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ORIGINAL ARTICLE

The Effect of Disaggregated Country Risk on Foreign Portfolio Investment Flows in South Africa

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Abstract

This study explores the relationship between disaggregated country risk and foreign portfolio investment (FPI) flows in South Africa, focusing on both the long-run and short-run effects of economic, financial, and political country risk measures on net foreign purchases of shares (NFPS) and net foreign purchases of bonds (NFPB) during the period from 1995 to 2019. We employed autoregressive distributed lag (ARDL) and nonlinear autoregressive distributed lag (NARDL) models to assess the relationships between the variables. The results indicate that all disaggregated country risk measures have a long-run effect on NFPS and NFPB, and the impacts of these risks are asymmetric. Specifically, low levels of economic risk are associated with a decline in foreign equity flows and an increase in foreign bond investments in the long run, while high levels of economic risk correlate with a rise in both foreign equity and bond investment flows. Conversely, both high and low levels of financial and political risk lead to a decrease in NFPS and NFPB. Notably, financial risk was the only country risk measure found to significantly impact NFPB in the short run. The findings highlight the importance for policymakers to understand these complex relationships in order to implement strategies that foster a mutually beneficial economic, political, and financial climate in South Africa, encouraging FPI while maintaining sovereignty.

Keywords: Country risk, Political risk, Financial risk, Economic risk, Net foreign portfolio investment

JEL classification: E44, G10, G11

1 Introduction

For a developing country such as South Africa, foreign capital inflows in the form of foreign direct investment (FDI) and foreign portfolio investment (FPI) play a critical role in promoting economic growth (Chorn & Siek, 2017). FPI investors are considered passive, as they do not participate in the day-to-day operations of domestic corporations, while FDI investors are more actively involved. Following the political liberalisation after 1994, South Africa became a significant recipient of FPI (Bah & Giritli, 2020). From 2013 to 2018, South Africa was the leading recipient of foreign portfolio investment in sub-Saharan Africa (Schwab, 2017). During this period, FPI inflows amounted to R408.1 billion, three times greater than FDI inflows (OECD, 2018). However, data from The Global Economy indicates a significant drop in FPI from 2019 to 2021, which relegates South Africa to the lowest recipient of FPI in the region. This transition raises critical questions about the factors influencing FPI inflows. Were there changes in the characteristics of the South African economy that deterred FPI investors?

While portfolio investments are considered less risky due to their liquidity, this same liquidity poses a risk for the receiving country, as investors may withdraw their investments during periods of financial, political, or economic instability (Al Samman & GabAlla, 2020; Bah & Giritli, 2020). These political, financial, and economic risk factors constitute

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country risk, which aligns with Nhlapho and Muzindutsi (2020), who assert that capital inflows and outflows are influenced by country risk. The past decade in South Africa has been tumultuous, marked by issues of state capture, credit rating downgrades, declining socio-economic conditions, and high national debt. Political instability peaked in 2016 during the governmental elections when the African National Congress (ANC) lost support in four major metropolitan cities, which led to increased political uncertainty, cabinet reshuffles, and votes of no confidence against the previous and current presidents (World Bank Group, 2018). Additionally, rising interest rates, high inflation, risk rating downgrades, load shedding, and civil unrest have contributed to consistently low economic growth (National Treasury, 2022; Nhlapho & Muzindutsi, 2020). Do these components of country risk affect foreign portfolio investment? This study seeks to answer this question.

Most existing literature on South African investments focuses on FDI, leaving a gap in understanding FPI and its relationship with country risk. Using autoregressive distributed lag (ARDL) and nonlinear autoregressive distributed lag (NARDL) models, this study examines the short-run and long-run influences of political, financial, and economic risk on FPI flows in South Africa. The contributions of this study to the literature are fourfold. First, it analyses the influences of disaggregated country risk on FPI flows in a developing country context, a topic that has not been previously explored. Second, most studies that assess the relationship between FPI flows and disaggregated country risk focus on developed countries, with limited attention to emerging economies. Emerging economies have diverse financial markets, levels of economic development, cultural factors, and geographical contexts, all of which significantly influence foreign capital flows. As such, models developed for one economy may not yield accurate results when applied to another. Thus, it is essential to investigate the effects of disaggregated country political, financial, and economic risk on FPI flows, specifically for South Africa. Third, South African literature often emphasises political risk while neglecting financial and economic risk components. Nhlapho and Muzindutsi (2020) suggested that greater attention should be paid to the effects of disaggregated country risk on foreign financial flows. Fourth, existing studies suggest that the debate on the influence of country risk on FPI flows remains unresolved and warrants further investigation.

2 Literature review

The risk–return trade-off is a fundamental principle in finance that suggests higher potential returns are generally associated with higher levels of risk (Elton et al., 2009). This phenomenon is explained by modern portfolio theory (MPT), which posits that investors can optimise returns by constructing diversified portfolios that balance risk and return. From a global point of view, foreign net portfolio investments are often guided by MPT principles, as international investors seek exposure to uncorrelated or higher-yielding assets in emerging or frontier markets (Zaimovic et al., 2021). However, linking the country risk and the concept of risk–return trade-off would emphasise how the risks associated with a particular country influence foreign investment decisions (Hassan, 2023). Thus, foreign investments tend to flow from countries with higher risk or lower returns to those with more stable environments and higher returns as investors seek to maximise returns while minimising risk (Al Samman & GabAlla, 2020). In other words, shifts in risk perceptions or economic conditions influence the direction and volume of foreign investment flows across countries, and country risk components play a crucial role in these dynamics. Thus, these dynamics inform the theoretical link between country risk components and foreign portfolio investment inflows.

Country risk arises from political, economic, and social issues, representing the overall risk landscape of a nation. Assessing country risk can influence the creation of an optimal investment portfolio, where a weighted composite indicator is tailored to a specific risk level (Malala & Adachi, 2020). Typically, a risk-averse investor may be deterred from investing in economies with high country risk levels. Conversely, risk-takers might pursue investments in such environments due to the potential for high returns associated with elevated risk (McCue, 2000). Therefore, the effect of country risk on foreign capital inflows can be either positive or negative. In South Africa, the flow of foreign capital largely depends on whether investments offer sufficient returns to offset the inherent risks of the economy (Oleksiv, 2000).

Despite its importance, only a few studies focus on the specific components of country risk when evaluating their influence on foreign financial flows, such as FDI and FPI. Most existing literature (e.g., Hassan, 2023; Hayakawa et al., 2013; Sekkat & Veganzones-Varoudakis, 2007; van Wyk & Lal, 2008) has primarily analysed the impact of macroeconomic factors, such as GDP, exchange rates, and inflation, on FPI, with a greater emphasis on FDI. For instance, Topal and Gül (2016) examined data from 49 developing countries and found that financial risk does not significantly influence FDI inflows; however, decreases in economic and political risk positively affect FDI. Similarly, Rafat and Farahani (2019) studied the relationship between FDI and political risk in Iran and discovered a negative impact of political risk on FDI.

Using a panel dataset covering 72 nations, Sekkat and Veganzones-Varoudakis (2007) suggested that higher GDP indicates better market opportunities for attracting FDI and that political and financial risks significantly influence FDI. Their findings also revealed that higher risk levels lead to decreased FDI. Additionally, Hayakawa et al. (2013) analysed FDI inflows for 89 countries from 1985 to 2007, concluding that political risk negatively correlates with FDI. Their results indicated that initially, low political risk and a subsequent decrease in political risk attract more FDI inflows, while emerging economies with reduced financial risk do not necessarily attract FDI, suggesting that the sensitivity of FDI to country risk components is not uniform.

In South Africa, Magoane et al. (2023) evaluated the relationships between political risk, the exchange rate, and FDI, finding that these factors influence FDI in the long run. However, they noted that the real exchange rate and political risk do not significantly affect FDI in the short run, whereas GDP does. Similarly, Khan and Akbar (2013) identified a long-run association between FDI and political risk, while Meyer and Habanabakize (2018) found that both economic growth and political risk influence FDI levels over the short and long term. Their findings highlighted that political risk ratings have a more considerable effect on FDI flows than GDP, emphasising the importance of specific country risk components.

Regarding FPI, Al Samman and GabAlla (2020) explored the effects of country risk components on foreign equity portfolio inflows, identifying a long-run association between net foreign portfolio equity investment inflows and all three country risk measures. Specifically, their results indicated that political risk influences inflows positively, while economic and financial risks affect them negatively. Mutize and Gossel (2019) investigated the net influence of sovereign credit rating announcements on foreign-currency-denominated stock and bond markets across 19 African economies from 1994 to 2014. They found weak positive relationships between bond and stock markets and sovereign credit ratings, suggesting that these markets respond positively to credit upgrades and negatively to downgrades. Furthermore, they revealed that variations in sovereign ratings have a more pronounced effect on bond prices than stock prices, indicating that the impact of country risk components may differ between bond and stock markets.

Overall, existing studies primarily focus on the influence of country risk on FDI flows, with limited attention to its effects on FPI. Given that FPI inflows are gaining prominence for enhancing investment flows in host countries (Singhania & Saini, 2018), assessing how changes in country risk impact FPI dynamics is crucial. This study aims to contribute to this discourse by analysing the effects of disaggregated country risk on FPI flows in South Africa, explicitly examining net foreign purchases of shares (NFPS) and net foreign purchases of bonds (NFPB). Previous research has indicated that the performance of stock and bond markets influences foreign portfolio investments positively (Haider et al., 2017; Singhania & Saini, 2018). However, these markets are also susceptible to country risk, affecting foreign financial flows. The relationship between market performance, asset returns, and country risk is complex. In South Africa, Nhlapho and Muzindutsi (2020) found that political risk affects both bond and stock returns in the short and long run, while economic risk has short-run effects on bond returns. Muzindutsi and Obalade (2024) discovered that bond returns increase with rising political and economic risks but decrease as financial risk increases. These conflicting findings on the effects of country risk components on bond and stock markets necessitate further investigation to clarify this important topic.

The theories and reviewed empirical evidence revealed that minimising country risk is crucial for countries seeking to attract foreign capital, as higher risks tend to deter foreign investors, affecting the net inflows of foreign investment. In contrast, high risk may attract foreign investors with high level of risk appetite. Thus, this study has the following three prior expectations or hypotheses. First, we hypothesise that increasing country risk (economic, financial, and political risks) decreases the FPI inflows. This expectation is based on the traditional finance theory that investors are less likely to invest in countries perceived as high risk, leading to reduced foreign investment inflows. However, behavioural finance argues that behavioural biases such as the level of risk appetite or tolerance and investor irrational behaviours may change this phenomenon (Mittal, 2022), where investors may channel their investments in countries in search of high returns (Baek & Qian, 2011). Hence, the second prior expectation is a positive relationship between country risk components and net foreign portfolio flow. Lastly, investors have been found to react to political risk as opposed to financial and economic risks, as the level of risk tolerance across economic, political, and financial risks may differ. Thus, our third hypothesis is that the effect of economic, financial, and political components of country risk on net foreign portfolio flows varies because the investors may react differently to each of these risk components. Thus, the empirical analysis of this study is set to examine these three prior expectations/hypotheses.

3 Data and methodology

3.1 Data and variables

This analysis employs a quantitative approach, utilising time-series data to achieve its objectives. Monthly data on NFPS and NFPB from January 1995 to December 2019 are used in this study. This sample period was selected because economic sanctions on South Africa ended in 1995, marking the transition to a democratic regime. The end date of 2019 was chosen to exclude the COVID-19 pandemic, which caused unprecedented disruptions in the global economy and affected investment flows. The NFPS and NFPB data, sourced from the South African Reserve Bank, reflect the overall market value of South African stocks and bonds purchased by non-resident investors minus the stocks and bonds sold (Havemann et al., 2022). NFPS and NFPB are appropriate measures of FPI flows, as evidenced by their use in several studies (Mamvura & Sibanda, 2020; Muguto et al., 2019).

Data on country risk ratings was obtained from the International Country Risk Guide (ICRG) scores provided by the PRS Group. The ICRG comprises 22 variables categorised into three subgroups of country risk: financial risk, political risk, and economic risk. Political risk encompasses factors such as government stability, socio-economic conditions, corruption, internal and external conflicts, military influence in politics, religious tensions, bureaucratic quality, ethnic tensions, law and order, and democratic accountability. Economic risk includes indicators such as GDP per capita, real GDP growth, annual inflation rate, budget balance as a percentage of GDP, and current account balance as a percentage of GDP. Financial risk consists of foreign debt as a percentage of GDP, foreign debt service as a percentage of exports, current account balance as a percentage of exports, net international liquidity measured in months of import cover, and exchange rate stability. Table 1 summarises the risk rating scores. The political risk index is considered the most critical component of country risk and is weighted at 100 points, while financial and economic risk indices are assigned weights of 50 points each (Muzindutsi et al., 2022). The overall scores from these three indices are averaged to derive a comprehensive country risk score. The scores range from 0 to 100, classified as follows: very high risk (0 to 49.9 points), high risk (50 to 59.9 points), moderate risk (60 to 69.9 points), low risk (70 to 79.9 points), and very low risk (80 to 100 points; The PRS Group, 2022).

Table 1. Country risk rating scores.

Risk rating score	Political risk	Financial risk and economic risk
Very low	80.0%–100%	40.0%–50%
Low	70.0%–79.9%	35.0%–39.9%
Moderate	60.0%–69.9%	30.0%–34.9%
High	50.0%–59.9%	25.0%–29.9%
Very high	0.0%–49.9%	0.0%–24.9%

Source: The PRS Group (2022).

3.2 Model specification

In order to achieve the aim of this study, which involves assessing the effect country risk measures have on net foreign flows and whether that effect is asymmetric or not, the linear ADRL and nonlinear ARDL (NARDL) models were adopted. These models are superior to other cointegration models such as Johansen and Engle–Granger tests because of their simplicity and their ability to produce accurate estimates even if the series is integrated of different orders (Allen & McAleer, 2021; Muzindutsi & Mjeso, 2018). This advantage is beneficial for the present study as the dataset used is more likely to be integrated of different orders. In determining the linear relationship between disaggregated country risk and FPI flows in South Africa, the following linear ARDL models were employed:

$$\Delta \mathrm{NFPS}_t = \alpha_0 + \sum_{i=1}^{n} b_i \Delta \mathrm{NFPS}_{t-i} + \sum_{i=0}^{n} c_i \Delta \mathrm{LER}_{t-i} + \sum_{i=0}^{n} d_i \Delta \mathrm{LFR}_{t-i} + \sum_{i=0}^{n} e_i \Delta \mathrm{LPR}_{t-i} + \varphi_1 \mathrm{NFPS}_{t-1} + \varphi_2 \mathrm{LER}_{t-1} + \varphi_3 \mathrm{LFR}_{t-1} + \varphi_4 \mathrm{LPR}_{t-1} + \varepsilon_{1t} \quad (1)$$

and

$$\Delta \mathrm{NFPB}_t = \alpha_0 + \sum_{i=1}^{n} b_i \Delta \mathrm{NFPB}_{t-i} + \sum_{i=0}^{n} c_i \Delta \mathrm{LER}_{t-i} + \sum_{i=0}^{n} d_i \Delta \mathrm{LFR}_{t-i} + \sum_{i=0}^{n} e_i \Delta \mathrm{LPR}_{t-i} + \varphi_1 lny_{t-1} + \varphi_2 \mathrm{LER}_{t-1} + \varphi_3 \mathrm{LFR}_{t-1} + \varphi_4 \mathrm{LPR}_{t-1} + \varepsilon_{1t} \quad (2)$$

Eqs. (1) and (2) represent the change in NFPS and NFPB, respectively. The NFPS and NFPB equations are approximated independently. LER, LFR, and LPR represent the natural logarithms for economic risk, financial risk, and political risk, respectively. The natural logarithm is used to transform the highly skewed country risk variable scores (see Table 2) into variables that approximate a normal distribution (Benoît & Dubra, 2011). Short-run coefficients are represented by a, b, c, d, and e, while φ_i represent the long-run coefficients, and ε denotes the error term. To estimate the long-run relationship between disaggregated country risk and FPI flows, the following hypotheses are tested:

H_0: $\varphi_1, \varphi_2, \varphi_3, \varphi_4 = 0$
H_1: $\varphi_1, \varphi_2, \varphi_3, \varphi_4 \neq 0$

The null hypothesis expresses that there is no long-run relationship association (cointegration) between the series, whereas the alternate hypothesis expresses that there is a long-run association between the series. If there is confirmation of a long-run relationship between disaggregated country risk and FPI flows, then error correction models (ECM) are estimated to evaluate the short-run relationships. The ECMs are expressed as follows:

$$\Delta \mathrm{NFPS}_t = \alpha_0 + \sum_{i=1}^{k} b_i \Delta \mathrm{NFPS}_{t-i} + \sum_{i=0}^{k} c_{1i} \Delta \mathrm{LER}_{t-i} + \sum_{i=0}^{k} d_{1i} \Delta \mathrm{LFR}_{t-i} + \sum_{i=0}^{k} e_{1i} \Delta \mathrm{LPR}_{t-i} + \delta\varepsilon_{t-1} + u_t \quad (3)$$

and

$$\Delta \mathrm{NFPB}_t = \alpha_0 + \sum_{i=1}^{k} b_i \Delta \mathrm{NFPB}_{t-i} + \sum_{i=0}^{k} c_{1i} \Delta \mathrm{LER}_{t-i} + \sum_{i=0}^{k} d_{1i} \Delta \mathrm{LFR}_{t-i} + \sum_{i=0}^{k} e_{1i} \Delta \mathrm{LPR}_{t-i} + \delta\varepsilon_{t-1} + u_t \quad (4)$$

Conceptually, δ is the error correction term that captures the adjustment speed to the equilibrium. Due to the possibility of nonlinearity in the relationship, the NARDL model is used to supplement the ARDL model. The NARDL model expands the linear ARDL model by considering the possibility of a nonlinear association between the variables. The NARDL model breaks down the variables in the model into positive and negative changes to identify whether there is a nonlinear effect on the dependent variable (Kartal et al., 2022). The NARDL model designed by Shin et al. (2011) is implemented to approximate both short and long-run asymmetries (Nasr et al., 2018). The NARDL model adopted is described as follows:

$$\Delta y_t = \sum_{i=1}^{n-1} b \Delta y_{t-i} + \sum_{i=0}^{n-1} (c_{1i}^{+} \Delta \mathrm{LER}_{t-i}^{+} + c_{2i}^{-} \Delta \mathrm{LER}_{t-i}^{-}) + \sum_{i=0}^{n-1} (d_{1i}^{+} \Delta \mathrm{LFR}_{t-i}^{+} + d_{2i}^{-} \Delta \mathrm{LFR}_{t-i}^{-}) + \sum_{i=0}^{n-1} (e_{1i}^{+} \Delta \mathrm{LPR}_{t-i}^{+} + e_{2i}^{-} \Delta \mathrm{LPR}_{t-i}^{-}) + \varphi_1 y_{t-1} + \varphi_2^{+} \mathrm{LER}_{t-1}^{+} + \varphi_3^{-} \mathrm{LER}_{t-1}^{-} + \varphi_4^{+} \mathrm{LFR}_{t-1}^{+} + \varphi_5^{-} \mathrm{LFR}_{t-1}^{-} + \varphi_6^{+} \mathrm{LPR}_{t-1}^{+} + \varphi_7^{-} \mathrm{LPR}_{t-1}^{-} + u_t \quad (5)$$

where y_t represents NFPS and NFPB, which implies two NARDL equations were estimated.

Table 2. Descriptive statistics.

	Economic risk	Financial risk	Political risk
Mean	34.75027	38.16667	67.51167
Median	34.50000	38.50000	66.50000
Maximum	38.50000	42.00000	77.00000
Minimum	29.00000	31.50000	61.50000
SD	2.103751	1.938577	3.696337
Skewness	−0.058291	−0.596396	0.658080
Kurtosis	2.199080	3.064181	2.770212
Jarque–Bera	8.188301	17.83593	22.31353
Probability	.016670	.000134	.000014
Sum	10,425.08	11,450.00	20,253.50
Sum of squares	363,597.6	438,132.0	1,371,433
Observations	300	300	300

4 Results discussion

4.1 Descriptive analysis

Table 2 summarises the descriptive statistics for the series in question. The *p* values for the Jarque–Bera test for normality are all below the 5-percent level of significance, which leads to the rejection of the null hypothesis of normality. This indicates that the country risk data is not distributed normally. This result is supported by the kurtosis figures, which are below 3 for economic and political risk, suggesting a platykurtic distribution, and above 3 for financial risk, which suggests a leptokurtic distribution. In addition to this, the skewness values show that economic financial risk has a negative skewness, which signals that the majority of South Africa's economic and financial risk ratings are clustered towards higher values, which indicate lower risk levels, whereas political risk has a positive skewness. This positive skewness indicates that the majority of the risk ratings of the country are clustered around lower values, which points to higher political risk levels. The skewness of the country risk scores necessitated the use of a logarithm in the subsequent analysis. The average scores for economic and political risk fall within the moderate risk range, whereas the financial risk score is classified as low risk.

Figs. 1 and 2 illustrate NFPS and NFPB trends during the sample period from January 1995 to December 2019. In the analysis of the trendlines, a point of note is the sharp decrease in NFPS in late 2008 and early 2009, which is not reciprocated in magnitude in NFPB. This is due to the 2008 global financial crisis, in which investors rushed to move their shareholdings to "safe haven" bond holdings. NFPS movements seem more volatile than NFBS movements and occur either inversely to NFPB or drastically more than NFPB movements.

4.2 Unit root test results

To assess the order of integration and stationarity of the variables used in this paper, the

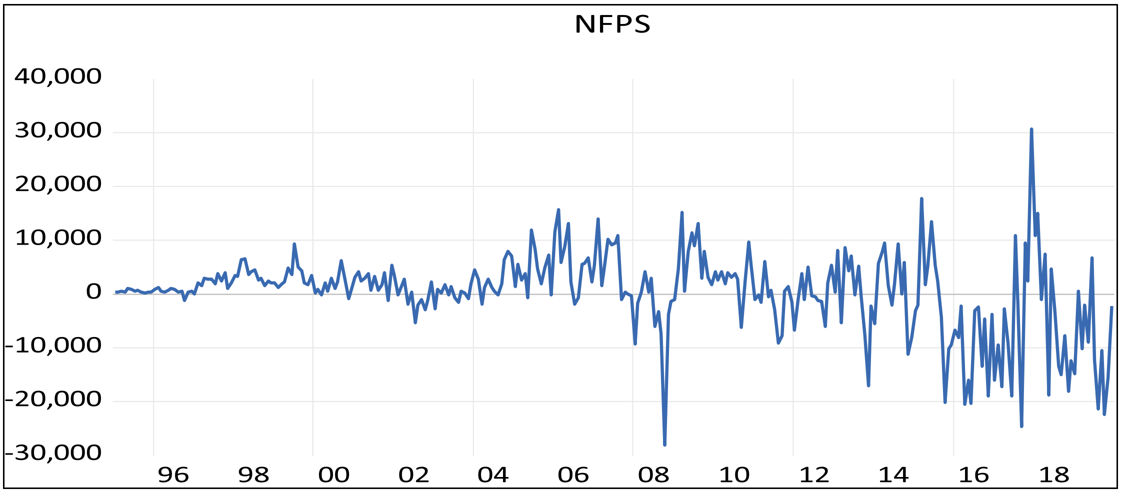

Fig. 1. Net foreign purchases of shares (January 1995–December 2019).

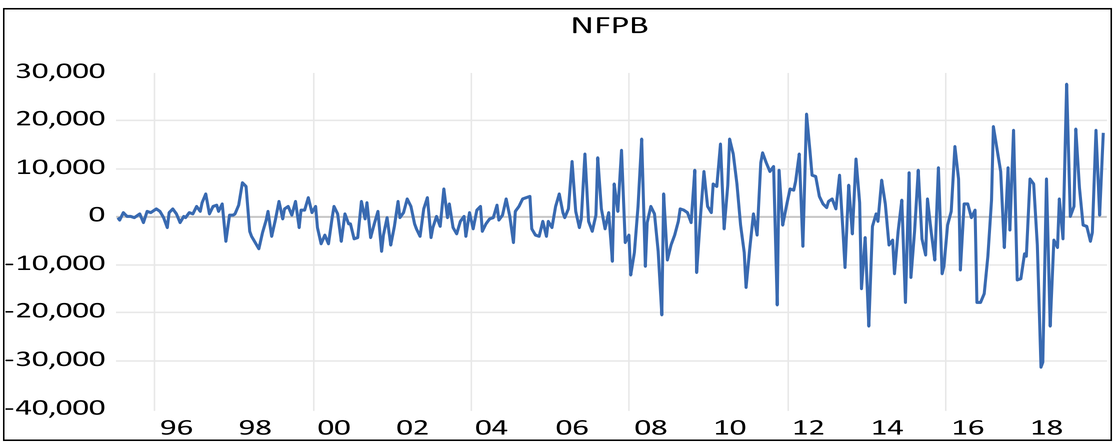

Fig. 2. Net foreign purchases of bonds (January 1995–December 2019).

Kwiatkowski–Phillips–Schmidt–Shin (KPSS) and augmented Dickey–Fuller (ADF) tests in conjunction with a unit root test with breakpoints were performed. The unit root tests were carried out at constant and at constant and trend. The results of the unit root test are summarised in Table 3. The test results indicate that the variables are either I(0) or I (1). In analysing the unit root results and stationarity tests, it is prudent to note that stationarity does not change in the presence of a trend. This indicates that the trend is not significant in the assessment of results. Interestingly, the KPSS results reflect that all variables except NFPS and LER and intercept are I(1). The KPSS result for LER moves from stationarity to nonstationarity with the inclusion of a trend. This may indicate that the trend of LER is significant. However, the ADF test and the unit root test with breakpoints do not support this. The unit root test results with breakpoints correlate with the ADF test results in that all variables besides LPR are I(0). There are no discernible patterns in the break dates, with the only similarity in break being LFR and LER in November/December 2008. This pattern represents a break during the fourth quarter of 2008. The reason for this may be linked to the financial crisis of 2008, which caused a recession in South Africa (Verick & Islam, 2010) and would have affected the economic risk and financial risk ratings of South Africa.

4.3 Log-run relationship analysis

In this study, we identified models for log-run relationship examination based on the Schwarz Bayesian information criterion. The best models were chosen for NFPS and NFBP, that is, NFPS ARDL (2, 0, 0, 0), NFPS NARDL (2, 0, 0, 0, 0, 0, 0), and NFPB (1, 0, 1, 0), NFPB (1, 0, 0, 0, 2, 0, 0) with the lag number on explanatory variables indicated in parentheses. The ARDL & NARDL *F*-bounds test results, displayed in Table 4, show that there is cointegration between the

Table 3. ADF, KPSS, and breakpoint unit root test results.

	At level			Order of integration			Break dates
Variable	ADF	KPSS	Breakpoint	ADF	KPSS	Breakpoint	Breaking date
NFPS							
At constant/intercept	−6.4357*	0.8787*	−10.3811*	I(0)	I(0)	I(0)	1996M02
At trend and constant	−7.0676*	0.2376*	−11.3405*	I(0)	I(0)	I(0)	1996M06
NFPB							
At constant/intercept	−14.1696*	0.0806	−14.8804*	I(0)	I(1)	I(0)	2018M06
At trend and constant	−14.1442*	0.0809	−15.1441*	I(0)	I(1)	I(0)	2018M03
LER							
At constant/intercept	−2.5883***	0.8026*	−4.6101***	I(0)	I(0)	I(0)	2008M11
At trend and constant	−3.2126***	0.1707	−5.2145***	I(0)	I(1)	I(0)	2008M11
LFR							
At constant/intercept	−4.7854*	0.1264	−5.2273*	I(0)	I(1)	I(0)	2008M12
At trend and constant	−4.8005*	0.0873	−5.6724***	I(0)	I(1)	I(0)	2002M04
LPR							
At constant/intercept	−2.4793	1.0841	−3.7165	I(1)	I(1)	I(1)	1998M03
At trend & constant	−2.7659	0.1139	−4.8092	I(1)	I(1)	I(1)	2003M08

Note. *, **, and *** represent the rejection of H_0 at 1%, 5%, and 10%, respectively. The absence of any such representation indicates a failure to reject H_0 at any level of significance.

Table 4. ARDL and NARDL bounds test results.

	Model	SBIC	F-statistic	Critical values: Lower bound	Critical values: Upper bound	
NFPS	ARDL (2, 0, 0, 0)	20.38	12.62	3.47	6.36	
	Long-run equation: $NFPS = 3779.53LER - 15013.21LFR + 701.97LPR$					(6)
	NARDL (2, 0, 0, 0, 0, 0, 0)	20.41	8.34	2.53	4.90	
	Long-run equation: $NFPS = -2207.09LER_{POS} + 24212.31LER_{NEG} - 13092.74LFR_{POS} - 12476.13LFR_{NEG} -33817.25LPR_{POS} - 12596.26LPR_{NEG}$					(7)
NFPB	ARDL (1, 0, 1, 0)	20.72	53.65	3.47	6.36	
	Long-run equation: $NFPB = 3167.82LER - 782.14LFR18672.08LPR$					(8)
	NARDL (1, 0, 0, 0, 2, 0, 0)	20.7632	26.8098	2.53	4.9	
	Long-run equation: $NFPB = 1956.62LER_{POS} + 17617.05LER_{NEG} - 10167.83LFR_{POS} - 15692.39LFR_{NEG} -19263.67LPR_{POS} - 22629.72LPR_{NEG}$					(9)

Note. Critical values are from Case V: unrestricted intercept and unrestricted trend.

country risk measures and both NFPS and NFPB at the 5% level of significance. This is evident in that the *F* statistics for NFPS (12.62) and NFPB (53.65) are greater than their respective upper and lower bound Pesaran critical values. Therefore, the null hypothesis of no cointegration is rejected, indicating that a long-run relationship exists between disaggregated country risk and NFPS and NFPB.

Since the Schwarz Bayesian information criterion results were so close to each other, it was prudent to run an additional test to assess the symmetry of the long-run relationships. The Wald test was conducted, and its results are summarised in Table 5.

Table 5. Wald test for long-run asymmetries.

Model	F-statistics	P-values	Specification
ARDL (NFPS)	17.11620	0.0000	Asymmetric
NARDL (NFPS)	11.75465	0.0000	Asymmetric
ARDL (NFPB)	6.165268	0.0000	Asymmetric
NARDL (NFPB)	5.046736	0.0000	Asymmetric

The results presented in Table 5 indicate asymmetric long-run relationships, suggesting that the NARDL results are preferable to those from the ARDL model. Eqs. (6) to (9) in Table 4 represent the respective long-run relationships for NFPS and NFPB. Given the confirmation of asymmetric long-run relationships, the discussion focuses solely on NARDL Eqs. (7) and (9). Eq. (7) demonstrates that a positive change in the local economic risk (LER) is negatively correlated with NFPS, while a negative change positively impacts NFPS. Specifically, a 1% increase in LER is associated with a decrease of 2,207.09 million rand in NFPS, whereas a 1% decrease in LER corresponds to an increase of 24,212.91 million rand in NFPS. Since an increase in the country risk score indicates lower economic risk, the results suggest that low economic risk levels decrease NFPS, while high economic risk levels increase NFPS. This phenomenon may be attributed to higher expected returns for foreign equity investors, as some developing economies with elevated risk levels are perceived as attractive, profitable investments (Anarkulova, 2023). Overall, this finding highlights the sensitivity of foreign investors to economic risk levels in South Africa and confirms our first hypothesis, namely that high risk is associated with high returns.

Regarding the natural log of financial risk (LFR) and the natural log of political risk (LPR), the results indicate that both positive and negative changes in these risks have a negative long-run relationship with NFPS. This implies that lower levels of financial and political risk decrease NFPS, while increases in these risks also result in a decline in NFPS. Although the finding that high country risk levels lead to a decrease in foreign investment flows aligns with the conclusions of Sekkat and Veganzones-Varoudakis (2007), the present study hints at deeper nuances in the relationship between financial and political risk and NFPS. Foreign equity investors may perceive a South African market with either excessively low or high political and financial risk levels as unattractive, reflecting concerns about the perceived future growth potential of the country. This perception may stem from South Africa's volatile political landscape, its status as a developing country, and a poor financial track record (Ajide & Alimi, 2019). While both negative and positive movements in LPR negatively affect NFPS, increases in political risk ratings exert a more substantial influence on the decline of NFPS.

Eq. (9) assesses the effect of disaggregated country risk scores on NFPB. The equation reveals that both positive and negative changes in LER are positively related to NFPB. Specifically, a 1% increase in LER leads to an increase of 1,956.62 million rand in NFPB, while a 1% decrease in LER also results in a 17,617.05 million rand increase in NFPB. This suggests that foreign bond investors are not discouraged by either low or high economic risk levels when investing in the South African bond market. This result may be counterintuitive; however, it reflects the complex nature of investor psychology according to behavioural finance as stated in our second hypothesis. Studies such as Baker and Wurgler (2007) and Ahmad et al. (2017) have shown that due to biases such as herding or familiarity bias, even institutional investors may make irrational investment decisions such as investing in a high economic risk environment. Moreover, as proposed in the prospect theory by Kahneman and Tversky (1979), the way in which risk is perceived by investors frames their investment decisions, which may be contrary to rational thought. This could indicate that there is a certain level of high economic risk that makes bond investors attracted to bond investment with expectation of high returns as portrayed by the risk-return relationship. Conversely, both positive and negative changes in LFR and LPR show a negative association with NFPB. The results indicate that a 1% increase in LFR and LPR decreases NFPB by 10,167.83 million rand and 19,263.67 million rand, respectively. This finding indicates that a South Africa characterised by high financial and political risk leads to outflows of foreign bond investments from the South African market. Unstable exchange rates, limited international liquidity, and rising corruption can all contribute to elevated financial and political risk. Given that bond investors are particularly sensitive to interest rates—factors that can be negatively impacted by these conditions—they may be discouraged from investing in the country (Fabozzi & Fabozzi, 2021). Contrary to expectations, a 1% decrease in LFR and LPR corresponds to decreases in NFPB of 15,692.39 million rand and 22,629.72 million rand, respectively; a relationship similar to that of NFPS and these exact country risk measures. Such a finding is in line with our second hypothesis as it implies that political and financial risk have a more nuanced dynamic with NFPS and NFPB. Declining political and financial risk levels may be associated with lower returns, making the South African market less attractive for investors. These results then suggest that there could exist an optimal political and financial risk range between which foreign equity and bond investors are not disincentivised by excessive political and financial instability and excessive political and financial stability. These findings also confirm our third prior expectation, namely that the effect of country risk on net foreign portfolio investments may differ across the components of country risk.

A closer examination of the results reveals that negative changes in local political risk (LPR) have the strongest effect on NFPB, which aligns with the findings of Muzindutsi and Obalade (2024), who identified political risk as a driver of bond returns. During the observation period, South Africa's political environment has undergone significant transformation, including the establishment of a new democracy, a presidency marked by corruption under Jacob Zuma, and the "Fees Must Fall" movement, which highlighted the levels of inequality still faced in the country post-apartheid. These events, among others, contribute to political uncertainty, adversely affecting foreign investor confidence. Therefore, this finding emphasises the importance of policymakers strengthening governance and political stability while enhancing security and social stability. The findings of this study are consistent with those of Baek and Qian (2011), and Meyer and Habanabakize (2018).

Table 6. Error correction models.

Model	Variables	Coefficients	Probability
NFPS (ARDL)	*C*	−14,880.99	0.0000
	@TREND	−13.67202	0.0025
	D(NFPS(−1))	−0.269752	0.0000
	CointEq(−1)	−0.445266	0.0000
NFPS (NARDL)	*C*	876.1663	0.2178
	@TREND	−93.22322	0.0000
	D(NFPS(−1))	−0.235367	0.0001
	CointEq(−-1)	−0.514832	0.0000
NFPB (ARDL)	*C*	−58,748.53	0.0000
	@TREND	5.030486	0.2998
	D(LFR)	64,366.98	0.0000
	CointEq(-1)	−0.826954	0.0000
NFPB (NARDL)	*C*	−650.3266	0.4600
	@TREND	8.572711	0.0771
	D(LFR_NEG)	109,172.3	0.0000
	D(LFR_NEG(−1))	−86,029.15	0.0005
	CointEq(−1)	−0.790281	0.0000

Table 7. Diagnostic tests.

Model	Serial correlation test (*F* stat. *p* values)	White heteroscedasticity test (*F* stat. *p* values)	CUSUM test
NFPS ARDL	0.066020	4.013455	Stable
NFPS NARDL	0.219669	3.508220	Stable
NFPB ARDL	4.458889	3.630707	Stable
NFPB NARDL	3.325175	1.769112	Stable

4.4 Short-run relationship analysis

Following the establishment of long-run relationships between disaggregated country risk and FPI flows, ECMs were estimated for both ARDL and NARDL equations of NFPS and NFPB. This was done to further analyse the short-run dynamics between the variables along with adjustment to the long-run equilibrium, and the results are summarised in Table 6. In reviewing the error correction term (ECT) in all four ECMs, it is notable that all are negative and statistically significant, which is the desired result for a short-run relationship to be valid. The ARDL ECTs for the NFPS and NFPB show that 44.53% and 82.70% of any disequilibrium are corrected monthly, respectively. On the other hand, the NARDL ECTs for NFPS and NFPB indicate that about 51.48% and 79.03% of any deviation from equilibrium are corrected monthly, respectively. The higher ECTs for NFPB implies that foreign bond investments adjust back to equilibrium at a faster rate than foreign equity investment flows. The results further reveal that only negative changes in LFR have a statistically significant impact on NFPB in the short run. Financial crises, which are commonly associated with growing financial risk, may hamper the government's ability to honour the bondholders' high-return payments. It is therefore crucial that policymakers acknowledge the short-term relation between financial risk and FPI so as to effectively manage financial risk in a manner that avoids financial crises and encourages the foreign purchasing of bonds in South Africa.

4.5 Diagnostic tests

The diagnostic tests of the estimated models are indicated in this subsection. Table 7 summaries the results obtained for the Breusch–Godfrey serial correlation tests and the white heteroscedasticity test. The results show that the residuals from the models in question are all not serially correlated and are homoscedastic at a 5% level of significance. The CUSUM (cumulative sum) test for stability shows stable models as the graph did not cross the 5% boundaries during the sample period. The overall outcome of the results proves that this study does not contravene any economic inferences and justifies the credibility of the outcomes in this assessment.

5 Conclusions

Through the application of ARDL and NARDL models, this study investigates the short-run and long-run effects of disaggregated country risk on FPI flows in South Africa. This study analysed the impacts of various elements of country risk, namely economic, financial, and political risk, on FPI flows. Our findings reveal a cointegrating relationship between disaggregated country risk and FPI flows, as measured by NFPS and NFPB. The effects of individual country risk measures on the two types of FPI flows were found to be asymmetric. Specifically, low levels of economic risk are associated with a decline in foreign equity flows but an increase in foreign bond investments in the long run. Conversely, high economic risk levels in South Africa are linked to rising foreign equity and bond investment flows. This suggests that foreign investors may view South Africa as an attractive investment opportunity during times of high economic risk due to the potential for high returns.

In terms of financial and political risk, both high and low levels of these risks were linked to a decrease in net foreign equity and bond investment flows. While foreign investors may be willing to invest in a highly uncertain economic climate, the same cannot be said for circumstances characterised by escalating financial and political risks. This finding revealed the existence of a possible optimal political and financial risk threshold where equity and bond returns are maximised. Moreover, low levels of political risk had the most significant impact on foreign equity flows, while rising political risk levels had the greatest effect on foreign bond investments in the long run. This finding confirms our hypothesis that the effect of economic, financial, and political components of country risk on net foreign portfolio flows varies because investors may react differently to each of these risk components. In this case, the political risk is found to be a prominent determinant of the shift in net portfolio investment inflows among these risks. This process underscores the importance of policymakers stabilising political risk to encourage FPI. In the short run, financial risk was the only country risk measure that significantly affected NFPB. The nature of the relationships between disaggregated country risk measures and NFPS and NFPB highlighted by this study emphasises the need for policymakers to understand these intricate dynamics. Such understanding is crucial for implementing policies that foster a mutually beneficial economic, political, and financial environment in South Africa, thereby encouraging FPI while maintaining the country's sovereignty. Although this study provides valuable insights for policymakers and scholars, the observation period is limited to 2019 due to data constraints. Future research could explore these relationships while accounting for recent economic, political, and financial developments in South Africa. Given that political risk had the most significant impact on both NFPS and NFPB, it would be worthwhile for future studies to closely investigate which individual political risk components most deter foreign investment flows into South Africa.

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