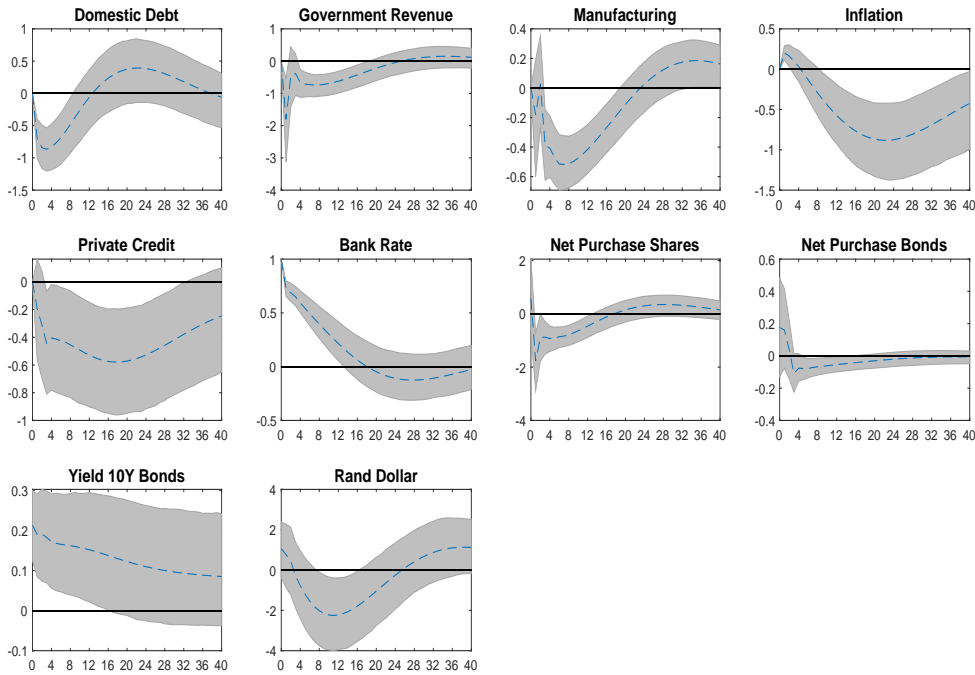


Figure 19: Response to a monetary policy shock - January 2000 to August 2008



either the real economy grows out of debt and the debt burden is reduced by running primary surpluses and selling government assets; or the value of debt is reduced by some form of default on the debt, such as debt restructuring, unexpected inflation or repressing private

Figure 20: Response to a monetary policy shock - September 2008 to December 2019

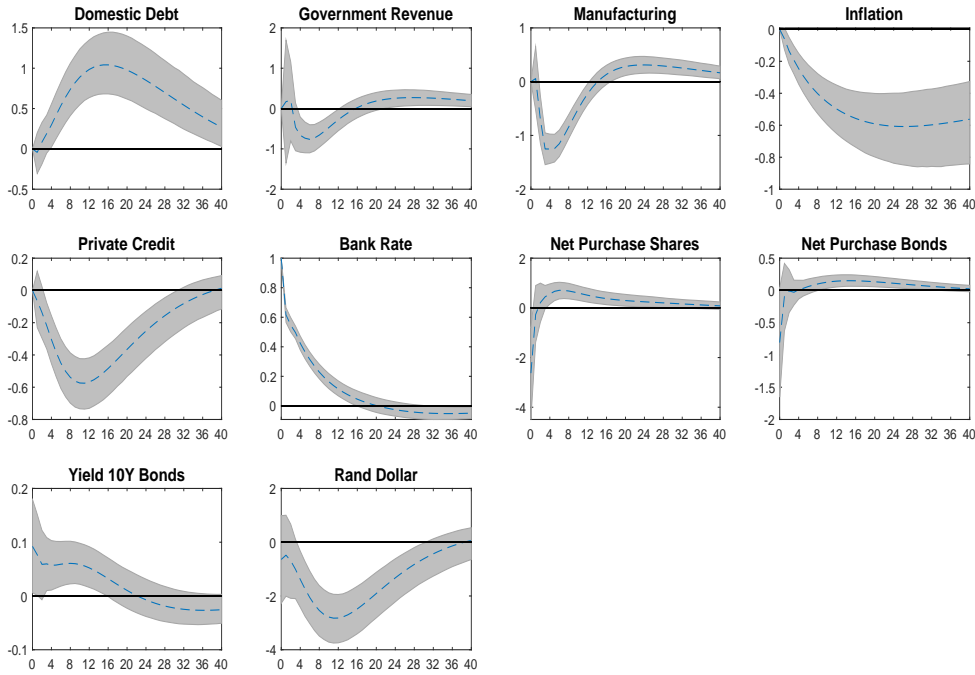
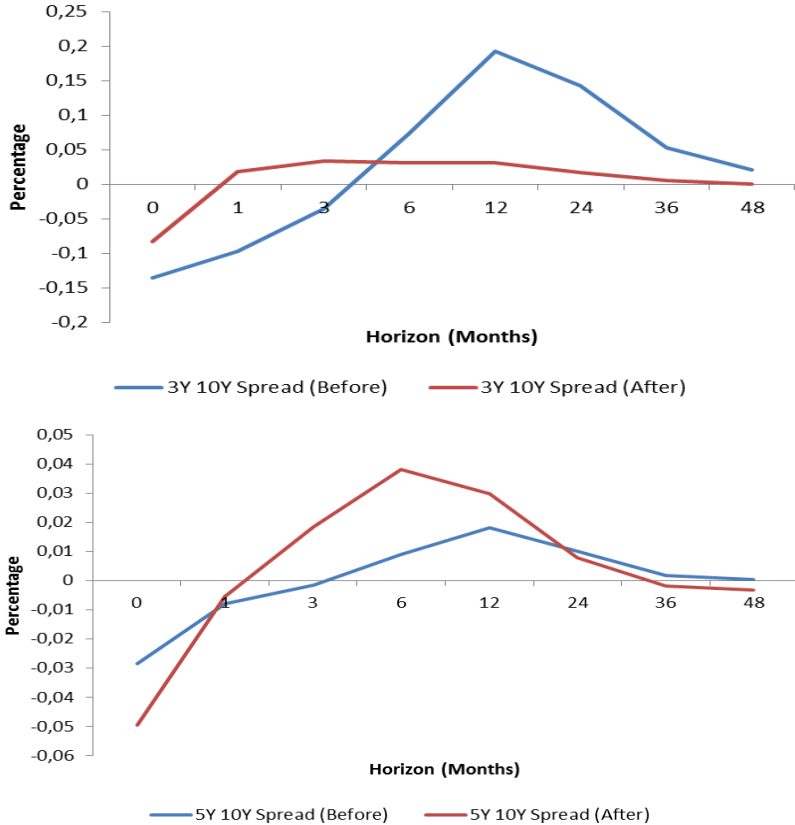


Figure 21: Impulse Response Functions - Yield Spreads (response of the spreads to a 100 basis point increase in policy rate before and after 2008Q4). All the impulse response functions are significant.



finance.

Both approaches have consequences for monetary policy. In the first case, monetary policy should support the fiscal stabilisation effort by reducing the policy rate to mitigate the recessionary effect of fiscal contractions. This is not possible when the policy rate is at the zero lower bound as it is in many developed countries, but it is certainly possible in the case of South Africa. Given the critical level of debt, a credible fiscal plan could have a long run expansionary effect.

The second approach requires monetary policy to be constrained by the need of fiscal solvency, a policy that is only constrained by the effect that it has on private sector behaviour¹³. As discussed by Buiter (2014), the policy can successfully reduce the debt burden without long-term economic consequences if "the State can issue un-backed, irredeemable fiat money or base money with a zero nominal interest rate, which can be produced at zero marginal cost and is held in positive amounts by households and other private agents, despite the availability of risk-free securities carrying a positive nominal interest rate" (p. 2). Therefore, a necessary condition is that private sector behaviour is not affected by the change in policies and that the private sector absorbs the excess money creation in its portfolio as private wealth¹⁴. This condition is unlikely to be respected when the amount of money financing is large and permanent, fiat money has close substitutes in other currencies or other assets and the state cannot credibly commit to long-term solvency. In fact, recent models discussing money financing like Galí (2019) implicitly assume a credible long-term nominal anchor for the economy and thus assume that money financing is credibly transitory.

This is unlikely to be the case in South Africa and in other emerging markets. Historical experience, mainly from Latin America, show the perils of money financing of public debt (Kehoe et al., 2020) and the permanent damage it can inflict on a country's financial development, access to capital and the credibility of its policies.

On the other hand, the COVID-19 crisis has accelerated the accumulation of public debt in many emerging markets that are now experimenting with ways to monetise this exceptional transitory shock without affecting long-term economic stability. This requires policy makers to commit to long term goals which underlines the importance of credible and independent monetary policy institutions.

6. The future of South African monetary policy: robustness, flexibility and coordination under inflation targeting

South Africa will emerge from the COVID-19 crisis as an extremely fragile country, with very little protective buffer stocks. Resources have been used to support current consumption and

¹³ See Turner (2013) and Reichlin et al. (2013) for early discussion of monetary financing in the context of policies at the zero lower bound

¹⁴ This is the same condition behind the popular Modern Monetary Theory assertion that a country able to issue sovereign currency cannot default on its debt (Kelton, 2020)

the economy has become increasingly dependent on international financial markets to finance the double deficit on the fiscal and external balance. Monetary policy has been constrained in maintaining a real interest rate high enough to guarantee continuing inflow of international capital.

The future of monetary policy in South Africa will depend on how the country deal with the constraints analysed above. The country needs to return to growth and build strong resilience in its economic and social institutions. Monetary policy can help in the transition process if the policy is strongly anchored to long-term stability objectives and the SARB remains credibly independent from short-run political pressures.

Monetary policy operates in the narrow space left between national policies and international trends. If national policies are based on a long-term, sustainable and prudent vision, monetary policy has the room to provide the necessary stabilisation from external shocks and uncertainties. However, if national policies are erratic and dominated by a short-term focus, monetary policy will struggle between dealing with internal economic weaknesses and protecting the country from external volatility.

Does this mean that we should not discuss the present policy framework? On the contrary: inflation targeting is a pragmatic response to the need to have both short-run flexibility of policies and a long-term certainty of outcomes. Today when the increasing uncertainty emanating from the world economy makes it impossible to predict future dynamics, we need a framework that is more robust, and we need to build more buffer stocks both financial and structural. We need also to think about new policy instruments that focus directly on protecting the economy from external shocks. Academics and policy makers around the world are discussing the role that macro-prudential policy can play, how to design effective instruments of capital control and how to use balance sheet policies as a supporting instrument to the current interest rate framework. This is a discussion worth having and this paper has provided some contribution to it.

On the other hand, a robust monetary policy is based on a credible commitment to long-term objectives and institutional stability. The inflation targeting framework has demonstrated during two of the worst global crises the world has ever experienced, that it is a flexible and adaptable monetary regime, that can accommodate new instruments and new emergencies while providing a long-term anchor to private sector expectations and decision making.

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