HONG KONG JOURNAL OF SOCIAL SCIENCES

香港社會科學學報

最新第 62 期 (2023 年秋/冬季) Vol. 62 Autumn/Winter 2023

Open Access Article https://doi.org/10.55463/hkjss.issn.1021-3619.62.37

Macroeconomic Variables and Political Stability in Financial Conditions after the 2008 Crisis and during the COVID-19 Pandemic

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Received: September 20, 2023 ▪ Reviewed: October 18, 2023

▪ Accepted: November 11, 2023 ▪ Published: December 29, 2023

Abstract:
The period between the 2008-2009 financial crisis and the advent of the COVID-19 pandemic was characterized by severe fluctuations in economic and financial conditions and political instability that had an austere impact on the South African economy. Given the existing mutual causality between financial conditions and the country's macroeconomic variables, the current study aimed to analyze the impact of employment, economic growth, exports, and political stability on the dynamics of financial conditions between the 2008-2009 financial crisis and COVID-19. To achieve this objective, the autoregressive distributed lag (ARDL), bound test, error correction model (ECM), and Toda– Yamamoto (T-Y) causality approach were applied to data time series from 2008 to 2019. Findings indicated a linear relationship between selected macroeconomic variables, political risk, and the financial condition index in South Africa for both the long-run and short-run. T-Y results also suggested unidirectional causation between the financial condition index and explanatory variables. These results are useful in economic and financial policymaking. This study is unique, as the topic was not previously researched. Given that a co-integration exists between the analyzed variables, policymakers should consider the interaction between political, financial and economic stabilities when making crucial decisions in each of these sectors.

Keywords: employment, economic growth, exports, political risk, financial conditions, South Africa.

2008 年危机后和新冠肺炎大流行期间金融状况的宏观经济变量和政治稳定性

摘要：
2008–2009 年金融危机和新冠肺炎(新冠肺炎)大流行爆发期间，经济和金融状况剧烈波动，政治不稳定，对南非经济产生了严重影响。鉴于金融状况与国家宏观经济变量之间现有的相互因果关系，本研究旨在分析 2008–2009 年金融危机和新冠肺炎之间就业、经济增长、出口和政治稳定对金融状况动态的影响。为了实现这一目标，对 2008 年至 2019 年的数据时间序列应用了自回归分布滞后(ARDL)、界限检验、误差校正

模型(细胞外基质)和户田 – 山本(T-Y)因果关系方法。研究结果表明，所选数据之间存在线性关系 南非长期和短期的宏观经济变量、政治风险和金融状况指数。T-Y 结果还表明财务状况指数与解释变量之间存在单向因果关系。这些结果对于经济和金融决策很有用。这项研究是独一无二的，因为该主题以前没有被研究过。鉴于分析变量之间存在协整关系，政策制定者在每个部门做出关键决策时应考虑政治、金融和经济稳定之间的相互作用。

关键词：就业、经济增长、出口、政治风险、金融状况、南非.

1. Introduction

Financial condition is generally described as the current values of a set of financial factors or variables that influence economic behavior. Consequently, the financial conditions index (FCI) is considered an indispensable tool for assessing the current values of financial indicators and forecasting the future of economic conditions (Hatzius et al., 2010; Koop & Korobilis, 2014). The financial conditions index is more complex than a simple monetary index because it comprises several variables, including exchange rate, interest rate, housing prices, financial stock, and total credits (Chow, 2012). Therefore, the financial condition index can also assist in forecasting a country's economic development.

The responsiveness of world economic activities to the 2008 financial crises and the continuous government debt crisis underscored the significance of financial conditions on both social and economic activities. Additionally, financial conditions are generally recognized as one of the major factors that influence business activities and business cycles, and they provide insight into past, current, and future economic outlooks (Gumata et al., 2012). The recent financial crisis served as an emergency call for decisions and policymakers to enhance their understanding of financial conditions and, more importantly, a better understanding of the impact of financial conditions on the real economy (Thompson et al., 2015).

Existing literature considers financial conditions as an indicator or a driver of economic conditions. Several studies from various authors within distinctive countries have emphasized the role of financial conditions in improving social and economic conditions (Chow, 2012; Gumata et al., 2012; Koop & Korobilis, 2014; Thompson et al., 2015). In South Africa, the financial conditions index is used to forecast gross domestic product (GDP) for at most one year or four quarters (Gumata et al., 2012).

South African financial conditions (FCI) are characterized by five major components: the real effective exchange rate, real interest rates, excess money supply growth, earnings, yields on shares, and the yield curve (Quantec, 2023).

The FCI plays an important role in the South African financial system as it is the driver of the country's monetary policies. Additionally, FCI influences economic activities within the country (Thompson et al., 2015). The importance of financial conditions for economic performance appeared clear to most individuals and countries during and after the 2008-2009 financial crisis, which caused great uncertainty within numerous economies. Thus, a close link exists between country-specific risk and financial conditions (Bhattarai et al., 2019; Gupta et al., 2020). According to Caldara et al. (2016), the linkage and correlation between financial conditions and economic shocks are too tight and strong, which makes it empirically difficult to distinguish which one is leading and which one is following (Balcilar et al., 2021). Based on this background, one can agree that the economic fluctuations experienced in South Africa might be linked to financial conditions

The 2008-2009 financial crisis, being one of the severe financial crises, had a significant impact on the South African financial industry and economic development as it hampered the country's economic activities. Further, the financial crisis caused a significant loss of jobs, and since then, the unemployment rate has continued to grow, and to date, economic growth has not yet fully recovered (Rena & Msoni, 2014). On the other hand, financial condition components such as the real effective exchange rate and interest rate underwent and are still undergoing serious volatility. This leads to the following question: which role do macroeconomic variables play in financial conditions?

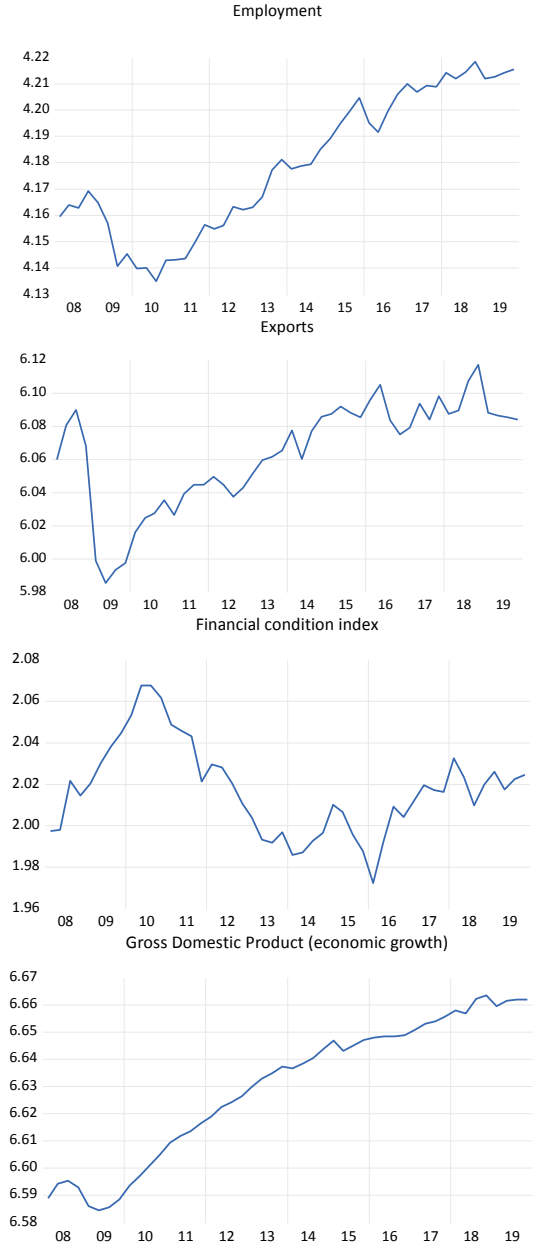
However, to the best of the authors' knowledge, there is a gap in the literature as there are not enough studies investigating the effect of macroeconomic variables on financial conditions dynamics. To that end, the current study analyzes the effect of employment level, economic growth, export level, and political instability on South African financial conditions during the period between the 2008 financial crisis and the COVID-19 outbreak.

2. Method

2.1. Data Description

To assess both long-run and short-run relationships among variables, the study employed quarterly time series data from the first quarter of 2008 to the last quarter of 2019. The study sample was selected on the basis of data availability. Additionally, data selection was motivated by the study objective, which is to determine the role of selected macroeconomic variables (employment, economic growth, and exports) and political stability on financial conditions between the

2008/2009 financial crisis and COVID-19. Financial condition (FC) is the study's dependent variable, while employment (EMP), economic growth or gross domestic product (GDP), exports (EXP), and political risk (PR) are used as the proxy of political stability and are explanatory variables expected to influence financial condition dynamism. While the dependent variable was acquired from the Quantec website, independent variables were obtained from the South African Reserve Bank (SARB, 2022). For consistency and reliability of the empirical findings, all variables were transformed into natural logarithms. Prior to the model specification, it is important to examine the study series trends over the sample period through a graphical representation (Figure 1).



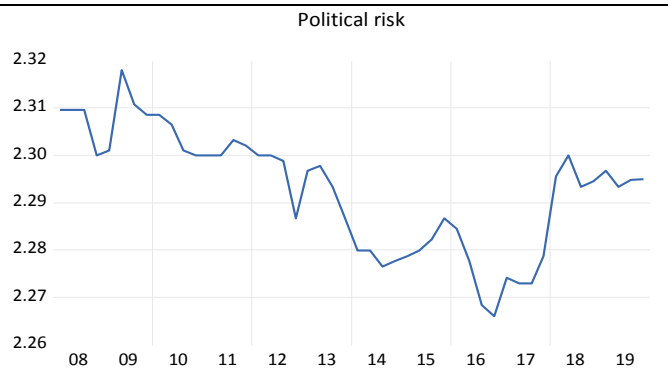


Figure 1. Graphical representation of the study series (Developed by the authors)

Series trends in Figure 1 indicate ongoing shocks within the assessed variables. There is one common factor for all explanatory variables. The 2008 financial crisis caused a significant decline in the South African economy, which is explained by the downtrend experienced by each of the selected explanatory variables. The seriousness of the 2008 financial crisis was manifested in the South African employment level as the latter experienced a decline between 2008 and 2010. Contrary to the explanatory variables, the South African financial index was not deeply affected by the 2008 global financial crisis, which is explained by upward trends for the period from the second quarter of 2008 to the third quarter of 2009, when the financial condition index started experiencing declining trends. Additionally, to the 2008 global financial crisis that affected most of the study variables, all variables experienced a downtrend movement in 2014 and 2017. In addition to trend analysis, summary statistics are another indicator that can explain the behavior of underpinned variables or series over a definite period. The results in Table 1 indicate a small difference between the minimum and maximum values for each variable. This implies small changes over time, as also explained by the small value of standard deviation that is closer to zero. However, the negative sign of skewness values suggests that variables, except the financial condition index, experienced chocks that were more negative over the sample period. The probability value from the Jarque-Bera test, greater than 0.05, implies a failure to reject the null hypothesis of normal distribution. This implies that the variables under consideration were normally distributed. Although the correlation coefficient between the explanatory and response variables is significant and positive, their values range between approximately 0.44 and 0.56.

Table 1. Descriptive statistics and correlation coefficients (Developed by the authors)

	LFCI	**LEMP**	**LEXP**	**LGDP**	**LPR**
Mean	2.017289	4.178923	6.063666	6.629675	2.292668
Maximum	2.067778	4.218239	6.117177	6.663364	2.318063
Minimum	1.972300	4.135062	5.985427	6.584601	2.265996
Std. Dev.	0.022138	0.026456	0.032109	0.025714	0.012762
Skewness	0.427028	-0.016588	-0.745364	-0.417817	-0.269567
Kurtosis	2.776261	1.597550	2.763616	1.780047	2.134470

Continuation of Table 1

Jarque-Bera	1.558945	3.935931	4.556297	4.3h73141	2.079613
Probability	0.458648	0.139741	0.102474	0.112301	0.353523
Correlation coefficients					
LEMP	0.4896**	1			
LEXP	0.5593**	0.8227**	1		
LGDP	0.4419**	0.8942**	0.811**	1	
LPR	0.5368**	-0.6204**	-0.609**	-0.7118**	1

2.2. Model Specification

To determine the functional relationship between the financial condition index and its explanatory variables, the general function of the study is presented as follows:

LFC = f (LEMP, LGDP, LEXP, LPR) (1)

Prior to the execution of the study time series model, it is compulsory to examine the nature of the data under consideration (Ewing et al., 2007). Thus, this study assessed the stationarity condition of all data series using both Augmented Dickey-Fuller (1979) and Phillips-Perron (1988) tests. The results from these two tests revealed that some variables are I(0) and others are I(1). Based on these unit root test results, the ARDL bound test for co-integration (Pesaran et al., 2001) was selected as an appropriate model for regressions. The choice of this model was based on its advantages over traditional approaches such as the Engle– Granger and Johansen tests for co-integration. First, the ARDL model applies to a mixture of I(0) and I(1). Second, it produces long-run and short-run results simultaneously. Third, even when a study is conducted on a small sample size, the ARDL model produces accurate and sound results (Pesaran & Smith, 1995). Furthermore, the ARDL model assists in solving the issue of endogeneity by adding lags of both dependent and independent in the model (Sankaran et al., 2019). The ARDL model for this study is expressed as follows:

$$\begin{aligned}\Delta LFC_t = {} & \propto_0 + \sum_{i=1}^{k} \beta_i \, \Delta LFC_{t-i} + \sum_{i=0}^{k} \delta_i \, \Delta LEMP_{t-i} \\ & + \sum_{i=1}^{k} \psi_i \, LGDP_{t-i} \\ & + \sum_{i=1}^{k} \varphi_i \, \Delta LEXP_{t-i} + \sum_{i=1}^{k} \gamma_i \, \Delta LPR_{t-i} \\ & + \lambda_1 LFC_{t-1} + \lambda_2 LEMP_{t-1} \\ & + \lambda_3 LGDP_{t-1} + \lambda_4 EXP_{t-1} \\ & + \lambda_5 LPR_{t-1} \\ & + e_t \ldots\ldots\ldots\ldots\ldots \quad \ldots (2)\end{aligned}$$

where *LFC* is the dependent variable and *LEMP, LGDP, LEXP, and LPR* are independent variables. The e_t denotes the term white noise. Equation 2 represents the relationship among variables in both the short-run and long-run. Thus, β_i , δ_i, η_i , ψ_i and φ_i are the short-run coefficients while λ_1 to λ_5 are the long-run coefficients. To determine the presence or absence of a long-term relationship, the bound test to co-integration is performed and the results from computed F-statistics are compared to the critical values from the table (Pesaran *et al.*, 2001). The critical values of lower bounds suggest that variables co-integrate at level I(0), and the critical values of upper bounds suggest that variables co-integrate after the first difference I(1). Therefore, if the F-statistics generated by the bound test are less than the critical values of lower bound, the test fails to reject the null hypothesis of no co-integration. However, if the F-statistics generated from the bounds test are greater than the upper bound critical values, the null hypothesis of no co-integration is rejected. In case the F-statistics falls between the critical values of lower and upper bounds, unless further information is provided, the results remain inconclusive. The subsequent study hypotheses are as follows:

H_0: $\lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = 0$ (No cointegration)

$H_1 : \lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 = \lambda_5 \neq 0$ (variables cointegrate)

Once the presence of co-integration or long-term relationship is confirmed, the next step is to capture the short-term dynamics by performing the error correction model (ECM) from Equation 2. The ECM delivered from Equation 2 is represented as follows:

$$\begin{aligned}\Delta LFC_t \; \Delta LFC_t = {} & \propto_0 + \sum_{i=1}^{k} \beta_i \, \Delta LFC_{t-i} \\ & + \sum_{i=0}^{k} \delta_i \, \Delta LEMP_{t-i} \\ & + \sum_{i=1}^{k} \psi_i \, LGDP_{t-i} \\ & + \sum_{i=1}^{k} \varphi_i \, \Delta LEXP_{t-i} + \sum_{i=1}^{k} \gamma_i \, \Delta LPR_{t-i} \\ & + \varpi ECT_{t-1} + e_t \ldots\ldots\ldots\ldots\ldots\ldots (3)\end{aligned}$$

where Δ denotes the first difference, ϖ represents the coefficient that captures the speed of adjustment and ECT_{t-1} denotes the model disequilibrium. The ϖ coefficient suggests how long it takes the model to return to its long-run equilibrium after short-term shocks. During the process of re-adjustment, the coefficient of adjustment ϖ is expected to be significant with a negative sign.

2.3. The Toda-Yamamoto-Granger Causality

The application of the ARDL model to variables that are either I(0), I(1), or a mixture of the two, discloses the presence of a linear long-run relationship. However, the results of this test do not indicate the direction of causality between the variables under consideration. Since causality plays an important role in determining

the relationship between two or more variables, this study used the modified Wald test (MWALD) proposed by Toda and Yamamoto (1995). This approach was preferred over the traditional Granger causality because the latter does not consider the likelihood of co-integration among the study variables (Wolde-Rufael, 2005). To rectify the traditional Granger causality model, Toda and Yamamoto's (1995) approach applies the standard vector autoregressive (VAR) model to variables at a level rather than at the first difference. Thus, the risk of wrong identification of variables in order of integration is minimized (Mavrotas & Kelly, 2001). Equation 4 represents the Toda Yamamoto approach used in the current study.

In Equations 4 to 8, *k* denotes the optimum number of lags for each variable, and *dmax* represents the maximum number of lags for all series. The modified Wald test (MWALD) is applied to equations (4 to 8) to establish causality among the underlined variables.

$$LFC_t = \propto_1 + \sum_{i=1}^{k} \beta_{2i}\, LFC_{t-i} + \sum_{j=k+1}^{k+dimax} \beta_{2j}\, LFCI_{t-j} + \sum_{i=0}^{k} \delta_{2i}\, LEMP_{t-i} + \sum_{j=k+1}^{k+dmax} \delta_{2j}\, LEMP_{t-j} + \sum_{i=0}^{k} \eta_{2i}\, LGDP_{t-i} + \sum_{j=k+1}^{k+dmax} \eta_{2j}\, LGDP_{t-j} + \sum_{i=k}^{k} \psi_{2i}\, LEXP_{t-i} + \sum_{j=k+1}^{k+dmax} \psi_{2j}\, LEXP_{t-j} + \sum_{i=1}^{k} \varphi_{2i}\, LPR_{t-i} + \sum_{j=k+1}^{k+dmax} \varphi_{2j}\, LPR_{t-j} + e_{2t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

$$LEMP_t = \propto_1 + \sum_{i=1}^{k} \beta_{2i}\, LFC_{t-i} + \sum_{j=k+1}^{k+dimax} \beta_{2j}\, LFCI_{t-j} + \sum_{i=0}^{k} \delta_{2i}\, LEMP_{t-i} + \sum_{j=k+1}^{k+dmax} \delta_{2j}\, LEMP_{t-j} + \sum_{i=0}^{k} \eta_{2i}\, LGDP_{t-i} + \sum_{j=k+1}^{k+dmax} \eta_{2j}\, LGDP_{t-j} + \sum_{i=k}^{k} \psi_{2i}\, LEXP_{t-i} + \sum_{j=k+1}^{k+dmax} \psi_{2j}\, LEXP_{t-j} + \sum_{i=1}^{k} \varphi_{2i}\, LPR_{t-i} + \sum_{j=k+1}^{k+dmax} \varphi_{2j}\, LPR_{t-j} + e_{2t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

$$LGDP_t = \propto_2 + \sum_{i=1}^{k} \beta_{3i}\, LFC_{t-i} + \sum_{j=k+1}^{k+dima\,x} \beta_{3j}\, LFCI_{t-j} + \sum_{i=0}^{k} \delta_{3i}\, LEMP_{t-i} + \sum_{j=k+1}^{k+dmax} \delta_{3j}\, LEMP_{t-j} + \sum_{i=0}^{k} \eta_{3i}\, LGDP_{t-i} + \sum_{j=k+1}^{k+dmax} \eta_{3j}\, LGDP_{t-j} + \sum_{i=k}^{k} \psi_{3i}\, LEXP_{t-i} + \sum_{j=k+1}^{k+dm\,ax} \psi_{3j}\, LEXP_{t-j} + \sum_{i=1}^{k} \varphi_{3i}\, LPR_{t-i} + \sum_{j=k+1}^{k+dmax} \varphi_{3j}\, LPR_{t-j} + e_{3t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6)$$

$$LEXP_t = \propto_3 + \sum_{i=1}^{k} \beta_{4i}\, LFC_{t-i} + \sum_{j=k+1}^{k+dimax} \beta_{4j}\, LFCI_{t-j} + \sum_{i=0}^{k} \delta_{4i}\, LEMP_{t-i} + \sum_{j=k+1}^{k+dmax} \delta_{4j}\, LEMP_{t-j} + \sum_{i=0}^{k} \eta_{4i}\, LGDP_{t-i} + \sum_{j=k+1}^{k+dmax} \eta_{4j}\, LGDP_{t-j} + \sum_{i=k}^{k} \psi_{4i}\, LEXP_{t-i} + \sum_{j=k+1}^{k+dmax} \psi_{4j}\, LEXP_{t-j} + \sum_{i=1}^{k} \varphi_{4i}\, LPR_{t-i} + \sum_{j=k+1}^{k+dmax} \varphi_{4j}\, LPR_{t-j} + e_{4t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7)$$

$$LPR_t = \propto_4 + \sum_{i=1}^{k} \beta_{5i}\, LFC_{t-i} + \sum_{j=k+1}^{k+dimax} \beta_{5j}\, LFCI_{t-j} + \sum_{i=0}^{k} \delta_{5i}\, LEMP_{t-i} + \sum_{j=k+1}^{k+dmax} \delta_{5j}\, LEMP_{t-j} + \sum_{i=0}^{k} \eta_{5i}\, LGDP_{t-i} + \sum_{j=k+1}^{k+dmax} \eta_{5j}\, LGDP_{t-j} + \sum_{i=k}^{k} \psi_{5i}\, LEXP_{t-i} + \sum_{j=k+1}^{k+dmax} \psi_{5j}\, LEXP_{t-j} + \sum_{i=1}^{k} \varphi_{5i}\, LPR_{t-i} + \sum_{j=k+1}^{k+dmax} \varphi_{5j}\, LPR_{t-j} + e_{5t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (8)$$

2.4. Model Diagnostic Tests

Prior to the interpretation of the study findings, several diagnostic tests were performed to ensure that the core assumptions of both the ARDL and MWALD models were met. These tests include the Jarque– Bera test for normality, Breush-Godfrey LM test for serial

correlation, White test for heteroscedasticity, Ramsey reset test for model misspecification, and recursive CUSUM test for model parameter stability.

3. Results and Discussion

3.1. Unit Root Results

Table 2 presents the results from the Augmented Dickey-Fuller (ADF) and Kwiatkowski-Phillips-Schmidt-Shin test statistic (KPSS) unit root and stationarity tests, respectively. The null hypothesis for the unit root test suggests that the series under consideration has a unit root, whereas the alternative suggests that the series has no unit root. Contrary to the ADF test, the null hypothesis for the KPSS stationarity test suggests that the series is stationary. Thus, rejecting the null hypothesis of the ADF test means failure to reject the hypothesis for the KPSS test. The outcome from these two tests, as displayed in Table 2, indicates that the variables are integrated in different orders. In other words, some series are I(0) and others are I (1). Thus, the ARDL was selected as a suitable model for co-integration analysis.

Table 2. Unit root and stationarity results (Developed by the authors)

		Levels		1st Difference		Order
Variables	**Model**	**ADF**	**KPSS**	**ADF**	**KPSS**	
LFCI	Intercept	0.028*	0.799*	……	……	I(0)
	With trends	0.010*	0.038*	……	……	I(0)
LEMP	Intercept	0.8187	1.2898	0.000*	……	I(1
	With trends	0.500	0.095*	0.003*	……	I(0)
EXP	Intercept	0.368	1.232*	0.000*	0.290	I(1)
	With trends	0.03*	0.2183*	0.0000*	0.173*	I(0)
LPR	Intercept	0.359	1.244*	0.000*	0.290	I(1)
	With trends	0.7581	0.2039*	0.000*	0.125	I(1)
LGDP	Intercept	0.6735	1.328**	0.000*	0.338	I(1)
	With trends	0.976	0.270	0.000*	0.059*	I(1)

Notes: * denotes the rejection of H0 at the 1%, 5%, or 10% level of significance; a series is stationary if the ADF test rejects H0 and the KPSS test fails to reject H0. In case the ADF and KPSS results conflict, the KPSS results are considered.

3.2. Bound Test Results

The bound test for co-integration was used to assess the presence or absence of long-term relationships among variables. Using the Akaike information criteria, the selected model ARDL (2, 0, 0, 4, 1) was selected as the best model to determine the long-run relationship. The calculated F-statistics, as shown in Table 3, were found to be higher than all upper bound critical values, implying the rejection of the null hypothesis of no co-integration even at a significance level of 0.01. Based on these results, it was concluded that a long-term relationship exists between the financial condition index, employment in the manufacturing sector, domestic and foreign direct investment, manufacturing output, and total exports.

Table 3. ARDL bound test results (Developed by the authors)

F-statistic	**8.207032**	
Significance	**Lower Bound**	**Upper Bound**
10%	3.03	4.06
5%	3.47	4.57
2.5%	3.89	5.07
1%	4.4	5.72

The presence of co-integration among variables leads to the next step, which is the analysis of long-run coefficients. These coefficients assist in establishing the elasticity of the financial condition index toward long-term changes in the research explanatory variables. It is important to note that prior to further discussion of long-run coefficients, it is vital to bear in mind that financial conditions are measured by the stability or volatility of five economic and financial variables: real interest rates, earning yields on shares, yield curve, excess money supply, and real effective exchange rate change (Quantec, 2020). Thus, a positive or negative effect of this study's variables toward any of these five mentioned variables also has a positive or negative effect on financial conditions as a whole.

3.3. Estimation of the Long-Run Coefficients

Table 4 displays the long-run coefficient for ARDL (2, 0, 0, 4, 1). As indicated in Table 4, all independent variables positively affect the long-term behavior of the financial condition index. However, the magnitude effect of GDP on FCI dominates the effect of other explanatory variables on the financial condition index. That is, a 1% increase in economic growth (GDP) leads to a 3% increase in the level of FCI. Additionally, a 1% increase in employment and political risk results in a 0.164028 and 0.128976 percent increase in the financial condition, respectively, while the financial condition index experiences a growth of 0.034054 percent as a response to a 1 % increase in exports.

Table 4. Long-run coefficients (Developed by the authors)

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
LEMP	0.164028	0.292210	-0.561336	0.5786
LEXP	0.034054	0.171290	-0.198807	0.8437
LGDP	3.723433	0.474663	-7.844380	0.0000
LPR	0.128976	0.216165	-0.596653	0.5551

The positive impact of all independent variables suggested a close link between financial conditions and economic and political situations. A country with a stable economy and political institutions should enjoy

the stability of its financial condition. In other words, a good economic and political condition determines the condition of the financial sector in a specific country. On the other hand, the strong and sustainable financial condition of a country assist in improving the economic condition of the same country.

3.4. Short-Run Dynamics and Error Correction Model (ECM)

The results for the short-run relationship and error correction model are provided in Table 4. The lagged value of the financial conditions index has a positive and significant effect on its short-term dynamism. Additionally, both economic growth and political risk are statistically significant to cause changes in short-term behavior of financial conditions. Employment has a statistically significant power to affect financial conditions in the short term. Thus, the former is not reported in Table 5. The R-squared of 0.637146 in Table 5 suggests that almost 64 % of changes in financial conditions are explained by the independent variables of this research, namely economic growth, export levels, employment rate, and political risk.

In addition to the significant effect of explanatory variables on the response variable, the coefficient of error correction was, as expected, negative and significant. The coefficient is -0.780157, meaning that the speed of adjustment from short-run shocks toward long-run equilibrium is approximately 80 % each quarter. In other words, all short-term fluctuations will be fully adjusted after 1.28 quarters. This implies that in less than two quarters, shocks in the financial conditions system revert to long-run equilibrium.

Table 5. Short-run and ECM results (Developed by the authors)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21.62599	3.176649	6.807801	0.0000***
@TREND	0.005094	0.000757	6.727645	0.0000***
D(LFCI(-1))	0.243300	0.112925	2.154521	0.0391*
D(LGDP)	-0.784915	0.467962	-1.677304	0.1035
D(LGDP(-1))	3.071447	0.594105	5.169875	0.0000*
D(LGDP(-2))	1.443896	0.599758	2.407465	0.0222*
D(LGDP(-3))	1.915523	0.592575	3.232539	0.0029*
D(LPR)	0.401926	0.181509	2.214354	0.0343*
CointEq(-1)	-0.780157	0.114617	-6.806616	0.0000*
R-squared	0.637146	Mean dependent variable		0.000231
Adjusted R-squared	0.554208	S.D. dependent variable		0.009683
S.E. of regression	0.006465	Akaike information criterion		-7.064487
Sum squared resid	0.001463	Schwarz criterion		-6.699539
Log likelihood	164.4187	Hannan-Quinn criteria.		-6.929146
F-statistic	7.682199	Durbin-Watson stat		1.994122

* indicates significance at the 1% and 5% levels.

3.5. Toda Yamamoto Results

A co-integration relationship between two or more variables implies the presence of at least a one-way causal relationship between the variables under consideration. Thus, having determined the long-term relationship between the financial condition index, employment, exports, economic growth, and the financial condition index, it is necessary to determine causality among these variables. As the study analyzed a mixture of the I(0) and I(1) series, the T-Y Granger causality is an adequate approach to assess causality. The results exhibited in Table 6 indicate a unidirectional causality between financial conditions, employment, and economic growth. On the other hand, financial conditions can cause short-term changes in political risk, while a bidirectional causality exists between economic growth and export levels. This implies that high gross domestic product results in an increase in exports, while the latter assists in increasing the former. Similarly, disturbances in financial conditions cause instability in political performances and stability.

Table 6. T-Y Granger causality test results (chi-square and P-values) (Developed by the authors)

Excluded lags	Dependent variable				
	LFCI	LEMP	LEXP	LGDP	LPR
LFCI	----------	13.670 (0.00*)	0.349 (0.8395)	10.785 (0.004*)	2.1960 (0.333)
LEMP	1.3631 (0.5058)	----------	7.13800 (0.028*)	5.7907 (0.0553*)	2.2414 (0.3261)
LEXP	2.5656 (0.277)	1.0645 (0.587)	----------	12.627 (0.001*)	2.2922 (0.3179)
LGDP	2.7026 (0.2589)	0.9438 (0.6238)	10.355 (0.005*)	----------	1.6707 (0.433)
LPR	7.6498 (0.021**)	2.8485 (0.240)	0.6483 (0.723)	----------	4.1252 (0.1271)

Notes: * indicates significance at the 1, 5 and 10% significance levels; P-values are in brackets.

3.6. Results of Residual Diagnostics

To verify the robustness of ARDL (2, 0, 0, 4, 1), several residual diagnostic tests were performed. These tests include the Jarque-Bera test for normal distribution, Ramsey's RESET test for stability, the LM test for autocorrelation, and the Breusch-Pagan-Godfrey test for heteroscedasticity. The probability values for all performed tests are greater than 0.05, implying a failure to reject the null hypothesis. Therefore, it can be concluded that the ARDL (2, 0, 0, 4, 1) model was

found to be robust and adequate for the study (Table 7).

Table 7. Short-run and ECM results (Developed by the authors)

Tests	Jarque-Bera	Ramsey's RESET Test	LM Tests	BPG Test
J-B value	0.9373	……..	……..	…….
F-statistic	……..	0.209	3.074	1.578
Prob. F	……....	1. 74	2.73	17.75
p-value	0.738	0.648	0.052	0.092

In addition to residual tests, Brown et al. (1975) suggested that two tests, namely Cumulative Sum (CUSUM) and Cumulative Sum of Square (CUSUMSQ), should be conducted to assess structural stability. These two tests are important as the CUSUM test is used to capture the systematic fluctuations in the regression coefficients, whereas the CUSUMSQ assists in detaining the departure of parameters from reliability. The results in Figures 2 and 3 indicate that the blue line remains within the red line bounds. Accordingly, the study model is reliable and its parameters are stable.

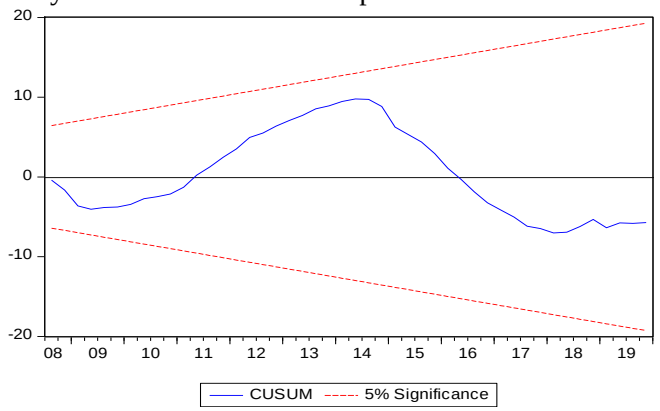


Figure 2. Cumulative sum of recursive residuals (Developed by the authors)

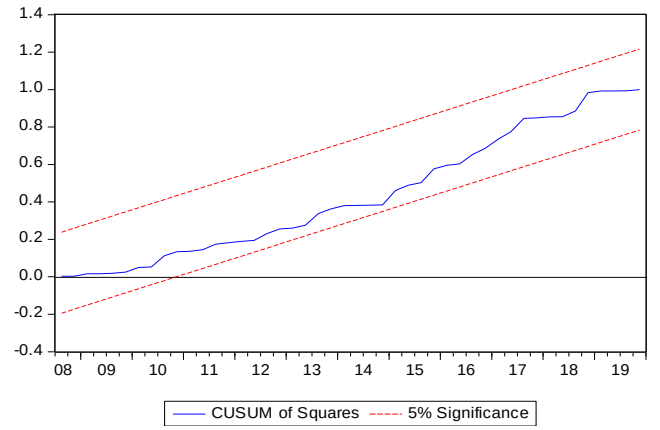


Figure 3. Cumulative sum squares of recursive residuals (Developed by the authors)

4. Conclusions and Policy Recommendations

In South Africa, as in most economies, the volatility of financial conditions remains a serious issue. This study examined the effect of some macroeconomic variables, namely employment, gross domestic product (as a proxy of economic growth), exports, and political risk on South African financial conditions. To achieve the study objectives, various econometric tools were employed. Unit root and stationarity tests indicated that the study series combined I(0) and I(1). Therefore, the ARDL and ECM approaches were adequate for determining both long-run and short-run relationships, respectively.

Based on regression analysis performed in section five of the study, findings revealed that all analyzed variables co-integrate eventually and that approximately 78 % of short-term fluctuations are adjusted every quarter. The results also indicated that all independent variables, namely employment, gross domestic product, exports, and political risk, have a significant positive impact on financial conditions.

However, changes in gross domestic product (economic growth) have a higher influence on South African financial conditions than other explanatory variables. These findings support previous research results, suggesting that an integrating relationship exists between financial conditions and macroeconomic variables. Additionally, the Toda-Yamamoto test for causation indicated a unidirectional causality between employment, gross domestic product, political risk, and the financial condition index. Furthermore, a bidirectional causality exists between gross domestic product and export levels. In simple terms, it can be concluded that an adjacent relationship exists between selected economic variables, political risk, and the financial condition index.

Based on the research findings, the results can serve as a useful tool for introducing adequate fiscal policies that corroborate monetary policies. In other words, South African economic authorities and policymakers should consider every impact of financial strategies or policies on economic stability and every economic policy impact on financial stability. Additionally, given the significant effect of political risks on financial conditions, all political decisions should also be taken in consideration of their impact on the country's economic performance, in general, and financial conditions in particular.

5. Limitations and Future Research

This study employed a simple equation to investigate the relationship between selected economic and political risks and financial conditions. The analysis was limited to the effect of explanatory variables (selected macroeconomic variables and political) yet the performance of the country's economy is also subject to financial conditions. To overcome this limitation, the relationship between the study variables would be more elucidated if a model that analyzed the interaction between these variables was used. In this regard, using

a vector autoregressive moderate, future studies should focus on the examination of the interaction between political risk (political stability) and financial and economic conditions.

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