Monetary policy reaction function pre and post the global financial crisis

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28 February 2018

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February 28, 2018

Abstract

This paper analyses the monetary policy reaction function pre and post the recent global financial crisis in South Africa. This is achieved by comparing the reaction of monetary policy to changes in the target variables that comprise the inflation rate, output gap and financial stress index pre and post the recent global financial crisis. The results show that following an increase in the monetary policy interest rate, inflation falls back to its target rate while output falls below its equilibrium level pre and post the global financial crisis period. The results further show a correction of financial conditions following an increase in the monetary policy interest rate, while they also show a relatively loose monetary policy stance during the financially stressful economic conditions pre and post the global financial crisis period. Most importantly, the results show that the reaction of monetary policy to changes in the target variables pre the recent global financial crisis period has not changed significantly compared to post the global financial crisis period. The paper thus concludes that there is no material difference in the conduct of monetary policy in South Africa pre and post the recent global financial crisis.

JEL Classification: C11, E43, E58, F31
Keywords: Monetary policy, financial crisis, financial stress

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Introduction

The macroeconomic landscape, structure of the economy, including key economic and political institutions that implement economic policy evolve and transform overtime. Rudebusch (1998) and OHara (2015) argue that these structural changes suggest time variant relationships in the underlying macroeconomic variables in the economy. According to Baxa et al. (2014), the evolution of policy coordination and the changes in the economic system over time present a problem for empirical analysis because the parameters of policy reaction functions estimated over longer periods are rendered structurally unstable. Thus the observed plausible structural shifts in the macroeconomic landscape including the institutions that implement macroeconomic policy highlight the importance of a flexible macroeconomic policy analysis framework that accounts for the possibility of time variation.

The structural shifts in implementation of macroeconomic policy is a hotly contested debate in monetary policy cycles. This is particularly the case in the US given that there has been five different Chairmen of the Federal Reserve System since 1971. This has led to a great interest in analysing the vigilance of each Chairman towards ensuring macroeconomic stabilisation. The implied existence of disproportionate macroeconomic landscape suggest the existence of structural breaks in the conduct of monetary policy. Cogley and Sargent (2001) and Primiceri (2005) argue that the systematic responses of monetary policy exhibit a trend toward a relatively more aggressive behaviour post the 1970s and 1980s. Nelson and Nikolov (2004) and Nelson (2005) study the benign neglect hypothesis in UK, Canada, Australia and New Zealand in the 1970s and 1980s and conclude that the delayed disinflation in these countries occurred because inflation control was accorded to the nonmonetary devices.

According to Primiceri (2005), the evidence that unemployment and inflation were higher and more volatile in the 1970s and 1980s has focused attention on the conduct of monetary policy. Empirical

evidence in support of a less aggressive monetary policy in this era include Judd and Rudebusch (1998), Clarida et al. (2000), Cogley and Sargent (2001), Orphanides (2002), Cogley and Sargent (2005), Primiceri (2005) and Cogley et al. (2010). In particular, Sims (2001) argues that the view of a changing monetary policy response to inflationary pressures suggests that policy oversight resulted in the 1970s and 1980s unemployment and inflationary episode. In contrast, Bernanke and Mihov (1998), Bernanke et al. (1999), Sims (2001), Hanson (2006) and Taylor (2012) find little evidence of changes in the systematic reaction of monetary policy post the era of great unemployment and inflation episode. Hanson (2006) specifically finds that the evidence of a changed macroeconomic structure is strong for the nonpolicy equations during and post the 1970s and 1980s than for the policy equations.

The recent global financial crisis has nudged the benign neglect versus the leaning against the wind debate beyond the preoccupation with inflation and output stabilisation. The crisis has demonstrated that financial assets play an important role in macroeconomic fluctuations and has strengthened the view that central banks should pay closer attention to asset price misalignments. The view in support of leaning against the wind is supported by Borio and White (2004), Stiglitz (2010), Mishkin (2011), Curdia and Woodford (2010, 2011), Woodford (2012) and Borio (2014). The view in support of benign neglect, or the so called cleaning after the bubble has bust, is supported by Bernanke and Gertler (2001), Bernanke and Gertler (2003), Mishkin (2009), Stiglitz (2010) and Svensson (2013). The benign neglect versus leaning against the wind debate highlights the possibility of a change in the conduct of monetary policy pre and post the recent global financial crisis and hence it necessitates understanding the influence of asset price fluctuations on the transmission of monetary policy.

This paper analyses the monetary policy reaction function pre and post the recent global financial crisis in South Africa. The reaction of the monetary policy interest rate is evaluated against the changes in the target variables that comprise inflation, output gap and financial stress index pre and post the recent global financial crisis. The financial stress index collects and synthesises information from the main segments of the South African financial market. Boivin et al. (2010) argue that the policymakers must have an accurate assessment of the timing and effect of policies on the economy to accurately understand the mechanisms through which such policies impact the real economic activity. Nelson (2005) further argues that the evidence about the evolution of monetary policy for the U.S. is vast while it often does not go beyond common wisdom for other countries. Thus analysing the monetary policy reaction function pre and post the recent global financial crisis will enhance policy coordination under the evolving and transforming economic landscape ensuring macroeconomic stability.

The paper is organised as follows. The next section discusses the data. This is followed by the methodology. Then its the discussion of the results and last is the conclusion.

Data

Quarterly data spanning the period January 2000 to December 2016 is used in the paper. The data is sourced from the South African Reserve Bank. The Interest rate, denoted REPO, is the Repurchase rate which is the monetary policy interest rate in South Africa. Inflation, denoted CPI, is the annual percentage change in consumer price index. Gross domestic product, denoted GDP, is the output gap. It is constructed as the deviation of real gross domestic product from its Hodrick and Prescott (1997) trend. 4 quarters are forecasted at the end of the gross domestic product data series to correct the end point problem following Ravn and Uhlig (2002) and Mise et al. (2005). Financial stress index, denoted FSI, is the composite indicator that comprise variables that cover the main segments of the South African financial market that approximates the misalignments of asset prices.

Financial stress is not observable but is assumed to be reflected in the financial market variables. Therefore the paper will attempt to identify the episodes of financial stress using a composite index comprising the financial variables that cover the main segments of the South African financial market. These include the bond and equity markets as well as the commodity and foreign exchange markets. The financial stress index variables comprise a set of 15 variables and these are described in Table 1. The selection of the variables used to construct the financial stress index relied on existing literature as well as their relevance and the availability of data. The financial stress index variables were standardised by z scoring and then aggregated using the principal components analysis weighting scheme.

The standardisation involved demeaning all the variables by subtracting their respective means and dividing them by their respective standard deviations. As such, a value of 1 in each one of these variables represents a 1 standard deviation difference from their mean value over the sample period. The first component from the Principal Components Analysis, which is a method of extracting factors

Variable	Description
Interbank spread	Spread between the 3 month JIBAR rates and the 3 month Treasury bill rate
Future spread	Spread between the 3 month FRAs and the 3 month treasury bill rate
Government bond spread	Spread between the yield on 3 year government bond and the yield on 10 year government bond
A rated bond spread	Spread between the yield on A rated Eskom bond and the yield on 10 year government bond
Corporate bond spread	Spread between the FTSE/JSE All Bond yield and the yield on 10 year government bond
Stock market return	Annual change in the FTSE/JSE All Share stock market index
Financial sector return	Annual change in the FTSE/JSE Financials stock market index
Banking sector return	Annual change in the FTSE/JSE Banks stock market index
Financial sector beta	CAPM beta of the one year rolling window of the annual FTSE/JSE Financials stock market index returns
Banking sector beta	CAPM beta of the one year rolling window of the annual FTSE/JSE Banks stock market index returns
Nominal eff. exchange rate return	Annual change in nominal effective exchange rate
Credit extension growth	Annual change in total private credit extension
Property market return	Annual change in the average price of all houses compiled by the ABSA bank
Commodity market return	Annual change in the Economist's commodity price index
Oil market return	Annual change in the Brent crude oil price
VIX S&P500	Chicago Board's implied volatility of the S&P 500 index

Notes: Own calculations. JIBAR rate is the Johannesburg Interbank Agreed Rate, FRAs are Forward Rate Agreements, Eskom is , FTSE/JSE is a joint venture between Johannesburg Stock Exchange Limited and the Financial Times Stock Exchange Group, CAPM is the Capital Asset Pricing Model, ABSA is a commercial bank and S&P is Standard & Poor's.

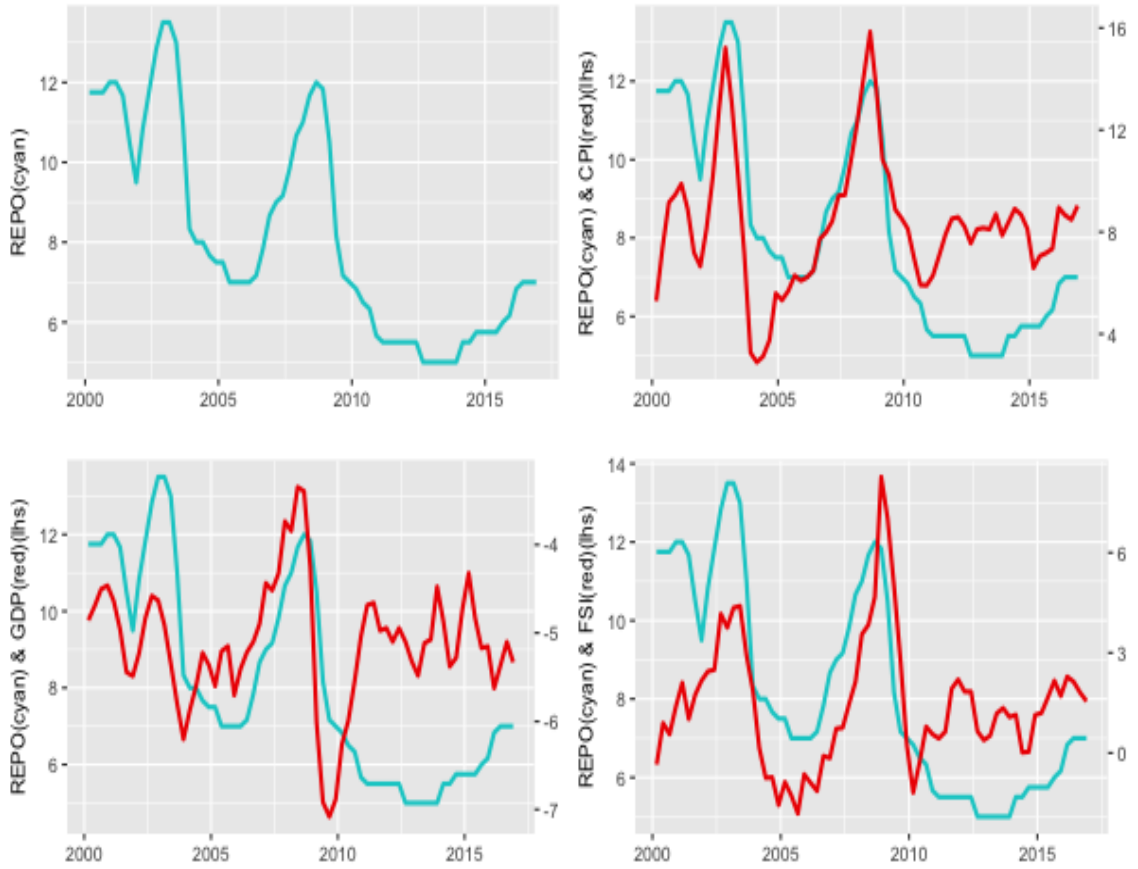
Table 1: Financial stress indicator variables

responsible for the comovement of a group of variables, was extracted and its implied weights were used to aggregate the indicator of financial stress variables. Thus the indicator of financial stress captures the interruption of the normal functioning of the financial markets. This interruption is characterised by increased uncertainty about the fundamental value of financial assets, increased information asymmetry and heightened aversion from holding illiquid and risky assets. Thus the heightened financial market stress results in liquidity shortages as well as significant shifts in fundamental asset prices.

The similar indicators of financial stress have been constructed by Illing and Liu (2006), Balakrishnan et al. (2011), Cardarelli et al. (2011), Hakkio and Keeton (2009), Borio (2014), Cevik et al. (2013) as well as Raputsoane (2014, 2015), among others, while Kliesen et al. (2012) provides a survey of the literature on indicators of financial stress. Financial stress indexes are also constructed and issued by different institutions including the Federal Reserves of Kansas City, Saint Louis, Chicago and Cleveland as well as Bank of Canada and the European central bank, the Organisation for Economic Co-operation and Development and the International Monetary Fund. Kliesen et al. (2012) find that, although the indicators of financial stress are different in their construction, the correlation between them is high given that each of these indexes measure a similar concept in principle.

Figure 1 depicts the evolution of the variables. The repurchase rate exhibits two distinct peaks in 2003 and 2008. It dropped somewhat at the beginning of 2001 but started to rise again later in the same year reaching a peak in late 2002. It then dropped dramatically from early 2003 reaching a low in early 2005. From early 2006, the repurchase rate increased steadily and peaked in the middle 2008 before it dropped again dramatically to late 2010 where it remained range bound until 2015. It then increased steadily to the end of 2016. The movements in repurchase rate are closely mirrored by the movements in inflation, the real gross domestic product gap, the financial stress index and the dollar denominated bilateral domestic exchange rate. All these variables also exhibit two distinct peaks 2003 and 2008. The peak in 2003 coincides with the effects of the 9/11 attacks and the resulting war on terror while the peak on 2008 coincides with global financial crisis. The only notable exception is the

decoupling of the repurchase rate between 2010 and 2015.



Notes: Own calculations. REPO is the monetary policy interest rate, CPI is the annual change in consumer price index, GDP is the deviation of Gross Domestic Product from its long term trend, FSI is the financial stress index

Figure 1: Plots of the variables

The movements in the financial stress index are comparable to those of similar indexes that are constructed in the literature and those that are published by different institutions including the European central bank and the International Monetary Fund.. The notable exception is that the indicators of the developed countries show heightened financial stress that peak in late 2011 as a result of the sovereign debt crisis. This observation is supported by Kliesen et al. (2012) who survey the literature on financial stress indexes by comparing the datasets from which they are constructed and provide evidence that they are highly correlated even though they are different in their construction.

Methodology

A time varying Vector parameter Autoregression (BVARTVP) model is specified to capture the dynamic relationships between the monetary policy interest rate and the selected target variables following Stock and Watson (2001). Vector Autoregression (VAR) models were introduced in applied macroeconomic research by Sims (1980) while their Bayesian equivalents were introduced by Litterman (1984) with later improvements by Kadiyala and Karlsson (1997) and Koop and Korobilis (2010). According to Stock and Watson (2001) and Rudebusch (1998), the Vector Autoregression (VAR) is a system of linear equations, one for each variable. Banbura et al. (2010), Koop and Korobilis (2010) and Koop (2013) contend that these models have become standard tools in macroeconomics structural estimation, policy analysis and forecasting. According to Del Negro and Schorfheide (2011), Vector Autoregression (VAR) models can capture the important stylised facts about economic time series despite their simple formulation. These include the decaying pattern in the values of autocorrelations

as the lag order increases as well as the dynamic linear interdependencies between the variables.

According to OHara (2015) and Primiceri (2005), a less restrictive approach to Bayesian VAR modelling that allows the coefficient matrix and in some cases the residual covariance matrix to vary over time is the time varying parameter Vector Autoregression (BVARTVP). Therefore following time varying parameter Vector Autoregression (BVARTVP) model is specified

$$Y_t = C_t + \theta_{i,t} Y_{t-1} + ... + \theta_{p,t} Y_{t-p} + \epsilon_t \tag{1}$$

$$\theta_{i,t} = \theta_{i,t-1} + \upsilon_t \tag{2}$$

where $Y_t = (Y_{1,t}, ..., Y_{n,t})$ is the $n*1$ vector of random variables observed at time t. $C = (C_1, ..., C_n)$ is the $n * 1$ vector of time varying intercept terms, $\theta_{i,t}, ..., \theta_{p,t}$ are $n * n$ autoregressive matrices of time varying coefficients, p is the number of lags to include of each variable, $\epsilon_t = (\epsilon_1, ..., \epsilon_t)$ and $\upsilon_t = (\upsilon_1, ..., \upsilon_t)$ are the $n * 1$ dimensional white noise error terms denoted

$$\epsilon_t \sim N(0, \Sigma_\epsilon) \tag{3}$$

$$\upsilon_t \sim N(0, \Sigma_\upsilon) \tag{4}$$

where Σ_ϵ and Σ_υ are $n * n$ variance covariance matrices. Rudebusch (1998) and Stock and Watson (2001) argue that the error terms are the unanticipated policy shocks or the surprise movements in the variables after taking the Vector Autoregression's (VAR's) past values into account.

The time varying parameter Vector Autoregression (BVARTVP) model is estimated using Bayesian methods. At the heart of Bayesian analysis is the Bayes theorem specified as

$$p(\theta_i, \Sigma \mid Y_t, M_i) = \frac{p(Y_t \mid \theta_i, \Sigma, M_i)\, p(\theta_i, \Sigma \mid M_i)}{p(Y_t, \Sigma \mid M_i)} \tag{5}$$

where M_i is an arbitrary model among a general class of models, $p(\theta_i, \Sigma \mid Y_t, M_i)$ is the posterior model probability, $p(Y_t \mid \theta_i, \Sigma, M_i)$ is the marginal likelihood of the model, $p(\theta_i, \Sigma \mid M_i)$ is the prior model probability and $p(Y_t, \Sigma \mid M_i)$ is the constant integrated likelihood over all models. The details on a time varying parameter Vector Autoregression (BVARTVP) model estimation, including a brief introduction to Bayesian econometrics and Bayesian Vector Autoregression models, can be found in OHara (2015). A general treatment of Vector Autoregression (VAR) models including Bayesian estimation and different priors can be found in Koop and Korobilis (2010) and Canova (2011).

According to Rudebusch (1998), the appeal of using Vector Autoregression (VAR) models for analysing monetary policy reaction functions is that they have the ability to identify the effects of monetary policy without a need to specify the complete structural model of the economy. Banbura et al. (2010) contend that Vector Autoregression (VAR) models have become popular with empirical macroeconomists because they facilitate the insight into the dynamic relationships between macroeconomic variables in a relatively unconstrained manner. Koop and Korobilis (2010) and Koop (2013) further argue that Bayesian methods have become popular in dealing with this problem of over parameterisation given the limited length of standard macroeconomic datasets. Vector Autoregression (VAR) models can also be successfully be used in macroeconomic forecasting with a large number of variables when coupled with Bayesian estimation due to the flexibility that is provided by the application of the Bayesian parameter shrinkage, as argue Sims and Uhlig (1991). Sims and Uhlig (1991) further argue that Bayesian Vector Autoregression (BVAR) models can incorporate unit root nonstationary variables with no adverse influence to the inference on the parameters of the model.

The empirical application of the time varying parameter Vector Autoregression (BVARTVP) in the literature include Canova (1993), Assenmacher-Wesche (2006), Kim and Nelson (2006), Justiniano and Primiceri (2008), Korobilis (2013), Koop and Korobilis (2010) and Del Negro and Primiceri (2015). This literature include the analyses of macroeconomic fluctuations, the transmission of monetary policy and the volatility of foreign exchange rates. In particular, Primiceri (2005) argues that the time varying parameter Vector Autoregressions (BVARTVPs) possess characteristics to address time variation in that they include time varying parameters to address policy changes, the implied shifts in private sector behavior as well as multiple equation models of the economy to understand the impact of changes in economic policy. Thus, according to OHara (2015), the time varying parameter Vector Autoregressions (BVARTVPs) addresses the changing structure of the economy, including the economic and political institutions, and hence the dynamic relationships between variables over time.

Results

A time varying parameter Vector Autoregression (BVARTVP) model is estimated to capture the dynamic relationships between the monetary policy interest rate and the target variables that comprise the inflation rate, output gap and financial stress index. The estimated time varying parameter Vector Autoregression (BVARTVP) specifies a random walk in levels prior and uses a Gibbs style sampler following Stock and Watson (2001) and Kadiyala and Karlsson (1997). The own first lags were set to 0.95 to account for persistence in the variables and the number of lags to include of each variable was set to 1 following the Bayesian information criterion. The integer value for the horizon of the impulse response calculations was set to 20 corresponding to 5 years given that quarterly data is used in estimation. 10000 is the number of Gibbs sampling replications to keep from the sampling run while 1000 is the sample burnin length for the Gibbs sampler.

As discussed above, the paper analyses the monetary policy reaction function pre and post the recent global financial crisis. where Quarterly data spanning the period January 2000 to December 2016 is used in estimation of the time varying parameter Vector Autoregression (BVARTVP) model. Therefore, 2000 to 2008 marks the first period to plot Impulse Response Functions (IRFs), which coincides with pre global financial crisis period while 2009 to 2016 marks the second period to plot the Impulse Response Functions (IRFs), which coincides with post global financial crisis period. A training sample covering the period 1960 to 1999 is used to initialise the posterior sampling. The the time varying parameter Vector Autoregression (BVARTVP) model was specified following OHara (2015) where details on setting up estimation of the model can be found.

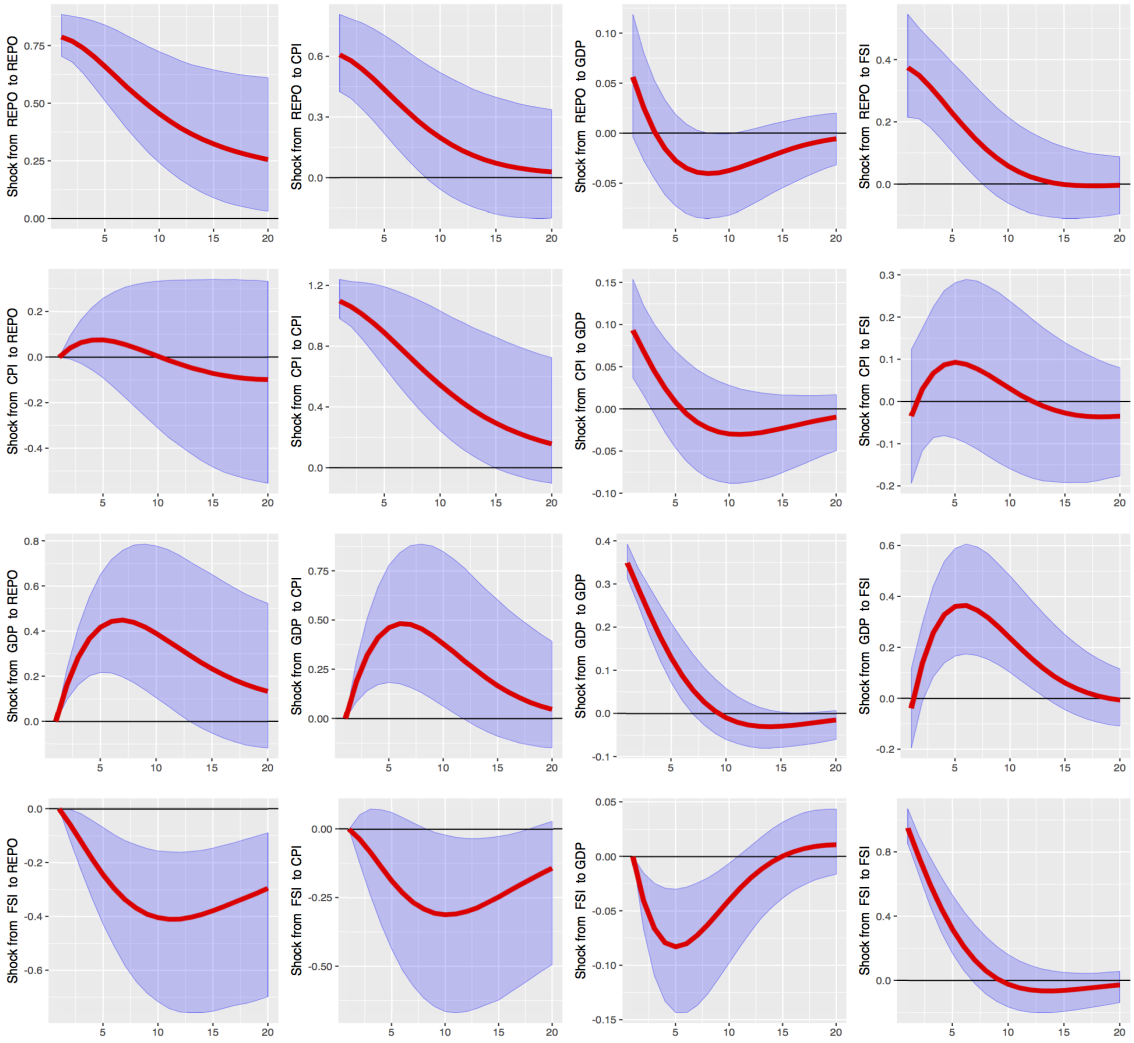
As outlined in the data section, the list of variables in the monetary policy reaction function comprise the monetary policy interest rate, denoted REPO, the inflation rate, denoted CPI, gross domestic product gap, denoted GDP and financial stress index, denoted FSI. Therefore Y_t in Equation 1, which is the vector of random variables observed at time t, can be rewritten as

$$Y_t = (REPO_t, CPI_t, IPN_t, FSI_t) \tag{6}$$

The ordering of the variables is immaterial given that a reduced form VAR is estimated as argue Stock and Watson (2001). A standard practice in Vector Autoregression (VAR) model analysis is to report results from impulse response functions and forecast error variance decompositions. The reason, as argue Rudebusch (1998), is because most Vector Autoregression (VAR) model equations do not have a clear structural interpretation hence little attention is usually paid to the individual equations of the model. In this particular paper, the impulse response functions are the only time varying parameter Vector Autoregression (BVARTVP) model statistics that are reported given that the interest is to analyse the advantage of targeting of financial stress as opposed to the exchange rate. Thus the paper compares the impulse response functions pre and post the recent global financial crisis to assess if the conduct of monetary policy changed materially pre and post the recent global financial crisis.

Figure 2 depicts the impulse response functions of the reaction of the monetary policy interest rate, annual change in consumer price index, deviation of Gross Domestic Product from its long term trend and the indicator of financial stress together with their 95 percent confidence bands in the pre recent global financial crisis period. An unexpected 1.00 percentage point increase in inflation causes the monetary authority to hike the monetary policy interest rate by just under 0.10 percentage points up to 5 quarters where the effect begins to fade away reaching an equilibrium in about 10 quarters. An unexpected 1.00 percentage point increase in the output gap causes the monetary authority to hike the monetary policy interest rate by about 0.45 percentage points up to 7 quarters where the effect begins to fade away reaching an equilibrium in over 20 quarters. An unexpected 1.00 percentage point increase in the indicator of financial stress causes the monetary authority to cut the monetary policy interest rate by just under 0.42 percentage points up to 13 quarters where the effect begins to fade away reaching an equilibrium in well over 20 quarters.

Furthermore, an unexpected 1.00 percentage point increase in the monetary policy interest rate causes inflation to increase by just under 0.60 percentage points in the first quarter where the effect begins to fade away reaching an equilibrium in over 20 quarters. An unexpected 1.00 percentage point increase in the monetary policy interest rate causes the the output gap to increase by about 0.06 percentage points in the first quarter where the effect begins to fade away reaching an equilibrium in just over 3 quarters. The output gap then decrease by 0.04 percentage points in about 8 quarters where the effect begins to fade away reaching an equilibrium in just over 20 quarters. An unexpected 1.00 percentage point increase in the monetary policy interest rate causes the financial stress index



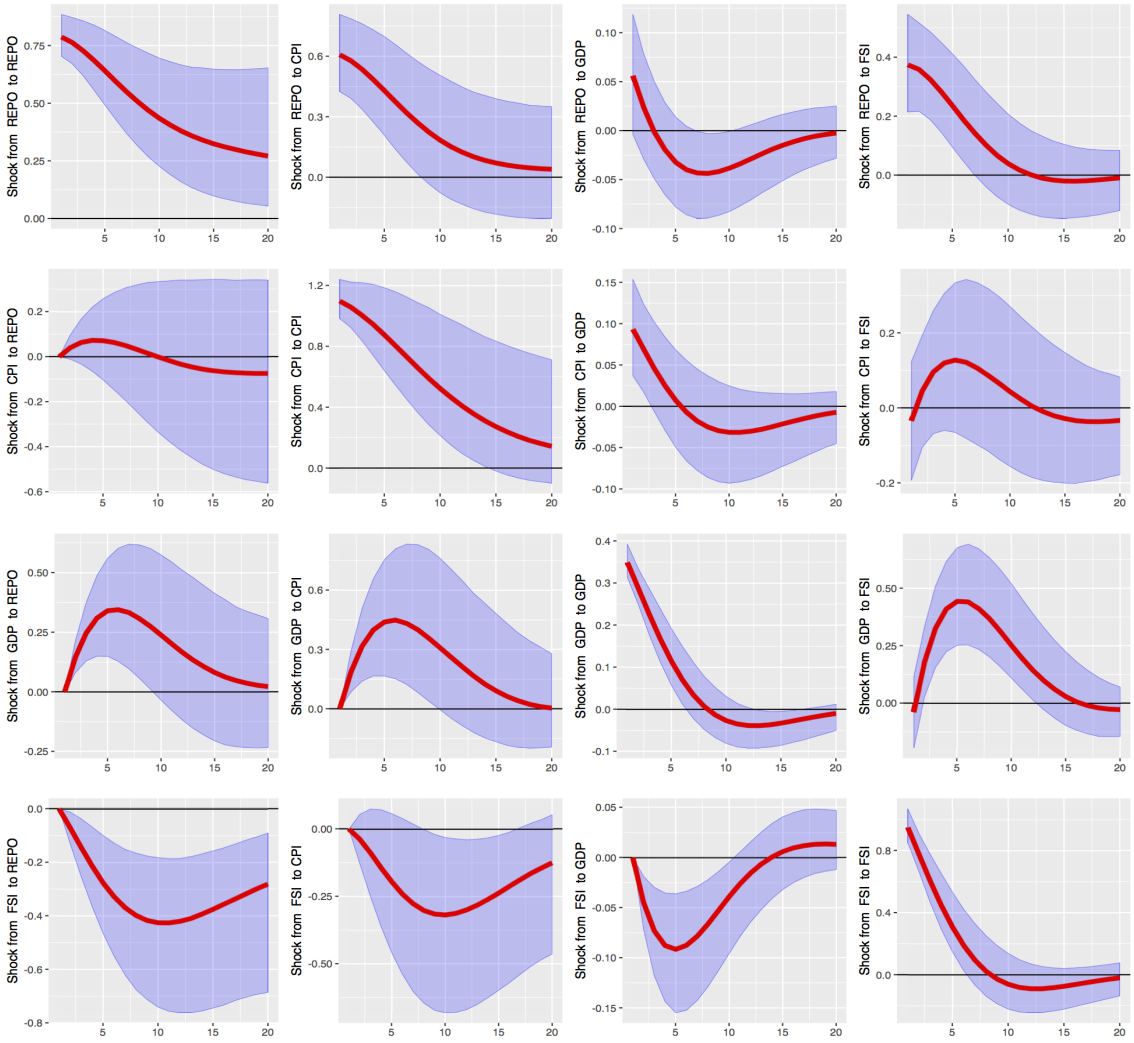
Notes: Own calculations. REPO is the monetary policy interest rate, CPI is the annual change in consumer price index, GDP is the deviation of Gross Domestic Product from its long term trend, FSI is the financial stress index

Figure 2: 2000-2007 Impulse response functions

to increase by just under 0.38 percentage points in the first quarter where the effect begins to fade away reaching an equilibrium in about 14 quarters. All the impulse response functions are statistically significant except that of the reaction of the monetary policy interest rate to an increase in inflation. This implies a negligible reaction of the monetary authority to the increase in inflation in the pre recent global financial crisis period.

Figure 3 shows the impulse response functions of the reaction of the monetary policy interest rate, annual change in consumer price index, deviation of Gross Domestic Product from its long term trend and financial stress index together with their 95 percent confidence bands in the post recent global financial crisis period. An unexpected 1.00 percentage point increase in inflation causes the monetary authority to hike the monetary policy interest rate by just under 0.10 percentage points up to 4 quarters where the effect begins to fade away reaching an equilibrium in about 10 quarters. An unexpected 1.00 percentage point increase in the output gap causes the monetary authority to hike the monetary policy interest rate by about 0.35 percentage points up to 6 quarters where the effect begins to fade away reaching an equilibrium in over 20 quarters. An unexpected 1.00 percentage point increase in the indicator of financial stress causes the monetary authority to cut the monetary policy interest rate by just under 0.43 percentage points up to 12 quarters where the effect begins to fade away reaching an equilibrium in well over 20 quarters.

Furthermore, an unexpected 1.00 percentage point increase in the monetary policy interest rate



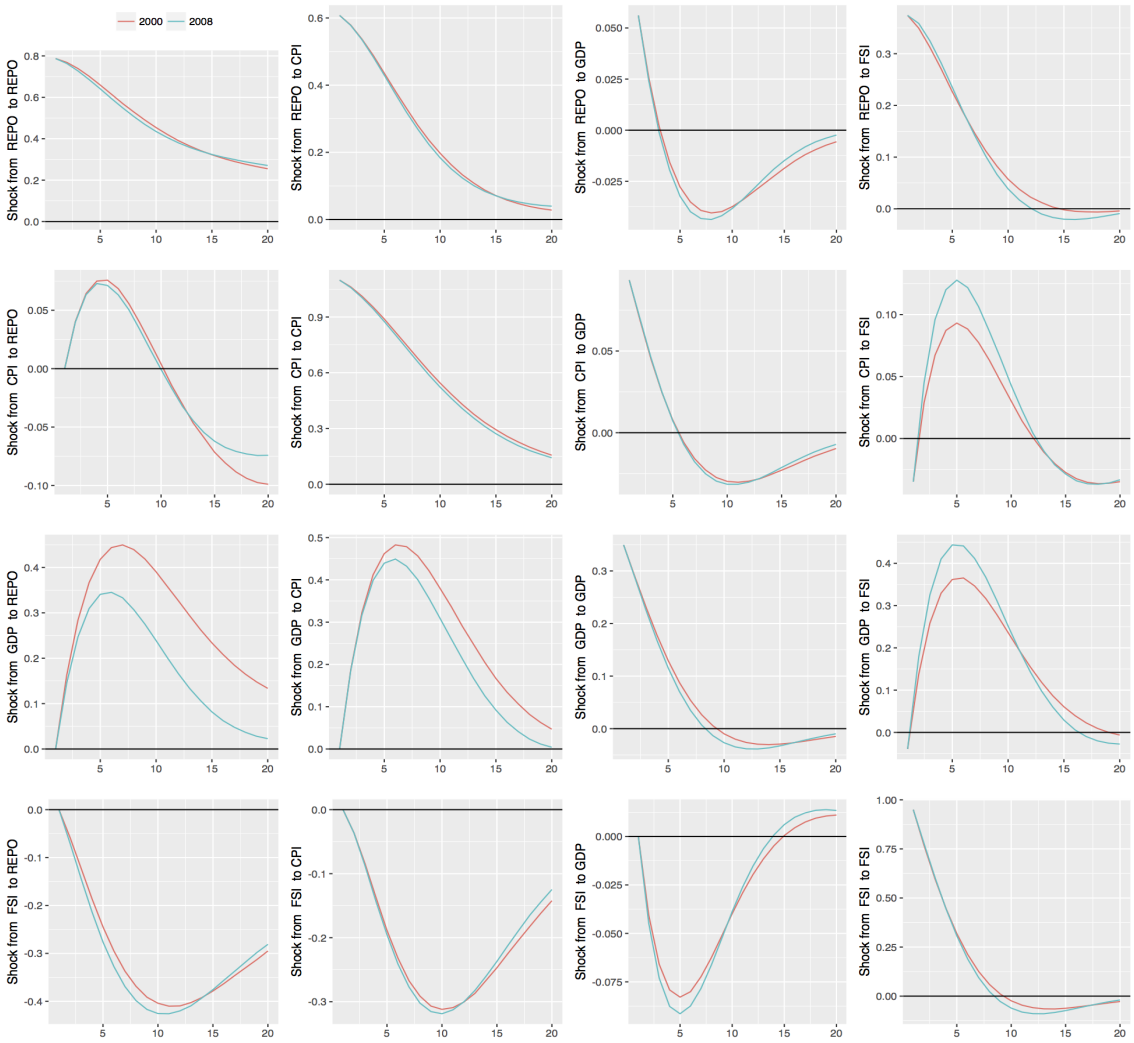
Notes: Own calculations. REPO is the monetary policy interest rate, CPI is the annual change in consumer price index, GDP is the deviation of Gross Domestic Product from its long term trend, FSI is the financial stress index

Figure 3: 2008-2016 Impulse response functions

causes inflation to increase by just under 0.60 percentage points in the first quarter where the effect begins to fade away reaching an equilibrium in just over 20 quarters. An unexpected 1.00 percentage point increase in the monetary policy interest rate causes the output gap to increase by about 0.06 percentage points in the first quarter where the effect begins to fade away reaching an equilibrium in about 3 quarters. The output gap then decrease by 0.04 percentage points in about 8 quarters where the effect begins to fade away reaching an equilibrium in about 20 quarters. An unexpected 1.00 percentage point increase in the monetary policy interest rate causes the financial stress index to increase by just under 0.38 percentage points in the first quarter where the effect begins to fade away reaching an equilibrium in about 12 quarters. As with the pre crisis period, all the impulse response functions are statistically significant saving that of the reaction of the monetary policy interest rate to an increase in inflation. This again implies a negligible reaction of the monetary authority to the increase in inflation in the post recent global financial crisis period.

Figure 4 compares the pre and post the recent global financial crisis period impulse response functions of the reaction of the monetary policy interest rate, annual change in consumer price index, deviation of Gross Domestic Product from its long term trend and financial stress index together with their 95 percent confidence bands. The impulse response function are largely similar in both periods. This is particularly the case with the reaction of the target variables that comprise annual change in consumer price index, deviation of Gross Domestic Product from its long term trend and financial

stress index to the changes in the monetary policy interest rate. The reaction of monetary interest rate to changes in the target variables such as annual change in consumer price index and financial stress index is also largely similar in both the pre and post the recent global financial crisis period. However, the reaction of monetary interest rate to changes in output gap show stronger policy action to he deviations of gross domestic product from its long term trend in the pre recent financial crisis period. This implies a relatively less vigilant reaction to the deviations of gross domestic product from its long term trend in the post recent financial crisis period.



Notes: Own calculations. REPO is the monetary policy interest rate, CPI is the annual change in consumer price index, GDP is the deviation of Gross Domestic Product from its long term trend, FSI is the financial stress index

Figure 4: Comparison of impulse response functions

The results have shown that all the impulse response functions in the pre and post global financial crisis period are statistically significant saving that of the reaction of the monetary policy interest rate to an increase in inflation in both periods. This implies a negligible reaction of the monetary authority to the increase in inflation in pre and post global financial crisis period. The results have further shown that the monetary authority adopts a loose monetary policy stance when confronted with the increase in financially stressful economic conditions. Most importantly, the reaction of the monetary policy interest rate to changes in the target variables is largely similar in both the pre and post global financial crisis period while the same is also true for the reaction of the target variables to changes in the monetary policy interest rate. However, the reaction of monetary interest rate to changes in output gap show stronger policy action to the deviations of gross domestic product from its long term trend by the monetary authority in the pre recent financial crisis period.

The results are largely similar to the finding in Stock and Watson (2001) and Koop and Korobilis (2010), particularly for the reaction of moentary policy to changes in inflation and the output gap. The results are are also similar to those in OHara (2015). The results in Stock and Watson (2001) are generated using a Vector Autoregression (VAR). Those in Koop and Korobilis (2010) and OHara (2015) are generated using using a Bayesian Vector Autoregression (BVAR) while OHara (2015) goes further to generate similar results using a time varying Bayesian Vector Autoregression (BVARTVP). Koop and Korobilis (2010) and OHara (2015) use the dataset in Stock and Watson (2001) that comprise quarterly inflation, unemployment and the federal funds rate to estimate the Bayesian Vector Autoregression (BVAR) as well as time varying parameter Bayesian Vector Autoregression (BVARTVP) results.

Conclusion

This paper analysed the monetary policy reaction function pre and post the recent global financial crisis in South Africa. The paper compared the reaction of the monetary policy interest rate to changes in the target variables that comprise consumer price index, deviation of gross domestic product from its long term trend and the indicator of financial stress pre and post the recent global financial crisis. The results show a negligible reaction of the monetary policy interest rate to the increase in inflation in the pre and post global financial crisis period. The results further show that the monetary authority adopts a loose monetary policy stance when confronted with the increase in financially stressful economic conditions. Most importantly, the results show that the reaction of the monetary policy interest rate to changes in the target variables is largely similar in both the pre and post global financial crisis period while the same is also true for the reaction of the target variables to changes in the monetary policy interest rate saving a somewhat less vigilant action by the monetary authority to the output gap in the post recent financial crisis period. The paper concludes that monetary policy in South Africa has not changed materially pre and post the recent global financial crisis.

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