Business & Social Science
IJRBS

Research in Business & Social Science

IJRBS VOL 13 NO 9 (2024) ISSN: 2147-4478

Available online at www.ssbfnet.com
Journal homepage: https://www.ssbfnet.com/ojs/index.php/ijrbs

Does financial stability spur or retard output and price stability in South Africa?

Khwazi Magubane [(a)*] *Jacques de Jongh* [(b)] *Precious Mncayi-Makhanya* [(c)]
Jabulile Makhalima [(d)] *Phindile Mdluli-Maziya* [(e)] *Boingotlo Wesi* [(f)]

[(a,b,c,d,e,f)] *North-West University, School of Economic Sciences, Vanderbijlpark, South Africa*

ARTICLE INFO

Article history:

Received 12 October 2024
Received in rev. form 23 Nov. 2024
Accepted 02 December 2024

Keywords:

price stability, output stability, financial stability, SVARs

JEL Classification:
E44, E52, E58

ABSTRACT

Following the 2007-2009 global financial crisis, the South African Reserve Bank (SARB) prioritised financial stability. This study assesses the impact of financial stability on South Africa's output and price stability, which is crucial for framing its monetary policy. Utilising a Structural Vector Autoregression (SVAR) approach, the influence of the Financial Conditions Index (FCI) on the Gross Domestic Product (GDP) and Consumer Price Index (CPI) between 1960Q1 and 2022Q4 was analysed. Results revealed a strong connection between these objectives. GDP drops after an FCI disturbance, whereas the CPI trends upwards when the SARB counters financial imbalances. This vital finding indicates a positive relation between enhanced financial conditions and output stabilisation but reveals a trade-off between price and financial stability. After a GDP shock, financial conditions improve, but they deteriorate following a CPI shock. If the SARB reacts by "mopping up" post-crisis, the policy rate typically drops, pointing to potential financial vulnerabilities. Both GDP and CPI react positively to FCI disturbances when SARB is passive. The evidence suggests that while financial stability bolsters output stability, it might endanger price stability. Thus, amongst other recommendations, South Africa's monetary policy authorities must lean against financial imbalances instead of mopping after a crisis

© 2024 by the authors. Licensee SSBFNET, Istanbul, Turkey. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).

Introduction

In the intricate and interconnected landscape of modern economics, the interplay between financial stability, output, and price stability has remained a focal point of ongoing research and discussion (Minsky 1957; Bernanke et al. 1999; Keen 2000; Svenson 2017; Adrian 2018). This discourse transcends theoretical speculation and significantly influences the decision-making of policymakers, central banks, investors, and, most importantly, the well-being of citizens (Osakwe, 2010). Since the 1980s, global financial markets have undergone deregulation, leading to rapid market expansion, increased financial activity among corporations and households, and more robust international financial market interconnections (Broner & Ventura, 2016; De Jongh, 2023). Non-bank institutions, like central banks, have ventured into providing financial services, reshaping the conventional channels of monetary policy, inflation control, and production dynamics, thereby potentially introducing new elements of financial instability (Vredin, 2015). South Africa is a captivating case study in this global economic dialogue, boasting a dynamic and evolving economy, a distinctive blend of financial markets, diverse economic sectors, and complex socioeconomic challenges (International Monetary Fund (IMF), 2022a). This provides an excellent backdrop to explore the complex interaction of financial stability, economic output, and price stability.

While intricate, financial stability is generally defined as the absence of systemic financial crises and the seamless functioning of financial intermediaries (van Dyk, 2011; Ertugrul et al., 2019; Glocker et al., 2023). It has long remained a paramount concern for global policymakers (Curi & Murgia, 2023). Financial stability does not imply the absence of imbalances but signifies a state where

* *Corresponding author. ORCID ID: 0000-0003-3918-9341*
© 2024 by the authors. Hosting by SSBFNET. Peer review under responsibility of Center for Strategic Studies in Business and Finance.
https://doi.org/10.20525/ijrbs.v13i9.3797

the system can address these imbalances without causing significant disruptions (Vredin, 2015). Achieving and sustaining financial stability is imperative for economic growth and development (World Bank, 2016; Barra & Zotti, 2021). In line with this, South Africa has implemented legislation to bolster financial stability and ensure robust economic performance. The Constitution of the Republic of South African Act of 1996 mandates the South African Reserve Bank (SARB) to protect the sovereignty of the currency in the interest of balanced and sustainable economic growth in the Republic (Vermeulen, 2020). The National Treasury broadened the SARB's mandate to include financial stability, which was formalised by the Financial Sector Regulation Act No. 9 of 2017. The act empowers the SARB to manage any systemic shocks that may occur and to restore financial stability. However, this responsibility is not solely that of the SARB. The SARB coordinates the efforts of additional stakeholders such as the government, financial sector regulators, state organs, and other financial sector stakeholders to collectively protect financial stability. During a "Questions for an Oral Reply" session in the National Assembly in November 2023, President Cyril Ramaphosa stated that there was "no intention" to make amendments to the mandate of the SARB and that the focus remains to maintain price stability and growing economy (South African Government News Agency, 2023).

The precise mechanisms by which financial stability influences a country's production and price stability remain a subject of extensive academic inquiry (Adrian & Liang, 2018). South Africa's economy is multifaceted economy inclusive of multifaceted, including mining, manufacturing, agriculture, finance, and services, each with its sensitivities towards financial stability (SARB, 2023). The country's financial system, characterised by a sophisticated banking sector, active stock, and bond markets, and thriving insurance industries, plays a pivotal role in shaping the broader economic landscape (Wajid, 2008; National Treasury, 2011; Price Waterhouse Coopers, 2015; Jules et al., 2021; IMF, 2022b). However, South Africa remains susceptible to global financial shocks from international capital flows, trade dynamics, and the interconnected networks of financial markets (Goel & Miyajima, 2021; Akhtaruzzaman et al., 2022). As a result, the need to investigate whether financial stability catalyses economic growth and price stability or hinders these objectives in South Africa becomes an essential academic effort.

Additionally, studies such as Wischnewsky et al. (2021) argue that central banks implement accommodative monetary policies during episodes of financial instability. These policies positively affect production and price stability by preventing severe disruptions but raising inflation risk due to the increased liquidity injected into the economy. Similarly, the pursuit of price stability through monetary policy tightening threatens financial stability by increasing the risk of an economic crisis (Schularick et al., 2021; Blot et al., 2023; Glocker et al., 2023; Schiman-Vukan, 2023). Other studies, like those conducted by Garcia Revelo and Levieuge (2022), suggest that conflicts between financial stability and price stability are more likely to arise in the case of shocks with a broader impact on the economy, such as macroeconomic shocks, as opposed to sector-specific shocks like those related to housing.

Against this backdrop, we are left with the problem of whether financial stability catalyses or hinders price and output stability in South Africa. Hence, this study examines the nexus between price, output, and financial stability in South Africa. The significance of financial stability lies in the fact that the South African Reserve Bank cannot pursue monetary policy while disregarding it (Curi & Murgia, 2023). Furthermore, financial stability is vital because it influences forecasts related to inflation and the output gap (Vredin, 2015). The main contributions of the present study are as follows. First, the study constructs a dynamic financial conditions index (FCI), which is used to gauge the stability of the financial system in South Africa over time. Second, the FCI, together with data for the period 1980q1 – 2023q4 and the structural vector auto-regression model (SVAR), are used to investigate and analyse how macroeconomic and policy variables respond to financial stability developments. Moreover, the study FCI and examines the FCI's relative importance in explaining developments in macroeconomic and policy variables in the country. The rest of this paper will delve into the theoretical foundations, empirical evidence, and policy implications surrounding this critical issue, shedding light on the intricate dynamics that shape the relationship between financial stability, economic output, and price stability in the South African context. Understanding these complex economic interactions holds profound implications for the future trajectory of South Africa's economy and, by extension, the broader global economic landscape.

Literature Review

The real sector is a cornerstone of any economy, wielding substantial influence over economic production and contributing significantly to a nation's Gross Domestic Product (GDP). It comprises the essential economic sectors that underpin GDP growth and overall financial viability (Ductor & Grechyna, 2015). At its core, the real sector involves the tangible creation of goods and services, earning it the distinction of being the 'real' facet of the economy. Its domains encompass diverse industries such as agriculture, manufacturing, construction, and mining (Baur, 2012). These industries are the backbone of meeting domestic and international demand for goods and services, underscoring the real sector's vital role in fostering long-term economic growth and employment opportunities. A thriving real sector resonates through various facets, positively influencing a nation's productivity, standard of living, and overall quality of life. Notably, it generates well-paying jobs, ensuring a consistent source of income for families and communities, which, in turn, plays a role in reducing poverty and income inequality (Gros & Alcidi, 2010).

According to Mordi (2010), the real sector's importance to an economy's growth and well-being becomes evident through several key factors: i) Economic Expansion. The real sector enhances economic expansion by boosting productivity, increasing employment opportunities, and stimulating consumer spending; ii) Economic Stability: It serves as the basis of the entire economy, fostering stability and mitigating the risk of economic crises. A thriving real sector amplifies output, elevates income levels, and enhances the overall quality of life for citizens; iii) Export Revenue: A robust real sector can yield substantial export revenue by producing goods

and services in international demand; and iv) Technological Advancements: The real sector drives technological and industrial advancements, leading to improved production efficiency, product quality, and competitiveness.

On the other hand, the financial sector primarily focuses on two key objectives: facilitating the movement of funds to enable buying transactions and facilitating the exchange of ownership of productive resources. The financial sector plays a complementary yet equally vital role in the economy by effectively managing, allocating, and facilitating the transfer of financial resources. This contributes significantly to the overall vitality of the economy (Mordi, 2010). Governments often assist the financial sector during financial crises or recessions. Furthermore, the financial sector serves as a conduit for capital allocation, channelling funds from various sources, including individuals, households, businesses, and governments, to borrowers. This multifaceted sector encompasses various segments collectively supporting a nation's commerce and overall economic well-being. These segments include monitoring enterprises' and retailers' financial performance, sales, and expenditures (Baily, 2013). It is widely believed that one of the crucial roles of the financial sector in facilitating economic growth involves reducing information asymmetry, transaction costs, and enforcement challenges. These objectives are achieved through various specific functions performed by the financial sector. One direct consequence of the financial sector's structure is its role in coordinating economic activities, such as managing finance costs and ensuring accessibility to investment funds (Aderibigbe, 2001). According to the Reserve Bank of Australia (2014), the financial sector serves several core functions: i) Value Exchange: It facilitates payments and transactions; ii) Intermediation: It acts as a means for transferring funds between savers and borrowers; iii) Risk Transfer: The sector provides methods for assessing and distributing specific risks and iv) Liquidity: It offers ways to convert assets into cash without incurring significant losses in value.

One might liken the stock market or stock exchanges to a reflection that partially mirrors the sector's growth or decline. Within this sector, the primary pillars are banking and insurance. Banks play a pivotal role in individuals' daily lives and a nation's economic landscape. Consequently, governments frequently enact reforms within the financial sector to regulate, ensure stability, and foster economic expansion. Similarly, the insurance sector is vital in safeguarding the well-being of individuals, businesses, and their health (Ibrahim, 2007). In summary, this industry facilitates issuing loans, mortgages, and insurance policies. Despite being often perceived as modern innovations, banking and payment systems have a long history spanning thousands of years. Significant changes in transactional behaviour have occurred throughout this time, but the fundamental objectives have remained consistent. For example, the economic functions performed by the earliest modern banks in Renaissance Italy continue to be relevant to date (Freixas & Rochet, 2008).

The connection between the real and financial sectors is a fundamental and complex relationship in every economy. It involves the dynamic interplay between the tangible, productive activities of the real sector, which includes businesses and households engaged in producing and consuming goods and services, and the financial sector, which comprises financial institutions, markets, and instruments. Central banks implement monetary policy transmission instruments such as interest rates to influence monetary policy and the economic environment in general. Therefore, a change in the interest rate and the money supply will affect the interest charged on loan repayments, consumption, and investment decisions in the real sector (European Central Bank, 2023a). As such, there is a potential reaction in the real sector for every action or decision taken in the financial sector. Globalisation may directly or indirectly impact the real sector globally or at the country level, as it facilitates the integration of financial markets and cross-border capital flows while indirectly affecting trade patterns, foreign exchange rates, and foreign direct investment (Osano & Koine, 2015). Globalisation is further intensified by the presence of technology in the form of Internet banking, where transactions can be conducted from anywhere, indicating the financial sector's efficiency in assisting businesses and customers in the real sector (Yin et al., 2020). Participants in the real economy are also able to avoid any risks that could potentially be posed by the financial sector locally or internationally by purchasing valuable instruments such as short-term insurance derivatives or may choose to pursue hedging strategies (Ocampo et al., 2000; Lanoo & Thomadakis, 2020).

The success of the real sector depends on the performance of those economic segments responsible for the growth of the GDP in the economy. Coupled with a healthy financial sector, the real sector can only grow, granted that other areas of the economy remain stable (Khalil & Chaisrisawatsuk, 2018). Studies have indicated the influence of financial stability and how its functioning can be altered to ensure capital accumulation, which inevitably leads to economic growth (United Nations, 1949; European Parliament, 2023). Additionally, King and Levine (1993) found that future rates of capital are inevitable when there is financial stability coupled with increased efficiency for economies that employ capital. Correspondingly, financial structures are positioned to promote growth by way of an efficient allocation of investments via a myriad of channels. At the same time, they can equally affect economic growth negatively, depending on the context and the specific circumstances (Levine, 2021). Financial stability can thus have both a positive and a negative effect on output and price. Concerning the positive effects, financial stability enables accessibility to financial products and services at reasonable costs, which may promote investment, entrepreneurship, and economic growth (Koudalo & Toure, 2023). Financial support and assistance afforded to businesses allow for further increased investments through further expansions and increased demand for labour, leading to a higher output. At a macro level, a conducive financial environment can assist central banks in effectively implementing monetary policy. Such an environment allows central banks to manage better monetary policy objectives such as inflation and interest rates, leading to price stability. Similarly, systemic risks can be averted through strong banking regulations highly dependent on financial stability (Agenor & Pereira da Silva, 2013). Averting crises is crucial in maintaining economic output and price stability, as crises often lead to unstable prices and economic contractions.

Equally, price stability can have adverse effects on economic growth and inflation. For instance, excessive risk aversion may result in stunted economic growth, and this is likely to happen when banks hold back on lending, particularly during recessionary periods, potentially leading to a credit crunch, reduced investment, and slower economic growth (European Central Bank 2023b; Rashid et al., 2023). An overly cautious financial sector can also lead to an asset price bubble, such as the housing or stock market bubble. Financial crises are often triggered by the bursting of such bubbles, leading to negative economic growth and inflation (Franklin & Gale, 1999). Low interest rates, among other things, though often used to prevent financial turmoil, are likely to lower returns on investments and savings, promote excessive risk-taking, and distort asset prices, particularly in the housing market. Low interest rates also can potentially negatively affect price stability (Shakour Shalaan, 1990).

Several theories underpin the relationship between the real and the financial sector. The first theory, the Balance Sheet Channel, explains the transmission mechanism of how monetary policy impacts the broader economy, in turn affecting the financial state and health of households and businesses (Bernanke et al., 1999). According to this theory, monetary affects interest rates, asset prices, wealth, balance sheets, and thus the overall economy. For example, if the SARB decreases interest rates through quantitative easing, it will lower borrowing costs for households and firms. Asset prices are expected to increase as a result of this, causing profits on bonds to be less attractive. In addition, households' wealth increases as asset prices rise, and the asset holders consequently have an increased net worth and tend to spend more. Credit conditions are also affected when interest rates fall. Borrowing becomes cheaper, leading to increased investment, meaning that more consumers can take out loans for investment. Changes in asset prices and credit conditions cause changes to the balance sheet. Adjustments by households and firms are then made depending on the credit conditions they may choose to increase borrowing or reduce debt.

The Credit Channel Theory underscores the substantial influence of monetary policy innovations on the real economy, even when open-market interest rates experience relatively modest fluctuations (Bernanke et al., 1999). This theory accentuates how changes within the financial sector, such as alterations in interest rates and credit availability, can significantly impact the real economy. It posits that disruptions or transformations within the financial sector can sway both firms' and households' borrowing costs and investment decisions, thereby shaping economic activity.

Bernanke, Gertler, and Gilchrist (1999) point out that this theory addresses challenges in ascertaining the scale, timing, and composition of the economy's response to monetary policy shocks concerning neoclassical cost of capital (interest rates) effects. It underscores the role of the Credit Channel Theory in bridging these gaps.

Building upon the foundations of the Credit Channel Theory, the Financial Accelerator Theory extends our understanding of how financial shocks or instability can amplify fluctuations within the real economy. This theory elucidates how volatility or disruptions in financial markets can give rise to more pronounced swings in output and employment. It underscores the feedback loop between financial markets and the real economy. According to Bernanke, Gertler, and Gilchrist (1999), the Financial Accelerator Mechanism elucidates how negative economic shocks, such as declining asset prices or rising interest rates, are amplified through financial channels. These shocks lead to tighter credit conditions, reducing borrowing capacity for households and firms from financial institutions (Bernanke et al., 1991). Such initial shocks exacerbate the situation, further reducing investment and consumption and increasing unemployment (Bernanke, Gertler, & Gilchrist, 1999). Several factors contribute to this credit crunch, including bank capital constraints, regulatory policies, and changes in the economic environment (Bernanke et al., 1991). Credit crunches, in turn, detrimentally impact overall economic growth by limiting investment and output. Hence, it is emphasised that the interaction between financial markets and the real economy holds paramount significance in analysing macroeconomic phenomena (Gertler, 1992).

Moreover, financial markets and institutions play a pivotal role in the propagation of business cycles (Bernanke, Gertler, & Gilchrist, 1999). However, firms' decisions are susceptible to distortions in capital allocation due to capital market imperfections, including asymmetry, agency problems, and financial frictions (Hubbard, 1998). A firm's capacity to borrow and invest is intricately linked to its investment decisions and aggregate output fluctuations (Gertler, 1992). Contrary to neoclassical and traditional investment models, which suggest that firms' investment behaviour is influenced primarily by the cost of capital, encompassing interest rates, firms often exhibit heightened sensitivity to cash flow (Hubbard, 1998). This has implications for monetary policy, indicating that interest rate adjustments have limitations in mitigating the effects of capital market imperfections.

Using the financial sector to predict the price level and output in South Africa is of utmost importance to SARB. This is reflected in the inclusion of financial variables in SARB's macroeconomic models and decision models (Boshoff & du Plessis, 2020). This is consistent with other countries where it was observed that there exists a robust linear connection between the financial sector and the real sector (Adeusi & Aluko, 2015; King & Levine, 1993).

Recent events in several emerging market countries, such as Argentina, Turkey, and Brazil, highlight the crucial role of financial stability in sustaining economic resilience after the pandemic. These countries encountered significant challenges to financial stability following the pandemic, mainly caused by increasing inflation, high levels of debt, and a slower economic recovery (IMF, 2021; Gudmundson et al., 2022; Financial Stability Board, 2022; Kose et al., 2021). These economies are further affected by the rising cost of interest rates due to rate increases by more developed countries. Efforts to address these challenges through contractionary measures could heighten financial instability, possibly resulting in financial bubbles and inadequately funded real sectors (Duttagupta & Pazarbasioglu, 2021; Financial Stability Board, 2021). These challenges highlight the significance of utilising strong financial

indicators, such as the Financial Conditions Index (FCI), to evaluate and promote financial stability, especially in volatile environments like South Africa (Brum-Civelli et al., 2024).

Various instruments are used to represent the financial sector in macroeconomic models; amongst the most comprehensive ones is the financial conditions index (FCI). The FCI has become a desirable index due to its ability to ascertain financial stability (Zheng & Yu, 2014). Several studies, such as one by Capaso et al. (2023), have used the index to establish the usefulness of asset prices in formulating monetary policy under an inflation-targeting regime. The FCI was constructed employing a vector autoregression model, an autoregressive distribution lag model, and a factor-augmented vector autoregression model. The study's findings indicate that an FCI is a useful measure in monetary policy and could be employed within an inflation-targeting framework, particularly for developing countries with low inflation rates. Due to its versatility, the FCI is associated with setting interest rates in the United States Federal Reserve Bank, the Bank of Canada, and the Bank of England. This was done using the Kalman filtering algorithm to capture the weight changes of the financial variables (Montagnoli & Napolitano, 2005; Sahoo, 2017).

Juhro and Iyke (2019) constructed an FCI for Indonesia inspired by the Asian Financial Crisis (AFC). After constructing the FCI, they found that it has the ability to capture the peaks of the AFC as well as those of the Indonesian financial crisis, those of the constant period before the AFC (2000-2008), and those of the period during and after the global financial crisis. Amongst their findings was that a contractionary monetary policy often leads to undesirable financial conditions in the first two quarters, an improvement in financial conditions for three subsequent quarters, and a decline thereafter. A study by Aikman et al. 2017 constructs an FCI using variables such as housing prices, household credit, and business lending standards. Any shocks to the FCI were interpreted as time-varying risk premia of investors, possibly estimated by bank capital constraints or other endogenous reactions of other financial intermediaries through value-at-risk. They found that credit is crucial to financial conditions and how they affect the real economy. Additionally, positive shocks to financial conditions may positively impact the real GDP and employment and lead to an increased credit-to-GDP gap.

The second comprehensive measure of the aggregate financial sector is the financial cycle. Financial cycles are often closely linked to business cycles, and the two indicators are often difficult to distinguish between. According to Borio et al. (2014), financial cycles are defined as "self-reinforcing interactions between perceptions of value and risk, attitudes towards risk and financing constraints, which translate into booms followed by busts." Plašil et al. (2015) define financial cycles as fluctuations in the attitude of market participants towards financial risks. Evidence from a study by Galati et al. (2016) found that financial cycles of the Euro area and those of the United States tend to be long for durations of up to 25 years compared to business cycles, which can be as long as eight years. They also found that financial cycles in the United States and the Euro area have larger amplitudes, as much as 10 per cent to 20 per cent, compared to business cycles of only about five per cent. Furthermore, their findings indicate that countries within the Euro area do not have a homogenous financial sector; for instance, Germany and the Netherlands may have shorter financial cycles of about ten years compared to those of France, Italy, and Spain, with cycles longer than ten years. Hiebert et al. (2014) and Comunale and Hessel (2014) reported similar findings. Findings by Claessens et al. 2010 and Claessens et al. (2011), as cited by Nyati et al. (2021), also indicate that the peaks and troughs of variables such as the credit to GDP ratio, housing, and equity prices tend to have longer and ampler financial cycles as opposed to business cycles. Farrell and Kemp (2020) followed the exploratory method of analysis and also used house prices, credit, and equity prices to estimate financial cycles for South Africa and found that house prices and credit tend to have lower frequency cycles, indicating that the financial cycle is of a medium-term based on South African data. They also found that the financial cycle has a lower frequency than the traditional business cycle with a longer amplitude than the business cycle.

In the scholarly domain, there appears to be a paucity of research investigating the influence of the Financial Conditions Index (FCI) and the financial cycle on South Africa's macroeconomic landscape. The prevailing literature predominantly centres on individual components of these indices. Among the limited scholarly contributions in this realm, Balcilar et al. (2016) leveraged the FCI to probe the ramifications of financial instability on the South African economic framework. Their research employed a nonlinear logistic smooth transition vector autoregressive model (LSTVAR). This methodological approach facilitates a gradual economic transition, modulated by a selected switching variable that distinguishes between epochs of heightened and diminished financial volatility. Their findings delineate a nonlinear reaction of the South African economy to financial disturbances. Specifically, it was discerned that manufacturing output growth and the Treasury Bill rates exhibit heightened susceptibility to financial perturbations during economic upturns. At the same time, inflation demonstrates a more pronounced response to financial shifts amidst downturns.

Most studies investigated components of financial cycles. For instance, Boshoff (2005) and Moolman (2003) studied South Africa to deduce that financial variables, particularly those more specific to the business cycle, include the yield curve and its role as a leading indicator. They found that the yield curve is the most desirable leading indicator, particularly in the long term, as opposed to other local financial variables such as the stock market prices, interest rates, and monetary aggregates. With regards to monetary aggregates, Boshoff (2020) further concludes that the real M3 is the best leading indicator to use as it performs better as opposed to the real M1 indicator as adopted by the SARB and that three-month Treasury bills are considered to be more effective over shorter leads. Similar results were obtained by Nel (1996) and Aye et al. (2018).

Other studies include Auret and Golding (2012) and Sayed et al. (2017), who explored the prophetic attributes of South African stock prices. Specifically, Auret and Golding (2012) assess the correlation magnitude between deviation cycles in South African stock

prices and real output (represented by proxies such as GDP and industrial production). These deviation cycles are extracted via the Hodrick–Prescott filter and are examined across varying lag intervals during the sample timeframe of 1969–2010. Their scrutiny uncovers a salient overarching correlation during three distinct intervals: 1969–1988, 1988–1997, and 1997–2010. However, it is pivotal to note that their analysis refrains from a focused examination of specific turning points, thereby homogenising the weightage attributed to each datum. In a parallel vein, Sayed et al. (2017), whilst examining the 1998 to 2016 period, ascertain that cumulative stock market indices spanning diverse market sectors (inclusive of the All-Share Index, the Industrial Index, the Resources Index, and the Financial Index) pre-emptively signal the growth rate cycle of South Africa. Yet again, the emphasis on turning points remains conspicuously absent. Hence, these scholarly pursuits can be perceived as preliminary evaluations of the potentiality of leading indicators and do not necessarily negate the insights propounded by Boshoff regarding the stability of the leading interval. The next section discusses the data and methodology used in the study.

Research and Methodology

Time series data for the period 1960q1-2022q4 is used in the study. The variables used are real gross domestic product (GDP), consumer price index (CPI), policy rate (PR), financial conditions index (FCI), federal reserve funds rate (FED), and oil prices (OIL). The variables CPI, GDP, and OIL were logged to make percentage changes. The PR and FED were not logged as they were already in percentage changes. The PR was collected from the Bank of International Settlements (BIS), CPI from the Organisation of Economic Co-operation and Development (OECD), FED and OIL from the Federal Reserve Bank, and GDP from the SARB. The data covers the period 1960q1–2022q4.

In South Africa, GDP has a dual role. First, it is a measure of economic growth. Positive GDP changes correspond to economic growth episodes (Trinh, 2017). Second, it is a measure of output stability. When GDP is above its trend level, it is considered a business cycle boom (Boshoff & du Plessis, 2020). This phase of GDP is associated with an overheating economy in terms of over-utilization of factors of production and is associated with a rising price level (Mankiw, 2020). During this period, policymakers try to cool down the economy by tightening policies to bring GDP back to its trend level. In contrast, when GDP falls below its trend level, it indicates a recession, unemployment increases, and the price level falls, easing policies to re-stimulate the economy. On the other hand, the variable CPI represents the price level. Positive changes in the CPI are defined as inflation, whereas negative changes represent deflation. In South Africa, the SARB uses the CPI to measure inflation. The SARB is concerned with keeping inflation between 3 per cent and 6 per cent in annual terms. Therefore, it can be said in the study that GDP measures output stability, whereas the CPI is a measure of price stability. The variable PR captures changes in the repo rate. Whereas the variables FED and OIL are included to account for exogenous shocks.

Our choice of variable to represent financial stability is the FCI. The FCI reflects the evolution of systemic risk over time in the financial system. This study follows Brave and Butters (2010) and constructs the FCI by extracting a common factor of financial variables using principal component analysis (PCA). De Wet and Botha (2020) and Kabundi and Mbelu (2021) also used PCA to construct versions of the South African FCI. However, these studies did not investigate the impact of their FCI on GDP and the CPI. The following financial variables are used to construct the FCI: Balance of payments (BOP), credit-to-GDP ratio (CRG), residential property prices (P.P.), real effective exchange rate (F.X.), aggregate index of equity prices (E.Q.), growth rate of GDP (Y), net international investment position (IIP), long-term interest rates (LRI), and aggregate money supply (M3). These variables were selected as they represent the various segments of the South African financial system. Moreover, they have been favoured by other existing studies as the crucial ingredients in the composition of the FCI (see Brace and Butters, 2011; Kabundi and Mbelu, 2021; Drehmman et al., 2012; Claessen et al., 2011; Farrel and Kemp, 2020; Nyati et al., 2020). This is because the movement of these variables and their correlation corresponds to most developments in systemic risk over time. The variables CRG, P.P., F.X., and E.Q. were collected from the Bank of International Settlements Statistics. The variables BOP and IIP were collected from the International Monetary Fund's International Financial Statistics. The Variable GDP was collected from the SARB. The BOP captures South Africa's fiscal position. The variables CRG, P.P., and E.Q. represent developments in the credit and asset markets. These variables are also considered to be the best indicators of systemic risk. Their cyclical fluctuations occur around episodes of financial distress (Borio, 2014). The F.X. captures the exchange rate market, whereas M3 represents the monetary sector. In the study, no weights are attached to variables entering the PCA, allowing each market to affect South Africa's financial conditions equally. This is consistent with De Wet and Botha, who found that these variables strongly impacted the FCI above 0.75 per cent in absolute terms.

Figure 1 above displays the FCI. The red line represents the evolution of the FCI over time. The grey-shaded areas are financial crises. In the literature, there are two ways to interpret the FCI. First, a decline in the FCI represents a deterioration of financial conditions, whereas an increase in the FCI represents an improvement in financial conditions (Gumata et al., 2012). Second, negative changes in the FCI are regarded as tightening financial conditions. In contrast, positive changes ease financial conditions, corresponding to a tight and loose monetary policy stance. As a general rule of thumb, when the FCI falls below its mean (Green line in Figure 1) or a standard deviation of negative one (Black line in Figure), it is considered that financial conditions are deteriorating or tightening (Brave & Butters, 2011). Through eyeball inspection of Figure 1, it can be observed that before the 1980s, there were sharp fluctuations in the FCI. However, from 1980 until the early 2000s, there was an increase in the FCI, indicating a period of accommodative financial conditions/ improvements in financial conditions. The period 1980-2000 corresponded with great moderation, a period of success in keeping inflation low and stabilising output. Between the Dot.Com Bubble in 2002 and the

international crisis in 2007, there was a sharp decline in the FCI; it gradually improved after 2010 and slightly tightened during the Covid-19 pandemic.

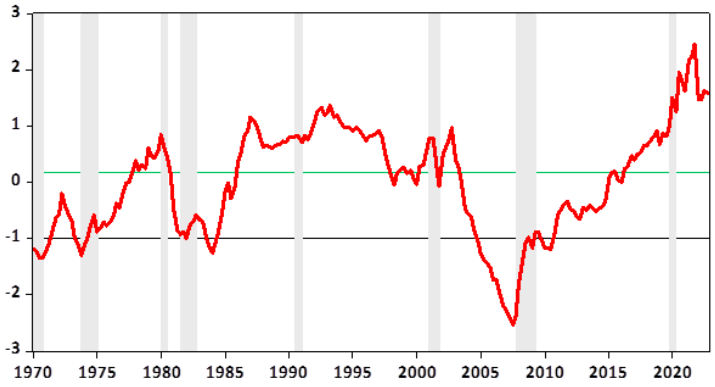

Figure 1: Evolution of the FCI

The Structural Vector Autoregression (SVAR) methodologies have gained widespread use in macroeconomic and financial research due to their flexibility and capacity to analyse complex interdependencies between multiple economic variables. One of the most significant advantages of these models is their ability to capture dynamic interactions and feedback effects across variables over time without requiring rigid theoretical assumptions about structural relationships (Sims, 1980). For instance, in a macroeconomic context, SVAR models allow researchers to assess how economic shocks, such as a monetary policy adjustment, propagate through the system and impact variables like output, inflation, and asset prices. These methodologies provide a powerful empirical framework for testing economic hypotheses in real-world contexts, especially within emerging economies where economic relationships might not align closely with traditional theoretical models (Leeper et al., 1996).

SVAR models also offer substantial versatility in analysing policy interactions, particularly in economies that implement monetary and macroprudential policies, such as South Africa. By allowing simultaneous examination of both policies' effects, SVARs provide insights into potential policy trade-offs or complementarities, informing policymakers on the impact of coordinated versus independent policy actions (Blanchard & Quah, 1989). Moreover, the SVAR approach enables researchers to incorporate country-specific variables and tailor the analysis to particular economic settings, making it suitable for studying complex economies with distinctive financial cycles and regulatory structures (Uhlig, 2005). Given these capabilities, the SVAR model is a vital tool for examining financial stability and policy effectiveness in South Africa's Inflation Targeting framework, where understanding financial cycles' interactions with macroeconomic variables is critical (Nkoro & Uko, 2016).

However, despite these advantages, SVAR methodologies have limitations. One prominent challenge is the identification problem, as the interpretation of structural shocks often relies on restrictive assumptions, such as orthogonalisation or economic theory-based constraints (Uhlig, 2005). These identification assumptions can introduce bias if they do not accurately capture the underlying economic relationships, potentially impacting the credibility of policy conclusions. Another limitation is the need for extensive data, as SVARs require many observations to yield robust and statistically reliable results, which can be challenging in contexts with limited historical data (Lütkepohl, 2005). Additionally, SVAR models can exhibit parameter instability when applied to economies with frequent structural changes, necessitating advanced techniques, such as time-varying parameter models, to accommodate these shifts (Primiceri, 2005).

Despite these limitations, the advantages of the SVAR/VAR approach typically outweigh its drawbacks, particularly for policy analysis in complex economic environments. The flexibility, dynamic analysis capabilities, and adaptability to various economic structures provide researchers and policymakers with nuanced insights that are not readily achievable with alternative methods. The model's capacity to test policy responses under different shock scenarios enhances its value as a policy tool, even when identification limitations are acknowledged (Sims, 1980; Lütkepohl, 2005). Consequently, the SVAR/VAR approach remains indispensable in understanding and forecasting economic dynamics in South Africa and other emerging economies, enabling informed policy decisions that account for both macroeconomic and financial stability concerns.

The Cholesky decomposition is frequently employed as a solution to address the identification limitations inherent in SVAR/VAR methodologies. The Cholesky decomposition simplifies the identification problem by orthogonalising shocks, allowing researchers to disentangle and interpret the impact of each structural shock independently (Kilian & Lütkepohl, 2017). By imposing a recursive ordering on variables, the Cholesky decomposition restricts certain contemporaneous relationships, which helps differentiate shocks according to assumed causal structures based on economic theory or empirical observations. For instance, in a typical SVAR model analysing monetary policy, the Cholesky decomposition can be used to specify that monetary policy shocks affect output with a lag. At the same time, financial variables might respond more immediately. This decomposition provides a straightforward approach to circumvent the complex identification requirements associated with SVARs, thus enhancing the reliability of shock responses derived from the model (Sims, 1986).

However, while Cholesky's decomposition partially helps to resolve identification challenges, it is not without limitations. Since the ordering of variables directly influences the interpretation of shocks, incorrect or arbitrary ordering may introduce bias, particularly if the chosen sequence does not align well with the underlying economic structure (Stock & Watson, 2001). Nevertheless, when used thoughtfully and in combination with robust economic reasoning, Cholesky decomposition remains a valuable tool within SVAR models. It aids in addressing the identification issues while maintaining the model's ability to capture complex interactions between variables, ultimately enhancing its effectiveness in studying policy interactions and economic stability in contexts like South Africa's financial system (Leeper et al., 1996). Consider the following structural equation:

$$G(L)y_t = C(L)x_t + \varepsilon_t$$

Where G(L) and C(L) are matrix polynomials in the lag operator L,x_t is a K×1 vector of independent variables, y_t is an N×1 vector of endogenous variables in period t, and ε_t is the vector of structural shocks such that:

$$VCV(\varepsilon_t) = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ - & 1 & 0 & 0 & 0 & 0 \\ - & - & 1 & 0 & 0 & 0 \\ - & - & - & 1 & 0 & 0 \\ - & - & - & - & 1 & 0 \\ - & - & - & - & - & 1 \end{pmatrix} \text{ and } CORR(\varepsilon_t) = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ - & 1 & 0 & 0 & 0 & 0 \\ - & - & 1 & 0 & 0 & 0 \\ - & - & - & 1 & 0 & 0 \\ - & - & - & - & 1 & 0 \\ - & - & - & - & - & 1 \end{pmatrix}$$

The diagonal elements in the VCV (ε_t) are variances, while the off diagonal are covariances. The structural VAR cannot be estimated directly because of the contemporaneous relations in matrix G(L). Assuming that G(L) is invertible, a reduced form VAR is estimated; afterwards, an identification scheme discussed below is imposed on the reduced form VAR to recover the true structure of the economy. Equation (1) is multiplied with the inverse of G(L) to obtain the reduced form VAR:

$$y_t = Fy_{t-1} + u_t$$

Where F is the matrix polynomial of parameters and u_t is the reduced form residuals. To recover the structure of the economy and structural shocks, restrictions are imposed on G and C matrices. Numerous identification schemes exist, such as structural factorisation, based on relevant economic theory and are usually employed (see Ngalawa & Viegi, 2011; Bernanke & Mihov, 1998; Sims, 1986; Bernanke, 1986). Other scholars employ a zero-long-run identification strategy known as the Blanchard-Quah (Blanchard-Quah, 1989; Gali, 1999). Blanchard and Quah (1989) argue that imposing long-run restrictions offers more valid results since economic theory is generally concerned about the long rather than the short run. Another approach uses Sims's (1989) recursive factorisation based on the Cholesky matrix decomposition. This identification scheme requires the most endogenous variables to be ordered last (Favero, 2011). This approach is widely used in literature and is considered best for emerging market economies (see Sims, 1980; Kim and Mehrotra, 2017; Christiano et al., 1999, for example).

This study follows Kim and Mehrotra (2017) by imposing a recursive factorisation/ Cholesky decomposition on equation 3 to get the structural shocks. The study consists of two target variables: real GDP (Y) and consumer price index (CPI). The Financial Conditions Index represents changes in the stability of the South African Financial Sector. One policy instrument is included, namely the policy rate (PR), to capture the role of the SARB. Furthermore, two exogenous variables are used: the U.S. policy rate (FED) and oil prices (USOIL). The latter variable, oil prices, suggested by Sims (1993), is included to address the 'price puzzle.' The variables Y and CPI are targets for monetary policy. This is consistent with Nier and Kang (2016).

In line with existing studies such as Kim and Mehrotra (2015; 2016; 2017), output, prices, and the FCI enter the system with contemporaneous relations PR to allow policy stances to be taken after observing the state of the economy (see Quint & Rabanal, 2014; Christiano et al., 1999). The identification scheme presented above is summarised in equation 4 below, where G is a lower triangular matrix, and C is a diagonal matrix. The identification scheme presented below ensures that our SVAR captures the structure of the South African economy under various assumptions.

$$G = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ a_{21} & 1 & 0 & 0 & 0 & 0 \\ a_{31} & a_{32} & 1 & 0 & 0 & 0 \\ a_{41} & a_{42} & a_{43} & 1 & 0 & 0 \\ a_{51} & a_{52} & a_{53} & a_{54} & 1 & 0 \\ a_{71} & a_{72} & a_{73} & a_{74} & a_{75} & 1 \end{pmatrix} C = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \end{pmatrix} \varepsilon_t = \begin{pmatrix} \varepsilon_t^{usoil} \\ \varepsilon_t^{ffr} \\ \varepsilon_t^{GDP} \\ \varepsilon_t^{CPI} \\ \varepsilon_t^{FCI} \\ \varepsilon_t^{pr} \end{pmatrix}$$

The first two rows imply that the South African economy is small enough not to influence oil prices and federal funds rates (Kganyago, 2012; Nzimande & Msomi, 2016). This is because oil prices are determined by the Organisation of Petroleum Exporting Countries (OPEC), whereas the Federal Reserve in the United States determines the federal rate. GDP, the CPI, and FCI are affected by exogenous shocks. However, they are slow in responding to policy shocks. According to Ngalawa and Viegi (2011), real economic activity is likely to respond to lags of policy shocks because people are generally tense with changes, and it takes time to make plans to match the new policy stances. Since South Africa is a net commodity importing country, oil prices affect LGDP, LCPI and FCI. Because of the small size of South Africa compared to the United States, changes in the United States policy rates also affect GDP, CPI, and the FCI. On the other hand, output and prices respond to financial shocks, i.e., FCI. For instance, credit in the FCI is used to finance spending on the household side and to finance investments on the firms' side; thus, changes in credit lead to immediate responses in output and prices (Agenor and Da Silva, 2019). The PR is endogenous to all the variables in the system. This is consistent with the scenario where the SARB "leans against the wind" of financial imbalances. In equation five below, this assumption is changed. In equation five, the PR responds with a lag to FCI shocks. This allows the SARB to "mop after" after a crisis has occurred. These two assumptions are made to test the importance of the FCI under two scenarios. In the first scenario, "lean against the wind", the SARB has an explicit financial stability mandate and financial developments are explicitly targeted in monetary policy decisions. In the second scenario, "mopping after a crisis", the SARB only considers financial developments in so far as they affect price stability. Moreover, in this setup, financial markets correct their behaviour independently, and the SARB only gets involved once a crisis has occurred to restore order. The purpose of testing both scenarios is to test whether the role of the SARB affects how financial conditions affect the economy.

$$G = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ a_{21} & 1 & 0 & 0 & 0 & 0 \\ a_{31} & a_{32} & 1 & 0 & 0 & 0 \\ a_{41} & a_{42} & a_{43} & 1 & 0 & 0 \\ a_{51} & a_{52} & a_{53} & a_{54} & 1 & 0 \\ a_{71} & a_{72} & a_{73} & a_{74} & 0 & 1 \end{pmatrix} C = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \end{pmatrix} \varepsilon_t = \begin{pmatrix} \varepsilon_t^{usoil} \\ \varepsilon_t^{ffr} \\ \varepsilon_t^{GDP} \\ \varepsilon_t^{CPI} \\ \varepsilon_t^{FCI} \\ \varepsilon_t^{pr} \end{pmatrix}$$

Results and Discussion

This section presents and discusses the findings of the study. It starts by presenting the descriptive statistics and correlation of variables. Thereafter, it presents unit root tests. Then, the findings from the SVAR are discussed.

In this section, we provide the preliminary results of the study. We start by presenting summary statistics (see Table 1). Regarding target variables, the mean values for LCPI and LGDP are at 1.59 and 1,85, respectively. The mean of the FCI is 0,18. The mean logged CPI value of 1.59 indicates an average compound growth rate of approximately 1.59 per cent per quarter in the CPI over the study's specified period. The consistent positive value suggests that, on average, there has been a continuous upward trend in the CPI over the period. This indicates persistent inflationary pressure in the South African economy. On the other hand, the mean logged GDP value of 1.85 shows that there has been an upward trend in real GDP levels in the country within the sample period. These mean statistics suggest that equilibrium trends in GDP and the CPI are larger than in the FCI. This is because GDP and CPI are measures of overall economic activity, whereas the FCI only measures activity in the financial sector.

The PR has a mean of 11,09 basis points, whereas the FED has a mean of 4,35 basis points. The lower mean statistic for FED reflects the U.S. accommodative nature of monetary policy, which began during the great moderation and halted during the stagflation in February 2022 (Caceres et al., 2016; Bi et al., 2022). Since 2002, the SARB has maintained an inflation target of 3- to 6 per cent by keeping the repo rate tight. As a result, the PR has a higher mean statistic (Comert & Epstein, 2011). The mean statistic for Oil of 1,54 shows an upward trend in oil prices during the period under consideration.

The results relating to the standard deviations show that the CPI, GDP, and FCI have a standard deviation of 0,38, 0,12, and 0,98, respectively. This suggests that South African financial conditions are more volatile than the price level and output volatility. Some of the vulnerabilities contributing to the volatility of the FCI include high public debt ratios, low economic growth, a decline in the quality of assets in the balance sheets of banks, a sharp increase in global risk premia, and the potential impact of protectionist policies

stemming from the United States and the resulting impact on trade agreements (Hollander & Lill, 2019). The standard deviation for PR is 4,51, whereas it is 3,83 for FED. Both are greater than 1, indicating high variations, reflecting that the SARB and Fed are relatively more active in their respective economies. The standard deviation for OIL is 0,28, implying that oil prices are less volatile than the South African CPI.

Table 1: Descriptive statistics

	LCPI	FCI	LGDP	FED	LOIL	PR
Mean	1,59	0,18	1,85	4,35	1,54	11,09
Median	1,68	-0,28	1,84	4,08	1,47	11,25
Maximum	2,11	1,73	2,02	18,37	2,08	21,75
Minimum	0,74	-1,03	1,67	0,13	1,06	3,50
Std, Dev.	0,38	0,98	0,12	3,83	0,28	4,51
Observations	160	160	160	160	160	160

Next, the study analysed the correlation of variables, which is shown in Table 2. The correlation between GDP and the FCI is 0.83, the correlation between the CPI and the FCI is 0.69, and the correlation of GDP with the CPI is 0.96. All correlations are statistically different from zero at all levels of statistical significance. According to Brooks (2019), a correlation between 0,4 and 0,75 in absolute magnitude indicates a moderate relationship between variables. Whereas a correlation that is larger than 0,75 indicates a strong relationship between variables. According to the correlation statistics, the FCI has a strong relationship with GDP and a moderate relationship with the CPI. This preliminary finding suggests interdependency between the goals of price stability, output stability, and financial stability.

Table 2: Pairwise correlation results

	LOIL	FED	LGDP	LCPI	FCI	PR
LOIL	1					
FED	-0,21***	1				
LGDP	0,91***	-0,40***	1			
LCPI	0,88***	-0,48***	0,96***	1		
FCI	0,69***	-0,65***	0,83***	0,69***	1	
PR	-0,74***	0,63***	-0,80***	-0,67***	-0,74***	1

The PR and FED negatively correlate with GDP, CPI, and FCI. This is because when the SARB or the Fed tightens monetary policy, the resulting effect is that it reduces economic and financial activity. The correlation between the FED, GDP, CPI, and FCI is -0,40, -0,48, and -0,65, respectively. This finding is similar to Hlongwane et al. (2011) and Khabo and Harmsey (2022). The corresponding correlation between the PR and GDP, CPI, and FCI is -0,80, -0,67, and -0,74. Thus, the correlation of PR with variables is greater than that of the FED with variables in absolute terms. Hence, the SARB has more impact on these variables. This is because the PR is the main monetary policy variable in South Africa, whereas the FED responds to U.S. developments. OIL negatively correlates with policy variables PR and FED, indicating that oil price shocks invite accommodative responses from the SARB. However, OIL positively correlates with GDP, CPI, and FCI. Indeed, there is sufficient evidence to show when oil prices increased, production costs increased in South Africa, thereby causing an increase in the general price level (Nzimande & Msomi, 2016; Ajmi et al., 2015; Gupta & Modise, 2013). Moreover, high oil prices generate uncertainty in financial markets, which puts these markets in a precarious position, which then causes tightening of financial conditions (Raza et al., 2016).

Table 3: Unit roots tests

	ADF		PP		KPSS (Kwiatkowski Phillips Schmidt Shin)	
Var	Level	1st Difference	Level	1st Difference	Level	1st Difference
FED	-1,85	-14,71***	-2,01	-14,70***	14,98***	0,06
LOIL	-1,24	-13,51***	-1,28	-13,44***	9,79***	0,90
LGDP	-2,83	-19,76***	-3,42	-19,55***	14,24 ***	10,99
LCPI	-1,32	-6,89***	-0,79	-6,65***	7,24***	13,73
FCI	-0,04	-10,39***	-0,49	-10,79***	3,35 ***	0,43
PR	-1,01	-6,934***	-1,78	-6,83***	15,85***	0,09

The SVAR methodology requires that the variables have the same order of integration and are stationary (Sureshi et al., 2014). Accordingly, in Table 3, the unit root tests were conducted to test the stationarity of variables. The unit root tests use the Augmented Dickey-Fuller (ADF) and Philips-Peron (P.P.). Both test the null hypothesis that the series has unit roots against the alternative hypothesis that the series has no unit roots. The significance of the parameters in the ADF and P.P. indicates that the null hypothesis is rejected. The optimum number of lags was selected using the AIC, SC, and H.Q. statistics, which suggested an optimal lag of 4. All coefficients are not significant at the level but are significant when the series is transformed into the first difference. Therefore, the study rejects the null hypothesis of unit roots at the level and accepts that the variables are stationary at first difference. The Kwiatkowski Philips Schmidt and Shin (KPSS) is conducted to corroborate the findings of the ADF and P.P. The KPSS tests the null hypothesis of no unit roots against the alternative hypothesis that a series has unit roots (Shin & Schmidt, 1992). According to the results, the study fails to reject the null hypothesis at the level but fails to reject the null hypothesis at the first difference. Meaning none of the variables are stationary at level. The study concludes that the variables are stationary at first difference. Consequently, the variables were first differenced before they were cast into the SVAR.

This section presents the results of the SVAR. First, the impulse response functions (IRFs) are discussed. Figure 2 plots the responses of GDP alongside CPI, FCI, and PR The IRFs in Figure 2 correspond to the scenario where the SARB responds to financial imbalances as specified in equation (4). The solid red lines present all IRFs, while the shaded blue areas are 95 confidence intervals. The x-axis is measured in quarters, whereas the y-axis is percentage changes. Before discussing the results, it is important to note that although the OIL and FED were used to estimate the SVAR, their responses to domestic variables are ignored since South Africa is a small economy and cannot affect oil prices and the federal rate.

Firstly, the study notes the responses of GDP, CPI, FCI, and PR to exogenous shocks. Shocks to OIL and FED trigger responses in GDP and the CPI. Figure 1 shows that GDP and CPI responded by rising following a shock to OIL. However, following a shock to FED, GDP and CPI declined. However, in both shocks, the responses of GDP and CPI are statistically insignificant. The statistical insignificance of these responses suggests that although exogenous is important in South Africa, GDP and CPI are less sensitive to these shocks. This could be because of the SARB's continuous efforts in using monetary policies to insulate South Africa from external shocks. This was particularly true in 2022-2023 when SARB tightened the repo rate to mitigate the higher inflation rate induced by the Ukraine-Russia War shock and the re-opening of the economy post-Covid-19 (Babar et al., 2023; Parsons, 2023; Mathebula & Naape, 2023). For instance, the Ukraine-Russia crisis exacerbated supply chain bottlenecks by constraining oil suppliers. As the global demand for Oil far exceeded the supply, oil prices hit the highest levels not seen in many decades (Babar et al., 2023). Moreover, it put upward pressure on food and energy prices, which saw the headline inflation in South Africa reach 5.9 per cent by April 2022 (Mathebula & Naape, 2023). In response, the SARB aggressively increased the repo rate from 6,75 basis points in January 2022 to 8,25 basis points by June 2023.

Tighter policy rates raise the cost of obtaining credit, reducing spending and ultimately depressing GDP growth. Similar results were obtained by Woodford (2012), Ferguson (2002), and Borio (2014). The impact of the FCI on GDP has crucial policy ramifications. It implies that improvement in financial conditions stabilises output. This suggests that the two objectives, financial and output stability, are interdependent. The effect of the PR reflects that monetary policy is a useful output stabilisation tool in South Africa. When output rises above its trend level, the PR is tightened to bring it back to its trend level; hence, GDP responds negatively to PR shocks (Klein, 2012). However, the impact of financial conditions on the price level has been unknown before this study. The fact that the CPI rises following an FCI shock implies that there is a trade-off between price and financial stability. Improvements in financial conditions because of adopting more efficient financial technology, for instance, create an environment with excess borrowing and lending (Bordo & Wheelock, 1998; Adrian & Shin, 2008). Excess credit finances asset investment (Kim & Mehrotra, 2017). This puts upward pressure on asset prices, and as a result, the general price level will increase.

FED and OIL shocks also trigger responses in the FCI and PR. Following a shock to FED and OIL, the FCI responds by rising. According to Agenor and Pereria da Silva (2018), U.S. monetary policy boosted credit conditions in emerging market economies such as South Africa after the international crisis. By keeping the U.S. interest low, countries could access external credit from the U.S. at a lower cost than domestic credit. This explains why financial conditions improved following a U.S. monetary policy shock. Regarding the PR, it responds by increasing following and OIL and FED shock. This corresponds to an earlier finding that the SARB is concerned with protecting the South African economy from external shocks. Moreover, the SARB is a follower of the FED – when the Federal Reserve Bank tightens its policies, the SARB follows suit. This ensures that South Africa's interest rates are competitive and would not lead to an outflow of capital (Baaziz et al., 2013; Rosouw & Padayachee, 2020).

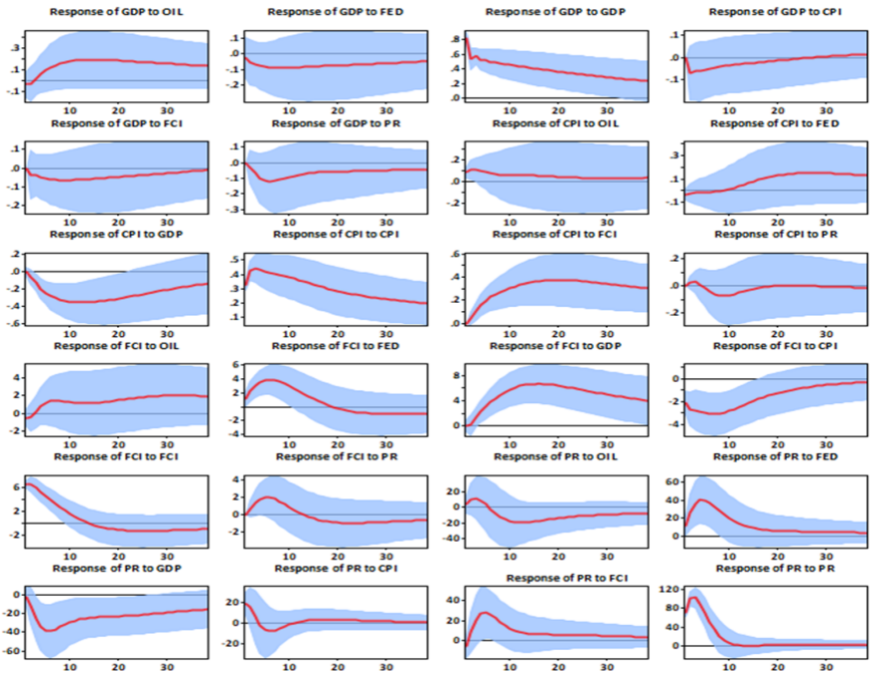

Figure 2: Impulse response functions of GDP, CPI, FCI, and PR; *Source:* Author's estimation

GDP, CPI, FCI, and PR responses to domestic shocks are analysed. Shocks to FCI and PR trigger a decline in GDP but a rise in CPI. The decrease in GDP following an FCI shock corresponds to the findings of Agenor and Pereria da Silva (2012), where they observed that in emerging market economies, improvements in financial stability led to a decline in GDP growth. This is because improvements in financial conditions require tighter policy rates.

For example, consumer credit was used to finance household spending between 1975 and 2023 in South Africa (Aadila, 2012; Nuru, 2023). This, in turn, puts upward pressure on prices, triggering a higher price level (Taljaard et al., 2006). Hence, FCI shocks induce inflation. On the other hand, the positive response of CPI on PR shocks has been associated with what has been termed the 'price puzzle.' The increase in price level resulting from a monetary policy contraction is known as the `price puzzle' (Ngalawa & Viegi, 2011; Sims, 1992; Bernanke and Mihov,1998). Several explanations exist for the price puzzle. According to Sims (1992), the price puzzle arises if monetary authorities react to higher inflation expectations by raising the interest rates but not enough to prevent inflation from rising. For instance, when the SARB simultaneously responds to price and financial developments, the repo rate rises to improve financial conditions, but not to the extent that it reduces credit to high default rates (Kim & Mehrotra, 2017). Hence, the increase in the interest rates may not be adequate to subdue inflation. Alternatively, the price puzzle may occur if monetary authorities react to supply shocks rather than demand shocks (Sims, 1992). Adverse supply shocks are likely to raise prices and interest rates. However, the price puzzle emerges if the rise in policy rates is not strong enough to bring down prices (Sims, 1992).

The study also analysed the response of GDP to CPI and CPI to GDP. The study finds that the CPI responds by declining following a GDP shock. Likewise, following a CPI shock, GDP falls. This is because a rising price level, for instance, raises the cost of living, discouraging spending and investment and ultimately lowering GDP. Next, the responses of FCI and PR to domestic shocks are discussed. When there is a GDP shock, the FCI responds by rising. However, when there is a CPI shock, the FCI decreases. The response of the FCI to CPI shocks further demonstrates that there is a trade-off between price and financial stability in South Africa. However, the FCI rises in response to a PR shock – implying that financial stability is archived.

The implications are that monetary policy can be used to manage the trade-off between price and financial stability in South Africa. This contradicts the view that financial stability and monetary policy must be kept separate (Issing, 2009). The PR responds to GDP and the CPI shocks by decreasing. This corresponds to the SARB's efforts to accommodate GDP and CPI shocks caused by external factors such as the FED and the OIL. In contrast, following an FCI shock, the PR rises, demonstrating that monetary policy can be useful for financial stability in South Africa.

Table 4: Variance decomposition

Period	LOIL	FED	LGDP	LCPI	FCI	PR
LGDP						
12	2,23	1,19	93,79	0,65	0,51	1,64
24	8,66	2,17	85,19	0,55	1,03	2,41
36	11,77	2,40	82,12	0,42	1,02	2,27
LCPI						
12	3,97	0,21	13,55	72,25	9,57	0,44
24	1,65	1,07	26,88	44,58	25,28	0,55
36	1,20	3,31	25,86	36,37	32,92	0,34
FCI						
12	1,34	14,45	12,71	13,10	55,39	3,00
24	2,62	12,84	48,19	11,73	22,06	2,57
36	4,39	9,07	59,99	8,60	15,59	2,35
PR						
12	1,09	11,06	8,28	2,04	3,99	73,54
24	4,69	14,08	18,29	1,21	5,65	56,08
36	6,24	13,25	22,78	1,21	5,57	50,95

The study also analysed the relative importance of each structural shock in explaining fluctuations in GDP, CPI, FCI, and PR. To this end, the study turns to the variance decomposition. Table 4 presents the result over a nine-year forecast horizon. Exogenous shocks and the PR dominate fluctuations in GDP. Oil prices account for 2.2 per cent of GDP fluctuations after three years, 8.6 per cent after six years, and 11.7 per cent after nine years. FED accounts for 1.1 per cent of GDP fluctuations after three years, 2.1 per cent after six years, and 2.4 per cent after nine years. In contrast, South Africa's monetary policy accounts for 1.6 GDP fluctuations after three years, 2.4 per cent after six years, and 2.2 per cent after nine years. In contrast to GDP, which is dominated by exogenous shocks, CPI fluctuations are mostly explained by GDP and FCI shocks. This reflects the extent to which price stability depends on other objectives, output stability, and financial stability. GDP explains 13.5 per cent of CPI fluctuations after three years, 26.8 per cent in six years, and 25.8 per cent after nine years. FCI accounts for 9.5 per cent of CPI fluctuations after three years, 25.2 per cent after six years, and 32.9 per cent after nine years. The finding that FCI explains more variations in CPI after nine years compared to GDP highlights the relative importance of FCI shocks in explaining CPI changes compared to GDP.

Regarding FCI fluctuations, they are mostly dominated by the FED, GDP, and CPI. This finding further illustrates the co-dependence of South Africa's price, output, and financial stability. The relative importance of the FED in both GDP and FCI highlights the need for more policy coordination between South Africa and the U.S. FED explains 14.4 per cent of FCI fluctuations after three years, 12.8 per cent after six years, and 9.0 per cent after nine years. In contrast, GDP accounts for 8.2 per cent fluctuations in FCI after three years, 48.1 per cent after six years, and 59.9 per cent after nine years. CPI accounts for 13.1 per cent, 11.7 per cent, and 8.6 per cent of FCI fluctuations after three, six, and nine years, respectively. GDP and FCI shocks explain more PR fluctuations compared to the CPI. This is unexpected since the goal of monetary policy is price stability. However, it does highlight the importance of monetary policy authorities to account for financial developments in their decisions. In this regard, GDP explains 8.2 per cent, 18.2 per cent, and 22.7 per cent of PR fluctuations after three, six, and nine years, respectively. For FCI, the corresponding percentages are 3.9 per cent, 5.6 per cent, and 5.5 per cent after three, six, and nine years, respectively. In contrast, the CPI explains 2 per cent of PR fluctuations after three years and 1.2 per cent after six and nine years, respectively. The SARB is also concerned with protecting the South Africa economy from external shocks. Hence, FED accounts for 11 per cent, 14 per cent, and 13 per cent of P.R. fluctuations after three, six, and nine years, respectively. Likewise, OIL explains 1 per cent of PR fluctuations after three years, 4.6 per cent after six years, and 6.2 per cent after nine years.

Finally, this study analysed the responses of GDP, CPI, FCI, and PR when the SARB follows the "mop after" a crisis has occurred approach. Figure 3 displays the results. The central bank does not explicitly respond to financial shocks in this approach. Financial developments are considered to the extent that they affect the price level. When a financial crisis occurs, the central bank lowers the repo rates to re-stimulate the economy. The impulse response functions of GDP, CPI, FCI, and PR are qualitatively similar to Figure 2, with minor differences. We discuss these differences next. The fact the IRFs are mostly the same implies that changing the approach of the SARB does not imply that the policy rate will change its impact significantly. Thus, it can be expected that the influence of the FCI is the same whether the SARB targets financial stability or not. The noteworthy differences are as follows. First, the response of the PR to an FCI shock is negative. This aligns with the view that when a crisis occurs, the central bank lowers policy rates to re-stimulate the economy. However, when the SARB "leans against the wind" of financial imbalances, it was observed in Figure 2 that

it responded aggressively by tightening the repo rate. Second, following a shock to the PR, the FCI responded by declining. This finding has significant implications. It suggests that when the SARB does not proactively respond to financial imbalances, the FCI decline reflects the deterioration of financial conditions. In contrast, when the SARB responded to FCI shocks, it improved financial conditions. Figure 3 shows that in response to an FCI shock, GDP increased. Thus, when the SARB does not appropriately monitor the financial sector, the FCI loses its output stabilisation significance.

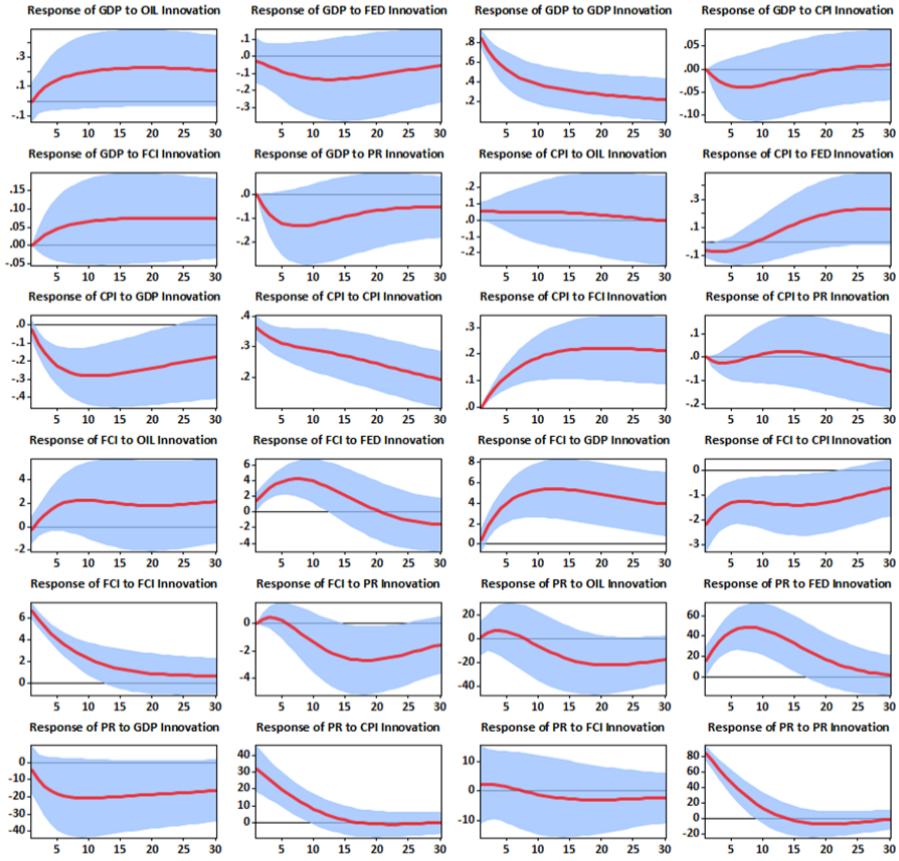

Figure 3: Impulse response functions of GDP, CPI, FCI, and PR; *Source:* Authors' estimation

Conclusion

The study aimed to ascertain whether financial stability influences the key macroeconomic processes relating to both price and output stability. Towards examining these effects, several pertinent findings came to the fore. Firstly, based on the variance decomposition, evidence was provided on the robust interdependencies between these three factors and the need to better understand the nuances surrounding these relationships. In this regard, the study shows the intricate considerations currently facing policymakers, especially from a monetary perspective. In relation to this, the use of impulse response functions specifically showed that output declines following shocks in the country's financial conditions whilst inflation was consequently increased. From this, the inquiry highlights and illuminates the possible trade-off facing role players when financial conditions improve. Importantly, it does result in a more stable output climate. There is trade-off between price and financial stability whereas improvements in financial stability increases the price level. This holds in both instances, regardless of whether the SARB leans against the wind of financial imbalances or actively assists through mopping-up in recovering possible financial crises.

Moreover, the study's results provided insights into the dynamics of financial conditions, revealing a notable trend wherein improvement occurs when a proactive stance is taken by the SARB but worsens when reactive measures are employed. Specifically, the research indicates that financial conditions tend to exhibit signs of enhancement when monetary policy leans against prevailing economic trends, such as by tightening regulations or adjusting interest rates to counteract inflationary pressures. This proactive approach fosters stability and confidence within the financial system, encouraging prudent decision-making and investment. Conversely, the study found that when policymakers resort to mopping up after economic downturns or crises by implementing reactionary measures, such as injecting liquidity into markets or lowering interest rates, financial conditions often deteriorate. Though intended to mitigate immediate challenges, such measures can inadvertently amplify volatility, erode investor trust, and foster speculative behaviours, ultimately exacerbating systemic vulnerabilities. Thus, the research underscores the importance of anticipatory policymaking in maintaining robust financial conditions and mitigating systemic risks.

Considering these implications, the study recommends that the SARB explicitly account for financial developments in its monetary policy decisions. Moreover, the SARB needs to balance price and financial stability by using its monetary policy tools. This recommendation does contradict the notion that monetary policy and financial stability must be kept separate. Although monetary policy authorities actively advocate the former, the failure to adequately and collectively account for these interdependencies can have repercussions not only for financial sectors but also for socioeconomic landscapes and the standard of living for the collective. Taking these suggestions into account, the study does acknowledge its own shortcomings. This mainly pertains to failing to account for different financial stability measures, such as the financial cycle. Likewise, it does not account for macroprudential policy interventions. Whilst this has limited its scope, it provides sufficient room for future investigations to advance of the body of knowledge.

Acknowledgement

The authors wish to state that while this research was conducted independently and without external collaboration, we are grateful for each team member's intrinsic motivation and dedication to this study, ensuring its successful completion.

Author Contributions: K.M.; methodology: K.M, J.DJ, and P.M.; formal analysis: J.M, B.W, P.M, P.M, J.DJ, and K.M; investigation: K.M, J.DJ, and P.M.; resources: J.M, B.W, P.M, P.M, J.DJ, and K.M.; writing—original draft preparation: J.M, B.W, P.M, P.M, J.DJ, and K.M.; writing—review and editing: J.M, B.W, P.M, P.M, J.DJ, and K.M.

Funding: This research received no funding.

Institutional Review Board Statement: Ethical review and approval were waived for this study, due to that the research does not deal with vulnerable groups or sensitive issues.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.

Conflicts of Interest: The authors declare no conflict of interest.

References

Aderibigbe, J.O. (2001). The role of the financial sector in poverty reduction. Economic and Financial Review, 39(4), 8.

Adrian, T., & Liang, N. (2018). Monetary policy, financial conditions, and financial stability. International Journal of Central Banking, 52(1), 73–131.

Adrian, T. (2018). Monetary policy and financial stability. In Advancing the Frontiers of Monetary Policy. USA: International Monetary Fund. https://doi.org/10.5089/9781484325940.071.ch006

Agénor, P. & da Silva, P. (2013). Inflation targeting and financial stability: A perspective from the developing world. In Inter-American Development Bank, 60. https://doi.org/10.1016/j.econmod.2016.08.020

Agénor, P.-R., & Pereira da Silva, L. A. (2012). Macroeconomic stability, financial stability, and monetary policy rules. International Finance, 15, 205–224.

Agénor, P.-R., & Pereira da Silva, L. A. (2018). Financial spillovers, spillbacks, and the scope for international macroprudential policy coordination. International Economics and Economic Policy, 1–49.

Aikman, D., Lehnert, A., Liang, N., & Modugno, M. (2017). Credit, financial conditions and monetary policy transmission. Hutchins Center Working Paper No: 39. https://www.brookings.edu/wp-content/uploads/2017/11/wp39-3.pdf

Ajmi, A. N., Gupta, R., Babalos, V., & Hefer, R. (2015). Oil price and consumer price nexus in South Africa revisited: A novel asymmetric causality approach. Energy Exploration & Exploitation, 33, 63–73.

Akhtaruzzaman, M., Benkraiem, R., Boubaker, S., & Zopounidis, C. (2022). COVID-19 crisis and risk spillovers to developing economies: Evidence from Africa. Journal of International Development, 34(4), 898-918. https://doi.org/10.1002/jid.3634

Baaziz, Y., Labidi, M., & Lahiani, A. (2013). Does the South African Reserve Bank follow a nonlinear interest rate reaction function? Economic Modelling, 35, 272–282.

Babar, S., Jafri, S. K., Kamal, J., & Khalid, A. (2023). Escape clauses for inflation targeting regime.

Baily, M.N., & Elliott, D.J. (2013). The role of finance in the economy: Implications for structural reform of the financial sector. The Brookings Institution, 11.

Balls, E., Howat, J., & Stansbury, A. (2016). Central bank independence revisited: After the financial crisis, what should a model central bank look like? M-RCBG Associate Working Paper Series | No. 67. https://www.hks.harvard.edu/sites/default/files/centers/mrcbg/files/67_central.bank.v.2.pdf

Barra, C. & Zotti, R. (2022). Financial stability and local economic development: the experience of Italian labour market areas. Empir Econ, 62, 1951–1979. https://doi.org/10.1007/s00181-021-02071-x

Baur, D.G. (2012). Financial contagion and the real economy. Journal of Banking & Finance, 36(10), 2680-2692.

Bernanke, B.S., Gertler, M., & Gilchrist, S. (1999). The financial accelerator in a quantitative business cycle framework. Handbook of macroeconomics, 1, 341-1393.

Bi, H., Shen, W., & Yang, S.-C. S. (2022). Fiscal implications of interest rate normalization in the United States. Canadian Journal of Economics/Revue canadienne d'économique, 55, 868–904.

Blanchard, O. J. (1989). A traditional interpretation of macroeconomic fluctuations. The American Economic Review, 1146–1164.

Blot, C., Creel, J., & Geerolf, F. (2023). Is monetary tightening a threat to financial stability? European Union Monetary Dialogue papers. https://www.europarl.europa.eu/committees/en/econ/econ-policies/monetary-dialogue

Borio, C. (2014). The financial cycle and macroeconomics: What have we learnt? Journal of Banking & Finance, 45, 182–198.

Borio, C. E. (2014). Monetary policy and financial stability: what role in prevention and recovery?

Boshoff, W. H. (2005). The properties of cycles in South African financial variables and their...

Boshoff, W. H., & Du Plessis, S. A. (2020). What do we know about the South African business cycle? Business Cycles and Structural Change in South Africa: An Integrated View, 9–48.

Boshoff, W. H., & Fourie, J. (2020). Business Cycles and Structural Change in South Africa. Springer. http://link.springer.com/10.1007/978-3-030-35754-2.

Brave, S., & Butters, R. A. (2018). Diagnosing the financial system: financial conditions and financial stress. 29th issue (June 2012) of the International Journal of Central Banking.

Brum-Civelli, C., Fried-Gindel, A., & Garcia-Hiernaux, A. (2024). IFCI-SA: International financial conditions index for South American economies. Research in International Business and Finance, 72, Part A.

Caceres, C., Carriere-Swallow, M. Y., Demir, I., & Gruss, B. (2016). U.S. monetary policy normalization and global interest rates. International Monetary Fund.

Capasso, S., Napolitano, O., & Vivero, A. (2023). The Financial Conditions Index as an additional tool for policymakers in developing countries: the Mexican case. Centre for Studies in Economics and Finance Working Papers No: 664.

Claessens, S., Kose, M. A., & Terrones, M. E. (2011). Financial cycles: what? how? when? International seminar on macroeconomics, JSTOR, 303-344.

Claessens, S., Kose, M. A., & Terrones, M. E. (2012). How do business and financial cycles interact? Journal of International economics, 87, 178-190.

Comert, H., & Epstein, G. (2011). Inflation targeting in South Africa: friend or foe of development? Economic History of Developing Regions, 26, S94–S113.

Comunale, M., & Hessel, J. (2014). Current account imbalances in the euro area: competitiveness or financial cycle? DNB Working Paper No 443.

Creel, J., Hubert, P., & Labondance, F. (2015). Financial stability and economic performance. Economic Modelling, 48, 25-40.

Cushman, D. O., & Zha, T. (1997). Identifying monetary policy in a small open economy under flexible exchange rates. Journal of Monetary economics, 39, 433–448.

De Wet, M. C., & Botha, I. (2022). Constructing and characterising the aggregate South African financial cycle: A Markov regime-switching approach. Journal of Business Cycle Research, 18, 37–67.

Ductor, L., & Grechyna, D. (2015). Financial development, real sector, and economic growth. International Review of Economics & Finance, 37, 393-405.

Duttagupta, R., & Pazarbasioglu, C. (2021). Miles to go: Emerging markets must balance overcoming the pandemic, returning to more normal policies, and rebuilding their economies. Retrieved from https://www.imf.org/external/pubs/ft/fandd/2021/06/the-future-of-emerging-markets-duttagupta-and-pazarbasioglu.htm [Accessed 06/11/2024].

Ertugrul, H.M., Ozun, A., & Kirikkaleli, D. (2019). How is financial stability impacted by political and economic stabilities in emerging markets? A dynamic panel analysis. Romanian Journal of Economic Forecasting, XXII(4), 148-159.

European Central Bank. (2021). Monetary policy strategy statement. ECB – Germany.

European Central Bank. (2023a). Transmission mechanism of monetary policy. Retrieved from https://www.ecb.europa.eu/mopo/intro/transmission/html/index.en.html [Accessed 21/09/2023].

European Central Bank. (2023b). Financial stability review. Retrieved from https://www.ecb.europa.eu/pub/financial-stability/fsr/html/ecb.fsr202

European Parliament. (2023). *Interaction between price stability and financial stability* (Issue June). Retrieved from https://www.europarl.europa.eu/RegData/etudes/STUD/2023/741494/IPOL_STU(2023)741494_EN.pdf [Accessed 21/09/2023].

Farrell, G., & Kemp, E. (2020). Measuring the financial cycle in South Africa. *South African Journal of Economics*, *88*(2), 123–144. https://doi.org/10.1111/saje.12246

Ferguson, R. W. (2002). Should financial stability be an explicit central bank objective? *Challenges to Central Banking from Globalized Financial Systems*, 16–17.

Financial Stability Board. (2021). *Lessons learnt from the COVID-19 pandemic from a financial stability perspective*. Retrieved from https://www.fsb.org/uploads/P281021-2.pdf [Accessed 06/11/2024].

Financial Stability Board. (2022). *Financial policies in the wake of COVID-19: Supporting equitable recovery and addressing effects from scarring in the financial sector*. Retrieved from https://www.fsb.org/uploads/P141122.pdf [Accessed 06/11/2024].

Franklin, A., & Gale, D. (1999). Bubbles, crises, and policy. *Oxford Review of Economic Policy*, *15*(3), 9–18.

Freixas, X., & Rochet, J. C. (2008). *Microeconomics of banking*. MIT Press.

Galati, G., Hindrayanto, I., Koopman, S. J., & Vlekke, M. (2016). Measuring financial cycles in a model-based analysis: Empirical evidence for the United States and the euro area. *Economics Letters, 145*, 495. https://doi.org/10.1016/j.econlet.2016.05.034

Gali, J. (1999). Technology, employment, and the business cycle: Do technology shocks explain aggregate fluctuations? *American Economic Review, 89*, 249–271.

Glocker, C., Schiman-Vukan, S., & Url, T. (2023). Two sides of the same sparkly coin? Disinflation and financial market jitters amid monetary tightening. *WIFO Studies, WIFO*, number 70838, July.

Goel, R., & Miyajima, K. (2021). Analyzing capital flow drivers using the 'At-Risk' framework: South Africa's case. *IMF Working Papers* (253), A001. https://doi.org/10.5089/9781589065888.001.A001 [Accessed 03/10/2023].

Gros, D., & Alcidi, C. (2010). The impact of the financial crisis on the real economy: The crisis and the real economy. *Intereconomics, 45*(1), 4–20.

Gupta, R., & Modise, M. P. (2013). Does the source of oil price shocks matter for South African stock returns? A structural VAR approach. *Energy Economics, 40*, 825–831.

Gudmundsson, T., Klyuev, V., Medina, L., Nandwa, B., Plotnikov, D., Schiffrer, F., & Yang, D. (2022). Emerging markets: Prospects and challenges. *Journal of Policy Modeling, 44*(4), 827-841. https://doi.org/10.1016/j.jpolmod.2022.09.012.

Hiebert, P., Klaus, B., Peltonen, T., Schuler, Y. S., & Welz, P. (2014). Capturing the financial cycle in euro area countries. *Financial Stability Review, 2*, 109–117.

Hlongwane, N. W., & Daw, O. D. (2022). Monetary policy in South Africa: A VECM approach. *International Journal of Economics and Finance Studies, 14*, 1–28.

Hollander, H., Van Lill, D., & others. (2019). A review of the South African Reserve Bank's financial stability policies. *Stellenbosch University, Department of Economics*.

Hoosain, A., & others. (2012). Relationship between consumer credit and consumption spending in South Africa. (Doctoral dissertation, University of Pretoria).

IMF. (2021). *Global financial stability report, October 2021*. USA: International Monetary Fund. Retrieved from https://doi.org/10.5089/9781513595603.082 [Accessed 06/11/2024].

IMF. (2022a). *South Africa: Financial Sector Assessment Program-Financial System Stability Assessment*, IMF Staff Country Reports, 2022(039), A001. https://doi.org/10.5089/9798400200885.002.A001 [Accessed 03/10/2023].

IMF. (2022b). *South Africa - Financial sector assessment program*. IMF Country Report No. 22/183. Retrieved from https://www.imf.org/-/media/Files/Publications/CR/2022/English/1ZAFEA2022006.ashx [Accessed 04/10/2023].

Ibrahim, M. H. (2007). The role of the financial sector in economic development: The Malaysian case. *International Review of Economics, 54*, 463–483.

Issing, O. (2009). Asset process and monetary policy. *Journal of Banking and Finance, 45*, 182–198.

Jokipii, T., & Monnin, P. (2013). The impact of banking sector stability on the real economy. *Journal of International Money and Finance, 32*, 1–16.

Juhro, S. M., & Iyke, B. N. (2019). Monetary policy and financial conditions in Indonesia. *Bulletin of Monetary Economics and Banking, 21*(3), 283–302. https://doi.org/10.21098/BEMP.V21I3.1005

Kabundi, A., & Mbelu, A. (2021). Estimating a time-varying financial conditions index for South Africa. *Empirical Economics, 60*, 1817–1844.

Keen, S. (2000). The nonlinear economics of debt deflation. In *Commerce, complexity, and evolution: Topics in economics, finance, marketing, and management. Proceedings of the Twelfth International Symposium in Economic Theory and Econometrics* (pp. 83-110).

Khabo, V., & Harmse, C. (2005). The impact of monetary policy on the economic growth of a small and open economy: The case of South Africa. *South African Journal of Economic and Management Sciences, 8*, 348–362.

Khalil, M. A., & Chaisrisawatsuk, S. (2018). Relationship between financial and real sectors: Implications for stable economic development (Evidence from Thailand). *International Journal of Economics and Finance, 10*(6), 204. https://doi.org/10.5539/ijef.v10n6p204

Khan, M. A. (2007). Foreign direct investment and economic growth: The role of domestic financial sector. *Working Paper No. 2007/18*. Pakistan Institute of Development Economics.

Kim, S., & Mehrotra, A. (2017). Managing price and financial stability objectives in inflation targeting economies in Asia and the Pacific. *Journal of Financial Stability, 29*, 106–116.

King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. *The Quarterly Journal of Economics, 108*(3), 625–658.

Klein, N. (2012). Estimating the implicit inflation target of the South African Reserve Bank. *International Monetary Fund*.

Kose, A. M., Nagle, P., Ohnsorge, F., & Sugawara, N. (2021). What has been the impact of COVID-19 on debt? Turning a wave into a tsunami. *Policy Research Working Paper 9871*, World Bank Group.

Koudalo, Y. M. A., & Toure, M. (2023). Does financial inclusion promote financial stability? Evidence from Africa. *Cogent Economics & Finance, 11*(2). https://doi.org/10.1080/23322039.2023.2225327

Lanoo, K., & Thomadakis, A. (2020). Derivatives in Sustainable Finance - Enabling the Green Transition. *European Capital Markets Institute*. Retrieved from https://www.isda.org/a/KOmTE/Derivatives-in-Sustainable-Finance.pdf [Accessed 25 Sep 2023].

Leeper, E. M., Sims, C. A., Zha, T., Hall, R. E., & Bernanke, B. S. (1996). What does monetary policy do? *Brookings Papers on Economic Activity, 1996*(2), 1–78.

Levine, R. (2021). Finance, growth, and inequality. *IMF Working Papers, 2021*(164). https://doi.org/10.5089/9781513583365.001 [Accessed 25/09/2023].

Lütkepohl, H. (2005). *New introduction to multiple time series analysis*. Springer Science & Business Media.

Mankiw, N. G. (2020). *Principles of macroeconomics*. Cengage Learning.

Mathebula, N., & Naape, B. (2023). Economic fallout of COVID-19: Evidence from South Africa. *Journal of Business and Management Review, 4*, 635–650.

Mordi, C. N. (2010). The link between the financial (banking) sector and the real sector of the Nigerian economy. *Economic and Financial Review, 48*(4), 11.

Minsky, H. P. (1957). Monetary systems and accelerator models. *The American Economic Review, 47*(6), 860–883.

Montagnoli, A., & Napolitano, O. (2005). Financial Condition Index and interest rate settings: A comparative analysis. *Istituto di Studi Economici Working Paper, 8* (2005). Università degli studi di Napoli "Parthenope".

National Treasury. (2011). *A safer financial sector to serve South Africa better*. Retrieved from https://www.treasury.gov.za/twinpeaks/20131211%20-%20item%202%20a%20safer%20financial%20sector%20to%20serve%20south%20africa%20better.pdf [Accessed 03/10/2023].

Ngalawa, H., & Viegi, N. (2011). Dynamic effects of monetary policy shocks in Malawi. *South African Journal of Economics, 79*, 224–250.

Nkoro, E., & Uko, A. K. (2016). Autoregressive Distributed Lag (ARDL) cointegration technique: Application and interpretation. *Journal of Statistical and Econometric Methods, 5*(4), 63–91.

Nuru, N. Y. (2023). Public spending, credit market conditions, and economic activity in South Africa. *South African Journal of Economics, 91*, 394–415.

Nyati, M. C., Tipoy, C. K., & Muzindutsi, P. F. (2021). Measuring and testing a modified version of the South African financial cycle. *Economic Research Southern Africa, 869*.

Nzimande, N., & Msomi, S. (2016). Oil price shocks and economic activity: The asymmetric cointegration approach in South Africa. *Journal of Economic and Financial Sciences, 9*, 685–695.

Ocampo, J. A., Zamagni, S., French-Davos, R., & Pietrobelli, C. (2000). Financial globalization and emerging economies. *Financial Globalization and the Emerging Economies, 1*.

Osakwe, P. (2010). Africa and the global financial and economic crisis: Impacts, responses, and opportunities. In Dullien et al. (Ed.), *The financial and economic crises of 2008–2009 and the developing countries* (pp. 203–222). UNCTAD. https://unctad.org/system/files/official-document/gdsmdp20101_en.pdf

Osano, H. M., & Koine, P. W. (2015). Role of foreign direct investment on technology transfer and economic growth in Kenya: A case of the energy sector. *Journal of Innovation and Entrepreneurship, 5*(1). https://doi.org/10.1186/s13731-016-0059-3

Parsons, L. (2023). Central banks in crisis times: Mandates in crisis? In *Globalisation in Transition: Human and Economic Perspectives* (pp. 165–179). Springer.

Primiceri, G. E. (2005). Time varying structural vector autoregressions and monetary policy. *The Review of Economic Studies, 72*(3), 821–852.

PWC. (2015). *Navigating a volatile landscape: Major banks analysis–South Africa*. Retrieved from https://www.pwc.co.za/en/assets/pdf/bank-analysis-march-2015.pdf [Accessed on 03/10/2023].

Raza, N., Shahzad, S. J., Tiwari, A. K., & Shahbaz, M. (2016). Asymmetric impact of gold, oil prices, and their volatilities on stock prices of emerging markets. *Resources Policy, 49*, 290–301.

Rossouw, J., & Padayachee, V. (2020). The independence of the South African Reserve Bank. In *The Political Economy of Central Banking in Emerging Economies* (pp. 129–144).

Rudebusch, G. D. (1998). Do measures of monetary policy in a VAR make sense? *International Economic Review, 39*(4), 907–931.

Sahoo, M. (2017). Financial Conditions Index (FCI), inflation, and growth: Some evidence. *Theoretical and Applied Economics, XXIV*(3), 147–172.

Schiman-Vukan, S. (2023). On (current) monetary tightening and inflation. *WIFO Research Briefs No. 70619*. Retrieved from https://www.wifo.ac.at/wwa/pubid/70619 [Accessed 10/09/2023].

Schinasi, G. J. (2004). Defining financial stability. *IMF Working Papers* (Vol. 04, Issue 187). https://doi.org/10.5089/9781451859546.001

Schularick, M., Steege, L. T., & Ward, F. (2021). Leaning against the wind and crisis risk. *American Economic Review: Insights, 3*(2), 199–214.

Shakour Shalaan, A. (1990). The impact of macroeconomic policies on investment. Retrieved from https://www.elibrary.imf.org/display/book/9781557751409/ch02.xml [Accessed 27/09/2023].

Shin, Y., & Schmidt, P. (1992). The KPSS stationarity test as a unit root test. *Economics Letters, 38*, 387–392.
Sims, C. A. (1992). Interpreting the macroeconomic time series facts: The effects of monetary policy. *European Economic Review, 36*, 975–1000.
Sims, C. A., & Others. (1986). Are forecasting models usable for policy analysis? *Quarterly Review, 10*, 2–16.
Sims, C. A., & Zha, T. (2006). Were there regime switches in U.S. monetary policy? *American Economic Review, 96*, 54–81.
South African Government News Agency. (2023). Reserve Bank mandate to remain unchanged. Retrieved from https://www.sanews.gov.za/south-africa/reserve-bank-mandate-remain-unchanged [Accessed 03/04/2024].
South African Reserve Bank. (2022). *Financial Stability Review: Second edition 2022*. Retrieved from www.resbank.co.za.
South African Reserve Bank. (2022). *South African Reserve Bank Annual report*. Retrieved from https://www.resbank.co.za/content/dam/sarb/publications/reports/annual-reports/2023/SARB%20Annual%20Report%202022-23.pdf [Accessed 21/09/2023].
South African Reserve Bank. (2023). *Lessons from the Covid-19 pandemic in South Africa*. Retrieved from https://www.resbank.co.za/en/home/publications/publication-detail-pages/Financial-Stability/Lessons-from-the-Covid-19-pandemic-in-South-Africa [Accessed 03/10/2023].
Stiglitz, J. (1998). The role of the financial system in development. Presentation at the fourth annual bank conference on development in Latin America and the Caribbean, 29, 17.
Suresh, K. G., & Tiwari, A. K. (2014). A structural VAR (SVAR) analysis of fiscal shocks on current accounts in India. *Macroeconomics and Finance in Emerging Market Economies, 7*, 140–153.
Svensson, L. E. O. (2017). Cost-benefit analysis of leaning against the wind. *Journal of Monetary Economics, 90*, 193–213.
Taljaard, P. R., Jooste, A., & Asfaha, T. A. (2006). Towards a broader understanding of South African consumer spending on meat. *Agrekon, 45*, 214–224.
Trinh, T. H. (2017). A primer on GDP and economic growth. *International Journal of Economic Research, 14*, 13–24.
Uhlig, H. (2005). What are the effects of monetary policy on output? Results from an agnostic identification procedure. *Journal of Monetary Economics, 52*(2), 381–419.
United Nations. (1949). *The Economic Development of Latin America*. Retrieved from https://repositorio.cepal.org/server/api/core/bitstreams/77466a7c-2c03-4168-81d0-4886825819dc/content [Accessed 25/09/2023].
Van Dyk, F. (2011). The new importance of financial stability's 2nd dimension: Towards Basel III & post the recent credit-liquidity crisis. Retrieved from http://financialmarketsjournal.co.za/oldsite/14thedition/printedarticles/financialstability.htm [Accessed 03/10/2023].
Vermeulen, C. (2020). On the mandate, ownership, and independence of the South African Reserve Bank. *South African Journal of Economic and Management Sciences, 23*(1), 1–11.
Vredin, A. (2015). Inflation targeting and financial stability: Providing policymakers with relevant information. *BIS Working Paper No. 503*. Retrieved from https://www.bis.org/publ/work503.pdf [Accessed 03/10/2023].
Wajid, K. (2008). South Africa: Financial System Stability Assessment, Including Report on the Observance of Standards and Codes on the following topic: Securities Regulation. *IMF Country Report No. 08/349*. Retrieved from https://www.imf.org/external/pubs/ft/scr/2008/cr08349.pdf [Accessed 03/10/2023].
Wischnewsky, A., Jansen, D.-J., & Neuenkirch, M. (2021). Financial stability and the Fed: Evidence from congressional hearings. *Economic Inquiry, 59*, 1192–1214.
Woodford, M. (2012). Inflation targeting and financial stability. *Economic Review (Sveriges Riksbank), 1*, 7–32.
World Bank. (2016). *Financial stability*. Retrieved from https://www.worldbank.org/en/publication/gfdr/gfdr-2016/background/financial-stability [Accessed 03/10/2023].
Yin, H., Yang, J., & Lu, X. (2020). Bank globalization and efficiency: Host- and home-country effects. *Research in International Business and Finance, 54*. https://doi.org/10.1016/j.ribaf.2020.101305
Zheng, G., & Wang, Y. (2014). Financial Conditions Index's construction and its application on financial monitoring and economic forecasting. *Procedia Computer Science, 31*, 32–39.

Publisher's Note: SSBFNET stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

© 2024 by the authors. Licensee SSBFNET, Istanbul, Turkey. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).

International Journal of Research in Business and Social Science (2147-4478) by SSBFNET is licensed under a Creative Commons Attribution 4.0 International License.