The switching-regime effect of sovereign risk components on housing prices in South African major cities

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Abstract

Purpose: This study aims to investigate the effect of sovereign risk components on housing prices in six major South African cities under switching regimes conditions.

Method: The Markov Switching Model was employed to analyse the switching effect of economic, financial and political risk on the property markets in major South African cities.

Results: In the bearish regime, the response of property prices to changes in country risk components varies across the cities. In contrast, country risk components do not affect property prices in the bullish regime in all sampled cities. Cape Town has the most volatile housing prices, and each city's response to changing regimes is asymmetric, with the likelihood of staying longer in bullish conditions than the bearish market conditions.

Originality: This study is the first to assess the impact of country risk factors on housing prices for South African cities with a specific focus on switching regimes.

Keywords- Housing price, sovereign risk, Markov Switching Model, Economic Risk, Financial risk, Political risk, South African Cities

Paper type- Research paper

L'effet de changement de régime des composantes du risque souverain sur les prix de l'immobilier dans les grandes villes sud-africaines

Résumé

Objectif : Cette étude vise à étudier l'effet des composantes du risque souverain sur les prix de l'immobilier dans les six grandes villes sud-africaines dans des conditions de changement de régime.

Méthode : Le modèle de commutation de Markov a été utilisé pour analyser l'effet de commutation des risques économiques, financiers et politiques sur les marchés immobiliers dans les principales villes sud-africaines.

Résultats : En régime baissier, la réponse des prix de l'immobilier aux variations des composantes du risque souverain varie selon les villes. En revanche, les composantes du risque souverain n'affectent pas les prix de l'immobilier en régime haussier dans toutes les villes échantillonnées. Le Cap a les prix de l'immobilier les plus volatils, et la réponse de chaque ville aux changements de régime est asymétrique, avec la probabilité de rester plus longtemps dans une situation haussière que dans une situation baissière.

Originalité : Cette étude est la première à évaluer l'impact des facteurs de risque souverains sur les prix de l'immobilier dans les villes sud-africaines, avec un accent particulier sur le changement de régime.

Mots clés : Prix de l'immobilier, risque souverain, modèle de commutation de Markov, risque économique, risque financier, risque politique, villes sud-africaines.

1. Introduction

During the pre-subprime mortgage crisis period (2000-2006), there was a rapid increase in South African housing prices. According to Absa's index of house prices, SA prices surged by 32% in 2004. In some areas, i.e., suburbs in and around Cape Town and Johannesburg, house prices rose by 17% while others stagnated (Kruger, 2013). Although the 2007-2008 period saw a decline in prices, this was short-lived as a significant upward tick ensued soon thereafter following the aftermath of the Global Financial Crises (GFC). The South African housing market experienced a 69% rise in prices from 2007-2021 indicating an incessant trend which, coupled with growing demand and low interest rates, will continue to lead buyers into believing that it is the appropriate time to invest in this market, thus, allowing one to anticipate a housing price bubble (First National Bank, 2021).

From the first quarter of 2019, South Africa's inflation adjusted house prices rose by 3.96% and later also declined by 0.51% (Mahan, 2021). Cape Town contributed the highest rate toward this increase, Durban was 2nd and Johannesburg the 3rd highest contributor (Kruger, 2013). During this same period, South African households were under financial strain due to slow economic growth, low employment levels, and high-interest rates (Rogers, 2020). The South African (SA) economy has been in a state of a downturn for many years, and the unprecedented Covid-19 pandemic exacerbated this condition, placing SA households in tighter economic conditions (Moody's Investor Service, 2020).

Over the years, the SA housing market has proven to be sensitive to various economic, financial and political factors. For instance, During the period of 2009 – 2017, SA was downgraded by all rating agencies from investment grade to sub-investment grade, and from 2017 to 2019, the country was downgraded by S&P and Fitch to junk status due to a high level of political volatility and government disarray (News24, 2020). Furthermore, the adverse economic aftermath of the level five lockdown measures in 2020 led Moody's to downgrade SA to junk status (News24, 2020). This downgrade adversely affects the property market as it increases the borrowing cost, which decreases the demand for the housing market in SA, therefore risking the market falling into a bearish trend. These downgrades are an indicator of South Africa's risk profile and are ultimately hazardous for the economy and real estate market.

Moreover, in an attempt to recover from the social and financial damage the coronavirus had inflicted on the economy, the South African Reserve Bank (SARB) cut interest rates five times in a space of seven months in 2020 (Mahan, 2021). As a result, SA experienced a 1.2% decline in property prices, which induced a high demand for the housing market. As a result of this increased demand, home buyers entered the real estate market, and if housing supply remains limited, prices in low interest environments will rise (Kwoun, Lee, Kim & Kim, 2013). Currently, the SA property market is experiencing a resurgence despite the economic difficulties (Ooba, 2021). This price resurgence, if sustained, has the potential to create housing bubbles. Considering that SA operates within an uncertain political and economic environment which has significant implications for corporate payment capacity since it significantly impacts credit extension, and as a result, the housing market (Global Edge, 2020). Furthermore, considering that interest rates may rise to offset the high demand, many homeowners may be unable to pay their debt which may result in a financial crisis in the SA housing market.

The housing market is crucial to the stability of the economy (Davids, 2022). A continuous increase in housing prices makes housing less affordable; this may result in homeowners defaulting on their mortgages therefore affecting the stability of the banking industry which is one of the cornerstones of an economy (Kirk McClure, 2022). However, it is unclear whether the connection between housing prices and country risk varies across the South African cities. It stands to reason that the increase of country risk in South Africa, as evidenced by the series of downgrades from Fitch

Ratings, Moody's Investor Services and S&P Global Ratings, increases the level of uncertainty investors experience, which is detrimental to investment prospects in the property market. Thus, the effect of country risk on housing price bubbles across the cities needs to be investigated.

It is evident that economic, political and financial risks may have implications for the SA housing market. Together, these risk components capture what is known as sovereign risk and in the presence of potential price bubbles, it is not clear which country risk component affects the housing market. South African metropolitan leaders are responsible for developing and maintaining economically sustainable metropolitan cities under the backdrop of historical spatial inequalities. This involves a balancing act of fostering growth in the housing market while maintaining affordability for all citizens. Each of the nine provinces in South Africa differs in their annual growth per capita due to the unique characteristics of their metros, therefore highlighting the importance of assessing how sovereign risk influences housing prices in the different municipalities. Furthermore, there is a limited understanding of how sovereign risk impacts housing prices under bull and bear markets. The purpose of this study is, therefore, to investigate the regime-specific effect of disaggregated country risk rating components on the housing markets in the major South African cities such as Cape Town, Durban, Ekurhuleni, Johannesburg, Nelson Mandela Bay and Tshwane. More specifically, this study aims to determine the switching effect of economic, financial, and political aspects of country risk on housing prices in major South African cities and compare the bullish and bearish housing market conditions in different South African cities.

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The remainder of this article is organised as follows. Section 2 the theoretical framework and the review of the existing empirical studies. Section 3 describes the data and model used in the study. Section 4 presents results and discusses the findings of this study. Section 5 concludes the study.

2. Literature Review

The global financial crisis of 2008 demonstrated the detriment of the bursting of housing price bubbles to the economy (Hui & Yue, 2006). Hence, this study aims to identify determinants of housing price fluctuation. The literature featured in this review contributed answers to the following about housing prices: (1) establishing a relationship between property prices and the components of country risk and (2) identifying the housing segments in South Africa most sensitive to country risk. Thus, the purpose of this literature review is to acquire further understanding of the underlying theory behind country risk ratings and further, to explore previous studies that investigated the relationship between the variables in question.

2.1 Theoretical Framework

Before discussing theories behind sovereign risk (country risk) ratings, it is important to understand country risk and its components. Country risk can be described as the risk of an undesirable expected return of an international or cross-border investment, not present in local investments (Meldrum, 2000). The components of country risk include economic risk, political risk, and financial risk. Economic risk is defined as the effect macroeconomic variables have on investments made in a country. On the other hand, financial risk refers to a country's capability to meet its debt obligations, keeping foreign debt and levels of liquidity in mind; while political risk defines the effect the political landscape and any instabilities therein have on a country's risk profile (Muzindutsi, Jamile, Zibani, & Obalade, 2021).

In light of the above, an underlying theory that forms the nexus between country risk ratings and housing prices is The Modern Portfolio Theory (MPT). This theory is an investment structure used by investors to create a portfolio with investments that maximise expected returns while minimising

risk (Fabozzi, Gupta & Markowitz, 2002). The MPT further inferred diversification as the driving force behind creating a risk minimizing portfolio. One of the most effective ways of diversifying a portfolio involves investing in various industries (Smith, 2021). The real estate sector has been identified as a positive return generating industry to invest in owing to its ability to enhance portfolio diversification through a balanced combination of debt and equity financing (Olaleye, 2011). Real estate assets wholly or even partially funded by mortgages are particularly exposed to interest rates, inflation rates and default risks (Olaleye, 2011). Due to this exposure, housing prices are vulnerable to these risks and fluctuate following these rates. In this regard, the MPT's attempt to diversify and decrease a portfolio's risk by investing in the real estate sector increases the loan growth rate- as most real estate investments are financed with debt. It resultantly increases the possibility of a housing price bubble developing. In the next section some empirical studies on the effect of country risk components on housing prices are presented and discussed.

2.2 A Review on the Effects of Country Risk on Housing Price

A limited number of empirical studies have directly addressed the impact of economic risk on property prices. Ong (2013) conducted a study in Malaysia measuring the relationship between housing prices and macroeconomic variables. More specifically, the study sought to empirically assess whether the increasing housing prices in Malaysia were linked to changes in Gross Domestic Product GDP, inflation, population, interest rates, property tax rates and construction costs. Using monthly data for the period 2001 to 2010, a regression analysis was conducted. The results revealed that macroeconomic variables do affect housing prices, which draws attention to the effect economic risk would have on housing prices. This conclusion coincided with the results obtained by Habanabakize & Dickason (2022) who investigated the effect of political risk and macroeconomic variables on housing price volatility in South Africa utilising the Vector Autoregressive (VAR) and, Vector Error Correction Model (VECM) models on monthly data from January 2002 to December 2019. This study's findings showed that inflation, interest rates, rental and political risk influence housing prices in both the long run and short run. Similarly, using the GMM panel and VAR approach, Balcilar, Roubaud, Uzuner & Wohar (2021) analysed the relationship between the housing sector and economic policy uncertainty in 16 countries. These authors' findings revealed that a positive relationship exists between economic policy uncertainty and housing prices. Additionally, the panel Granger causality tests indicated a strong and robust unidirectional causal relationship from economic policy uncertainty to housing prices. These findings substantiate the premise that economic risk influences housing prices.

Bahmani-Oskooee & Wu (2018) conducted a study to determine whether a Granger causal relationship existed between real effective exchange rates and residential real estate prices in 18 Organisation for Economic Co-operation and Development (OECD) countries. This paper postulated that inflation increases in response to exchange rate depreciation, and that inflation is positively correlated to housing prices. That is, housing prices rise as inflation increases, creating a wealth effect for homeowners. The study further explained that this effect could stimulate consumption and importing activities which further weakens the stability of the exchange rate as the demand for foreign currency increases. Based on this premise, it was hypothesised that housing prices can influence the exchange rate and vice versa. This study found that in half the sample, residential property prices, Granger caused exchange rate changes, whereas, in the remaining nine countries, changes in the exchange rate Granger caused changes to housing prices. A different angle on the effect of economic and financial risk on regional housing price in the United State of America was then examined by Chien, Setyowati & Liu (2023). Utilising panel threshold regression the study analysed data for 50 of the largest metropolitan areas in the USA. The study findings indicated a nonlinear effect of economic and financial uncertainty on the analysed metropolitans. However, the results also revealed that the effect of macroeconomic uncertainty is limited to time. Therefore, as the tie increases the economic risk effect on housing prices decreases and when the former reaches its highest regime it becomes insignificant to affect housing prices. In contrast, financial risk was found to have a positive effect on

housing prices in its both low and middle regimes and negatively impacts on housing market when it reaches its highest regime of uncertainty. Consequently, the effects of financial and economic risk on housing price differs when these country risk components are at their highest level.

Uncertainty in the political climate of a country has long been hypothesised to decrease the value of property. A study Nguyen & Vergara-Alert (2023) investigated the impact of political uncertainty and housing markets on the US gubernatorial elections from 1982 to 2018. The study result showed that higher political uncertainty causes a reduction in house price and a decrease in the number of housing transactions, while causing an increase in the number of building permits. Analogously, with specific reference to the recent experience of Scotland, Jones (2019) investigated the influence of political risk and economic vulnerability in housing markets using political events that occurred between 2000 and 2018. The outcome of the study indicated that political risk made by referendum expanded vulnerability and adversely affected sentiment, with decreased housing investment by U.K. investors and expended property yields, prompting lower development actions. Moreover, the fall in property values related to higher yield had significant results as far as a shortage of development and a more extensive legacy of a potential real estate constraint of economic growth. To add further light on the matter in developing countries, Contreras, Garay, Santos, & Betancourt (2014) investigated the determinants of housing prices in Caracas, Venezuela. Of particular interest was the effect that land expropriation risk and the incidence of crime had on residential property prices as constituents of political risk. Contreras Garay, Santos, & Betancourt (2014) explained that in Latin America, the threat of government seizing private property with minimal compensation was a real risk faced by homeowners. The study uncovered that land invasion and expropriated risk, and incidence of crime had a negative and significant effect on residential property prices.

In the South African context, the two latest studies similar to the current study are those of Habanabakize & Dickason (2022), and Muzindutsi, Jamile, Zibani, & Obalade (2021). Although both these studies focus on the South African housing market, the overall aims and the methods of analysis differ significantly. Muzindutsi, Jamile, Zibani, & Obalade (2021) investigated the effect that all three components of country risk had on South Africa's housing prices, using both linear and non-linear autoregressive distributed lag models. Upon conducting their tests, this paper concluded that all housing segments observed were most sensitive to political risk in the long-run, with the housing prices for large houses having the biggest reaction. Medium-sized housing prices were not as sensitive, but they exhibited the same positive relationship. Housing prices for small houses also reflected a positive relationship although to a lesser extent than the medium-sized market. Although Muzindutsi, Jamile, Zibani, & Obalade (2021) revealed a significant relationship between country risk and housing prices exists, the study did not observe the relationship between country risk and property prices in switching regimes. Additionally, the study was limited to housing segments as opposed to geographical locations. On the other hand, the central focus of Habanabakize & Dickason (2022) is the analysis of the relationship between political risk, inflation, interest rates and rental price on the housing prices in South Africa without necessary focusing on all components of country risk. The present study differs from the aforementioned studies in two ways: firstly, by taking a closer look at the influence of political, financial and economic risk on housing prices of the major South African metropolitan cities and secondly by observing the nature of this relationship in bull and bear markets using the Markov Switching Model. Therefore, this study provides a unique and significant contribution to South African and emerging market literature on the ongoing endeavour to understand the factors that influence housing prices.

From the review of existing literature, there is evidently no unanimity regarding the optimal model to employ to analyse the relationship between country risk and housing prices. Additionally, academic contribution has been minimal on this subject, more so in a South African context. This gap provides a basis that allows for the exploration of the relationship between economic risk, financial risk and political risk and housing prices in South African major cities.

3. Methodology

3.1 Data and Variables

This study took a quantitative approach, employing lagged, quarterly time-series data. Based on data availability, this study examined how property prices in Johannesburg (LHPJOB), Tshwane (LHPTSH), Durban (LHPDUR), Cape Town (LHPCPT), Ekurhuleni (QEKU), and Nelson Mandela Bay (LHPNMB) metropolitans responded to changes in country risk between September 2001 and June 2018.

These metropolitan areas are the top-performing housing markets situated in different provinces of the country, and the distinctive characteristics of each metro touch on a specific component of sovereign risk, making it interesting to investigate how each of the components of sovereign risk influences housing prices. The sample period was selected to cover the prior to COVID-19, which disrupted the standard patterns of the housing markets. Additionally, the housing price indices for the selected cities were available only until the end of June 2018. Although the data may be considered dated, the results of this study remain valid and comparable to other similar studies. The quarterly commercial and residential housing price data used for this study was sourced from the IRESS database and is approximated in millions of South African Rands, while the monthly country risk data was obtained from The PRS Group's International Country Risk Guide (ICRG) model. Due to the quarterly nature of the housing price data, the risk scores at the end of each quarter were used to represent the entire quarter. Country risk, according to IRCG, consists of economic risk, financial risk, and political risk. Namely, economic risk assesses a country's prospective susceptibility or strength by analysing five growth indicators, such as inflation and GDP growth (Howell, 2012). While financial risk examines a country's ability to repay its debts based on its foreign debt and currency rate stability (Howell, 2012). Finally, political risk assesses how factors such as government stability and socioeconomic difficulties affect the country (Howell, 2012) . The ICRG model classified political risk as the most extreme type of risk and consequently assigned it a score of 100, while economic and financial risk were assigned a score of 50 each (Howell, 2012). The computation of the total country risk score (CRS) is expressed as: CRS=0.5 (political risk score + financial risk score + economic risk score), with a higher score indicating less country risk.

3.2 Model Specification

The housing price data used in this study is time-series data and is affected by the economy, therefore, a switching model is appropriate to cater to changes in volatility and mean values, where a “switch” refers to a change in data behaviour (Brooks, 2019; Chang et al., 2016). Switching models facilitate quantitative analysis in differing market conditions by allotting data into regimes to reflect these states. Empirically, Beine, Laurent, & Lecourt (2001), and Hays, Freeman, & Nesseth (2003) have utilized the Markov Switching Model to characterize low and high volatility exchange rate regimes based on state-dependent variances, while Alvarez-Plata & Schrooten (2006) considered regimes of low and high devaluation probability. Similarly, Das & Roy (2021) identified bullish and bearish switching behaviour in the BRICS foreign exchange markets. Most comparable to this study, Muzindutsi & Obalade (2020) were successful in assessing the effect of country risk components on South African bond market returns in bullish and bearish regimes by employing the Markov Switching Model. Therefore, the Two-state Markov Switching Model was employed to estimate the effect of country risk on housing price in bullish and bearish conditions of housing market.

Simple switching models identify when the switches occur using dummy variables, which alternate between 0 or 1, depending on whether their conditions have been satisfied (Brooks, 2019). The Markov switching model assumes m possible states known as regimes. The dependent variable

can switch based on the value of some unobserved factor, st. If st = 1, the model is in regime 1; if st = 2, the model is in regime 2. The Markov model is used to assess the changes incurred when switching from a bullish to a bearish regime. The model uses equations to determine how the data behaves in each regime and draws attention to the patterns that emerge when the data switches between regimes (Brooks, 2019). The Markov process dictates which regime the dependent variable uses a probability distribution that depends on the state the variable was in the period immediately before. The regime of time t depends only on t -1, not t-2 or earlier (Brooks, 2019).

$$P\ [a < y_t \leq b \mid y_{t-1}] \quad (1)$$

A *m* x *m* matrix of the probabilities that the regime will be in a state based on its previous state is created to yield a vector of current state probabilities:

$$P = \begin{bmatrix} P(S_T = 1 \mid S_{T-1} = 1) & P(S_T = 2 \mid S_{T-1} = 1) \\ P(S_T = 1 \mid S_{T-1} = 2) & P(S_T = 2 \mid S_{T-1} = 2) \end{bmatrix} = \begin{bmatrix} P_{11} & P_{12} \\ P_{21} & P_{22} \end{bmatrix} \quad (2)$$

Where S_T = Regime at time T, S_{T-1} = Regime one period before time T, and P_{ij} = Probability of switching from regime i to regime j.

This matrix of probabilities enables the assessment of how long the housing market remains in a bullish or bearish regime before switching. P_{11} indicates being in state one during time T, if the housing prices was in state one during time T – 1; P_{12} indicates being in state two during time T, if the subject was in state one during time T – 1; P_{21}indicates being in state one, if the subject was in state two in period T – 1; and P_{22} indicates being in state two in period T, if the subject is in state two in time T – 1. The following equation represents the Markov switching regression for the housing prices model:

$$LHPCPT_t = \alpha_{S_T} + \beta_{1S_T}\Delta LQFR_t + \beta_{2S_T}\Delta LQPR_t + \beta_{3S_T}\Delta LQER_t + e_{S_T} \quad (3)$$
$$LHPDUR_t = \alpha_{S_T} + \beta_{1S_T}\Delta LQFR_t + \beta_{2S_T}\Delta LQPR_t + \beta_{3S_T}\Delta LQER_t + e_{S_T} \quad (4)$$
$$LHPEKU_t = \alpha_{S_T} + \beta_{1S_T}\Delta LQFR_t + \beta_{2S_T}\Delta LQPR_t + \beta_{3S_T}\Delta LQER_t + e_{S_T} \quad (5)$$
$$LHPJOB_t = \alpha_{S_T} + \beta_{1S_T}\Delta LQFR_t + \beta_{2S_T}\Delta LQPR_t + \beta_{3S_T}\Delta LQER_t + e_{S_T} \quad (6)$$
$$LHPNMB_t = \alpha_{S_T} + \beta_{1S_T}\Delta LQFR_t + \beta_{2S_T}\Delta LQPR_t + \beta_{3S_T}\Delta LQER_t + e_{S_T} \quad (7)$$
$$LHPTSH_t = \alpha_{S_T} + \beta_{1S_T}\Delta LQFR_t + \beta_{2S_T}\Delta LQPR_t + \beta_{3S_T}\Delta LQER_t + e_{S_T} \quad (8)$$

Where: $LHPCPT_t$ = Percentage changes in housing price index in Cape Town city ($LHPDUR_t$ = Durban, $LHPEKU_t$, $LHPJOB_t$ Ekurhuleni = Johannesburg, $LHPNMB_t$ = Nelson Mandela Bay and $LHPTSH_t$ = Tswane); α = Switching intercept; LFR = Changes in the logged financial risk variable; LPR = Changes in the logged political risk variable; LER = Changes in the logged economic risk variable; β_{S_T}= coefficients to be estimated for each regime; e = Error term; and S_T = Represents the regime (1; 2) that the housing market is in, namely bearish (1) and bullish (2). Hypothesis testing is conducted using the coefficients produced by the regression, according to the following conditions:

H_0: $\beta_{1S_T};\ \beta_{2S_T};\ \beta_{3S_T} = 0$

H_1: $\beta_{1S_T};\ \beta_{2S_T};\ \beta_{3S_T} \neq 0$

The beta coefficient is estimated under both bullish and bearish regimes. Rejecting the null hypothesis will indicate that one of the components of country risk has a significant effect on the changes in housing prices in the bullish or bearish regime.

Prior to estimating this model, the Augmented Dickey Fuller (ADF) test, supplemented by the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test and the break point unit root test were conducted to ensure that all dependent and independent variables were stationary in the presence of structural breaks.

4. Results and discussion

4.1. Descriptive Statistics

Table 1 displays descriptive statistics describing housing price fluctuations within the analysed cities while the descriptive statistics in Table 2 represent the riskiness of the sampled country risk variables. Based on standard deviation presented in the Tables, Cape Town has the highest standard deviation while the Nelson Mandela Bay has the smallest standard deviation. This implies that Cape Town city had the most volatile housing prices and the Nelson Mandela Bay experiences the lowest volatility compared to other South African cities. In observing the distribution of the housing prices, all cities have a kurtosis of below 3, which indicates a platykurtic distribution prices. With regards to skewness, only Cape Town city is positively skewed while Durban, Ekurhuleni, Johannesburg, Nelson Mandela Bay and Tshwane are negatively skewed with skewness factors ranging between -0.5 and 0.5. In other words, the data for these cities symmetrical.

Table 1. Descriptive statistics for the sampled cities.

	CAPETOWN	DURBAN	EKURHULENI	JOHANNESBURG	NMB	TSHWANE
Mean	927731.43	681931.07	703026.18	852701.44	591560.37	792902.19
Median	835272.83	683228.44	721679.82	842988.62	595777.31	789994.28
Maximum	1716059.29	1037072.25	1056147.66	1287635.95	836610.58	1168340.75
Minimum	368320.68	221986.64	228939.18	314876.29	195630.58	299410.58
Std. Dev.	356910.95	250084.73	247766.42	289905.02	169896.91	243299.48
Skewness	0.5829	-0.3606	-0.4754	-0.2178	-0.7016	-0.3090
Kurtosis	2.5239	2.0829	2.2392	2.0956	2.8175	2.274
Jarque-Bera	4.5268	3.8002	4.1398	2.8132	5.5897	2.5379
Probability	0.1093	0.1496	0.1262	0.25	0.0611	0.2811

Table 2. Descriptive Statistics for the Country Risk Components

	CR	ER	FR	PR
Mean	69.6269	34.6791	38.1567	66.4104
Median	68.75	34	38	66.5
Maximum	74.25	38.5	42	71.5
Minimum	65	29	31.5	61.5
Std. Dev.	2.6895	2.2775	1.966	2.7606
Skewness	0.3062	-0.1316	-0.5888	0.06
Kurtosis	1.7075	2.4147	3.515	1.9298
Jarque-Bera	5.7111	1.1496	4.6114	3.2376
Probability	0.0575	0.5628	0.5628	0.1981

Source: Authors' computation

Comparing the quarterly mean values of each country risk measure over the 18 years outlined in Table 2, revealed that economic risk as well as financial risk are riskier compared to political component of country risk in South Africa. Thus, political risk over the analysed period yields a mean fitting of a moderate risk level. However, examining the standard deviation of the country risk components, political risk appears the most volatile, whereas financial risk is the least volatile.

4.2 Unit Root Results

In order to test for stationarity in the country risk rating variables and six major cities, the Augmented Dickey-Fuller (ADF) and Kwiatkowski–Phillips–Schmidt–Shin (KPSS) tests were employed, together with the Breaking Point unit root test to account for the presence of structural breaks. These tests were conducted at constant and at constant and trend.

In comparing the stationarity and unit root results at constant and constant and trend, it is evident that the stationarity test outcomes are consistent for LFR, LHPDUR, LHPEKU and LHPTSH. The ADF results pertaining to LHPCPT, LHPJOB and LHPNMB change from nonstationary to stationary in the presence of trend indicating that trend is significant and vice versa in the instance of LQSA. Similarly, the KPSS results concerning LER and LHPCPT convert from nonstationary to stationary in the presence of trend. Likewise, LPR and LHPCPT yield stationary outcomes in the presence of structural breaks with the inclusion of trend.

Considering the unit root tests conducted at constant and trend, financial risk and Cape Town city prices were I(0) in both the ADF and KPSS tests. On the other hand, political risk, Tshwane housing prices and the country risk index were I(1) in both the ADF and KPSS. Durban, Ekurhuleni, Nelson Mandela Bay and Johannesburg were I(0) as per the ADF test, but I(1) as per the KPSS test. Economic risk was I(1) as per the ADF test and I(0) as per the KPSS test.

With regards to the break point unit root test at constant and trend for the cities, the results for Cape Town, Durban, Ekurhuleni, Johannesburg and Nelson Mandela Bay all correlated with their respective ADF tests as these cities had an order of integration of I(0). Tshwane and South African Index are also integrated at I(0), which is different from both their respective ADF and KPSS tests. The break point unit root test at constant and trend for the country risk components reflected an order of integration of I(0). Therefore, the variables of this study fulfill the condition requiring stationarity at level from the Breaking Point unit root test. These unit root results permit and support the use of the Markov Switching Model.

Following on from the break point unit root tests, Ekurhuleni, Johannesburg, and the South African Index all showed break dates in quarter 3 of 2004. Durban showed a break date of quarter 2 of 2004. Nelson Mandela Bay had a break date of quarter 3 of 2002, Cape Town had a break date of quarter 4 of 2012, and Tshwane had a break date of 2006 quarter 2. It is important to note that some of the tested cities experienced breaks in 2004. Possible explanations for this could include the amendment to the Municipal Systems Act of 2000, allowing for a municipality to impose rates, implement exemptions, value property fairly, and allow for objections and appeals; the 2004 announcement of the FIFA World Cup being hosted in South Africa in 2010; the announcement of the Expanded Public Works Programme; and the 3rd democratic election (Local Government, 2004). These breaks may also be explained by the presence of multi-periods housing price bubbles across South African major metropolitan cities as demonstrated by Muzindutsi, Mbhele, Rambaran, Mthembu, Ramjiyavan, & Dube (2024).

Table 3. *ADF, KPSS and Breaking Point Unit Root Test Results*

Variable	At Level			Order of Integration (at 10%)			Break Dates
	ADF	KPSS	Breaking Point	ADF	KPSS	Breaking Point	
LER							
Constant	-2.2246	0.6588**	-5.4923*	I(1)	I(1)	I(0)	2008Q3
Trend & Constant	-3.1325	0.0699	-5.3564*	I(1)	I(0)	I(0)	2008Q3
LFR							
Constant	-4.5071*	0.1119	-5.2343*	I(0)	I(0)	I(0)	2008Q4
Trend & Constant	-4.4654*	0.1107	-5.4717*	I(0)	I(0)	I(0)	2004Q3
LPR							
Constant	-2.2193	0.5148**	-2.8771	I(1)	I(1)	I(1)	2009Q2
Trend & Constant	-2.2391	0.1551**	-6.2751*	I(1)	I(1)	I(0)	2004Q3
LCPT							
Constant	-1.3954	0.9717*	-3.7691	I(1)	I(1)	I(1)	2008Q4
Trend & Constant	-3.5234**	0.1183	-4.6179**	I(0)	I(0)	I(0)	2012Q4
LHPDUR							
Constant	-4.3485*	0.9304*	-8.5732*	I(0)	I(1)	I(0)	2002Q4
Trend & Constant	-4.8836*	0.1924**	-6.4959*	I(0)	I(1)	I(0)	2004Q2
LHPEKU							
Constant	-2.661***	0.8967*	-8.6208*	I(0)	I(1)	I(0)	2003Q2
Trend & Constant	-3.258***	0.1976**	-6.2418*	I(0)	I(1)	I(0)	2004Q3
LHPJOB							
Constant	-2.5677	0.9669*	-8.3659*	I(1)	I(1)	I(0)	2002Q2
Trend & Constant	-4.2734*	0.1942**	-6.0812*	I(0)	I(1)	I(0)	2004Q3
LHPNMB							
Constant	-2.0558	0.7825*	-6.7481*	I(1)	I(1)	I(0)	2002Q2
Trend & Constant	-4.1523*	0.1610**	-4.7384**	I(0)	I(1)	I(0)	2002Q3
LHPTSH							
Constant	-2.2489	0.9400*	-6.8231*	I(1)	I(1)	I(0)	2002Q2
Trend & Constant	-2.9909	0.1740**	-5.4614*	I(1)	I(1)	I(0)	2006Q2

(*), (**) 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.

Source: Authors' computation

4.3 Switching Effect Disaggregated Country Risk Rating on Housing Prices

The results of the Markov Switching model with bull and bear regimes are summarised in Table 6. In these results, the intercept values have been utilised to characterise regime one and regime two as either bullish or bearish market conditions for all six major cities. Both regime-specific intercepts are significant at the 1% significance level. Low volatility levels were noted during bullish market conditions with a variance of -0.74% whereas high volatility permeates the bear market (-3.07%). In the bullish market conditions, the disaggregated country risk components exhibit positive coefficients which indicate that an increase in economic risk, financial risk and political risk scores increases the price of housing. This positive relationship indicates that increases in risk ratings (decreases in country risk components) is associated with an increase in property prices. Therefore, these findings suggest that increasing scores by lowering risk amongst these country risk components would boost property prices. These coefficients, however, prove to be insignificant at all levels. In the bearish market

conditions, the economic risk scores have a positive relationship with housing prices while financial and political risk ratings maintain a negative relationship. An increase in financial and political risk scores would decrease the price of housing. Counterintuitively, this suggests that decreasing financial and political risk would depress housing prices in Cape Town. However, similar to the bullish market condition, none of the country risk components demonstrate statistical significance in this regime. Overall, these findings suggest that in Cape Town, country risk components do not influence the price of housing in either the bullish or bearish market.

Evidently, LHPDUR's intercept C is greater in the bullish market condition with a value of 13.58 as opposed to 12.74 in the bearish regime, implying that the average price of housing is higher in a bullish market. Counterintuitively, higher volatility is expressed within the bull market with a variance of -1.64% while the bear market maintains a variance of -1.22%. This implies that homeowners are compensated for assuming risk. These regime-specific variances are statistically significant at 1%. The coefficients associated with economic, financial, and political risk scores do not prove to be statistically significant in either the bullish or bearish market implying that in Durban, the price of housing is not determined by country risk components.

Ekurhuleni retains statistically significant intercepts in both the bullish (13.61) and bearish (12.75) market conditions. The bull market appears to be more volatile (-1.81%) than the bearish market condition (-1.33%) denoting that, similar to LHPDUR, residential property investors are compensated for risk. Statistical insignificance is apparent amongst the coefficients of economic, financial, and political risk ratings in both the bullish and bearish regimes. This alludes to the fact that in Ekurhuleni, country risk component scores do not impact housing prices. For the city of Johannesburg (LHPJOB), the coefficient associated with country risk are all positive under bullish regime and the coefficient associated with economic and political risk are positive in bearish regime, whereas the one associated with financial risk is negative. However, the change in the score of country risk are insignificant at influencing the LHPJOB housing prices under both regimes.

In Nelson Mandela Bay (LHPNMB), the intercept value in a bullish market condition is 13.38410, whereas in a bearish market it is 13.60414. Under both regimes, the return is statistically significant. However, the county risk component ratings are insignificant at all levels under the bullish regime, which indicates that they do not affect housing prices in this city. In the bearish market conditions, the coefficient associated with economic and political risk shares a positive relationship with housing prices, where a 1% increase in economic risk and political risk scores would increase the price of housing by 5.14% and 4.99%, respectively. These coefficients are significant at 5% and 1%, respectively, whereas financial risk is not statistically. These findings suggest that decreases in economic and political risk raise housing prices in LHPNMB, boding well for homeowner and property investor prospects even in bearish regime phases.

In LHPTSH, the intercept value of C in a bearish market condition is 12.90839, whereas in a bullish market it is 13.66959. Under both regimes, the return is statistically significant. In the bearish market conditions, the coefficient associated with economic and political risk ratings share a positive relationship with housing prices, where a 1% increase in economic risk and political risk scores would increase the price of housing by 3.51% and 3.32% and vice versa in the instance of a 1% decrease in these risk scores. In addition to that, these coefficients prove to be significant at 5% and 1%, whereas financial risk is statistically insignificant and negatively related to housing prices. On the other hand, the coefficient associated with country risk are all positive but statistically insignificant under bullish regime. Therefore, these findings prove that political and economic risk have the most influence in affecting housing prices at LHPTSH, whereas financial risk does not affect property prices. Similar to the results of LHPNMB, in Tshwane, decreases in political and economic risk increase the wealth of homeowners and real estate stakeholders by driving price upwards even in declining market conditions.

Table 6. *Markov Switching Model Results of Country Risk Rating and Housing Prices*

LHPCPT			**LHPDUR**		
Variables	**Coefficient**	**P-value**	**Variables**	**Coefficient**	**P-value**
Regime 1: Bearish Condition			**Regime 1: Bullish Condition**		
C	13.60793*	0.0000	**C**	13.57924*	0.0000
LER	0.396382	0.1410	**LER**	0.600885	0.5416
LFR	-0.228855	0.2568	**LFR**	-0.070203	0.9002
LPR	-0.027477	0.9731	**LPR**	0.801451	0.6932
LOG(SIGMA)	-3.069772*	0.0000	**LOG(SIGMA)**	-1.642665*	0.0000
Regime 2: Bullish Condition			**Regime 2: Bearish Condition**		
C	13.72584*	0.0000	**C**	12.73646*	0.0000
LER	2.137694	0.5927	**LER**	5.781089	0.2299
LFR	0.316580	0.8768	**LFR**	-2.756989	0.4199
LPR	1.663066	0.6677	**LPR**	3.994140	0.2803
LOG(SIGMA)	-0.739109*	0.0000	**LOG(SIGMA)**	-1.217617*	0.0000
LHPEKU			**LHPJOB**		
Variables	**Coefficient**	**P-value**	**Variables**	**Coefficient**	**P-value**
Regime 1: Bearish Condition			**Regime 1: Bullish Condition**		
C	12.75491*	0.0000	**C**	13.80092*	0.0000
LER	5.033132	0.2313	**LER**	0.362020	0.6971
LFR	-2.121042	0.5084	**LFR**	1.001911	0.6036
LPR	3.119644	0.3409	**LPR**	0.022395	0.9660
LOG(SIGMA)	-1.329354*	0.0000	**LOG(SIGMA)**	-1.711968*	0.0000
Regime 2: Bullish Condition			**Regime 2: Bearish Condition**		
C	13.61215*	0.0000	**C**	13.08952*	0.0000
LER	0.083621	0.9190	**LER**	5.252447	0.1748
LFR	0.012449	0.9790	**LFR**	-1.758788	0.5039
LPR	1.336847	0.4313	**LPR**	2.741642	0.3543
LOG(SIGMA)	-1.808584*	0.0000	**LOG(SIGMA)**	-1.415215*	0.0000
LHPNMB			**LHPTSH**		
Variables	**Coefficient**	**P-value**	**Variables**	**Coefficient**	**P-value**
Regime 1: Bullish Condition			**Regime 1: Bearish Condition**		
C	13.38410*	0.0000	**C**	12.90839*	0.0000
LER	0.425158	0.5654	**LER**	3.507629***	0.0510
LFR	-0.038985	0.9288	**LFR**	-0.790001	0.4733
LPR	0.963272	0.5321	**LPR**	3.318999*	0.0025
LOG(SIGMA)	-1.881401*	0.0000	**LOG(SIGMA)**	-2.447657*	0.0000
Regime 2: Bearish Condition			**Regime 2: Bullish Condition**		
C	13.60414*	0.0000	**C**	13.66959*	0.0000
LER	5.136672***	0.0513	**LER**	0.309945	0.7408
LFR	-1.274534	0.4301	**LFR**	0.003657	0.9947
LPR	4.990511*	0.0019	**LPR**	1.311858	0.5016
LOG(SIGMA)	-2.064955*	0.0000	**LOG(SIGMA)**	-1.645010*	0.0000

(*), (**) and (***) represent the significance of a coefficient at 1%, 5% and 10% respectively. The absence of any such representation implies statistical insignificance.
Source: Authors' computation

Our findings show that the effect of country risks on property prices differs across the sampled cities. Property prices in Cape Town, Durban, Ekurhuleni, and Johannesburg do not respond to changes in country risk components, while in Tshwane and Nelson Mandela Bay property prices were found to

be affected by political and economic risks. On a comparative basis, this paper concludes that financial risk does not pose significant implications for housing prices in any of the major South African cities tested under either bullish or bearish regimes. Likewise, the effects of economic and political risk were not reflected in the movement of housing price under bullish conditions in any of the listed cities. Notably however, the cost of housing in Nelson Mandela Bay and Tshwane appears to vary according to fluctuations in economic and political risk under bearish conditions. These findings substantiate that, to an extent, uncertainties arising from economic stagnation, poor economic outlook, extensive government budget deficits, crime, corruption, socio-economic conditions such as poverty and unemployment, and political instability all possess considerable wealth implications for property market participants due to the effect these factors have on the price of housing.

4.4 Discussion

The aim of this study was investigated the influence of disaggregated country risk rating components on housing prices for different cities in South Africa. Findings suggested the disaggregated country risk rating influence housing prices in all South African major Cities. However, considering country risk components individually, and effect of each component on each of the assessed cities, the results differ. Thus, housing prices in Cape Town, in Durban, in Ekurhuleni and Johannesburg are not influenced by country risk components. This implies changes in economic and financial and political have no significant effect on housing and property prices in these four cities. In other words, investors, housing buyers and tenants in these cities, give less importance on country risk effects when buying or renting houses. Surprisingly, these findings are contrary to those of results of by Muzindutsi, Jamile, Zibani, & Obalade (2021) who found aggregated country risk to have a significant on different segments of South African housing market. Nevertheless, the analysis results indicated that economic and political risks possess a significant impact on housing prices in Nelson Mandela Bay and Tshwane cities. This implies that whatever disturbance in economic, financial and political situation influences housing demand in these two cities (in Nelson Mandela Bay and Tshwane). In other words, housing prices in Nelson Mandela Bay and Tshwane are very sensitive to country risk components.

Findings of this study support those of Ong (2013), who investigated the impact of economic risk on housing prices in Malaysia and discovered that economic risk is significantly related to housing prices. Additionally, the study conducted by Muzindutsi, Jamile, Zibani, & Obalade (2021) and Habanabakize & Dickason (2022) also revealed that, in South Africa, housing and estate markets are sensitive to a long-term political instability. Although most of conducted studies including the mentioned findings together with the current study, indicated the significant effect of political risk on housing prices, findings of Higgins & Reddy (2010) revealed that political risk was insignificant to influence the housing prices in Melbourne. Therefore, the impact of country risk components on housing markets differ from country to country, from market to markets, and from city to city.

Additionally, the effect of different market conditions on the South African housing prices mirrors the previous findings by Muzindutsi, Apau, Muguto, & Muguto (2023) which demonstrated that the response of different segments of the South African markets to investor sentiment vary between the bull and bear market conditions. Thus, this is important to consider the changing market conditions when evaluating the drivers of housing market.

5. Conclusion

The main objective of this study was to investigate the existing relationship between the components of country risk and housing prices in the major cities of South Africa. The study adopted the Markov Switching Model to identify how country risk components affect housing prices in bullish and bearish conditions.

The study findings indicated property prices in Cape Town, Durban, Ekurhuleni, and Johannesburg do not have a statistically significant relationship with changes in country risk components in bull and bear markets. On the other hand, property prices in Tshwane and Nelson Mandela Bay were found to have a positive and statistically significant relationship with political and economic risks under bearish market conditions only. A closer look into the metropolitan cities' specific impact of country risk on property prices showed that economic risk has the highest impact on Tshwane and Nelson Mandela Bay, albeit at differing levels. These findings demonstrate that the influence of country risk components can be diversified across South African cities, but the political risk remains a major threat to housing markets in major South African cities. Thus, our findings revealed the benefit of disaggregating country risk rating factor when analyzing the effect of country on financial markets.

Given the prevailing effect of economic and political risk on housing price the government and policy makers should strive to create a conducive political environment for local business and attractive to foreign investors to improve economic conditions. One of the major issues in the current South Africa in a high rate of unemployment with highly contribute to economic, social and political unrest. Thus, a sustainable political stability and enhancement of social wellbeing is a key policy in alleviating political risk. Improvement in economic activities and job creation would be another policy to alleviate country risk. This study focused on the effect of country risk from the point view of fundamental factors but did not consider psychological factors such as investor sentiment or confidence. Given the influence of investor behavioural factors in financial markets, future studies should include exploring the effect of behavioural factors on housing market prices.

References

Alvarez-Plata, P. & Schrooten, M. (2006). The Argentinean currency crisis: A Markov-Switching model estimation. *The developing economies*, 44(1), 79-91. https://doi.org/10.1111/j.1746-1049.2006.00004.x

Bahmani-Oskooee, M. & Wu, T.P. (2018). Housing prices and real effective exchange rates in 18 OECD countries: a bootstrap multivariate panel Granger causality. *Economic Analysis and Policy*, 60, 119-126. https://doi.org/10.1016/j.eap.2018.09.005

Balcilar, M. Roubaud, D. Uzuner,G. & Wohar, M.E. (2021). Housing sector and economic policy uncertainty: A GMM panel VAR approach. *International Review of Economics & Finance,* 76, 114-126. https://doi.org/10.1016/j.iref.2021.05.011

Beine, M. Laurent, S. & Lecourt, C. (2001). Official central bank interventions and exchange rate volatility: Evidence from a regime-switching analysis. *European Economic Review*, 47(5), 891-911. https://doi.org/10.1016/S0014-2921(02)00306-9

Brooks, C. (2019). Introductory econometrics for finance. *Cambridge University Press*, 3rd edition, Cambridge.

Chang, T. Liu, W.C. Aye, G.C. & Gupta, R. (2016). Are there housing bubbles in South Africa? Evidence from SPSM-based panel KSS test with a Fourier function. *Global Business and Economics Review*, 18(5), 517-532. https://doi.org/10.1504/GBER.2016.078668

Chien, M. S. Setyowati, N. & Liu, S. B. (2023). The nonlinear effect of macroeconomic and financial uncertainty on regional housing prices in the USA. *Journal of Housing and the Built Environment*, 38(3), 1529-1557. https://doi.org/10.1007/s10901-022-10003-z

Contreras, V., Garay, U., Santos, M.A. & Betancourt, C. (2014). Expropriation risk and housing prices: Evidence from an emerging market. *Journal of Business Research*, 67(5), 935-942. https://doi.org/10.1016/j.jbusres.2013.07.013

Das, S. & Roy, S.S. (2021). Predicting regime switching in BRICS currency volatility: a Markov switching autoregressive approach. *Decision*, 48(2), 165-180. https://doi.org/10.1007/s40622-021-00275-9

Davids, A. (2022). Essays on the housing market. Doctoral dissertation. University of Cape Town: South Africa

Fabozzi, F.J., Gupta, F. & Markowitz, H.M. (2002). The legacy of modern portfolio theory. *The Journal of Investing*, 11(3), 7-22. https://doi.org/10.3905/joi.2002.319510

First National Bank. (2021). Property barometer: FNB Estate Agents Survey – Still strong, but market activity moderating. FirstRand Bank Limited. https://www.fnb.co.za/downloads/economics/reports/2021/PropertyBarometerOctober.pdf?srsltid=AfmBOoqmWx4Z-xDSEPMdKMOOO52ouA9TRCPAYh8Zrg7RukfwgsKL0YPQ

Global Edge (2020), "South Africa: Risk Assessment", available at: https://globaledge.msu.edu/countries/south-africa/risk (accessed 22 March 2021).

Habanabakize, T. and Dickason, Z. (2022). Political risk and macroeconomic effect of housing prices in South Africa. *Cogent Economics & Finance*, 10(1), 1-11. https://doi.org/10.1080/23322039.2022.2054525

Hays, J.C., Freeman, J.R. & Nesseth, H. (2003). Exchange rate volatility and democratization in emerging market countries. *International Studies Quarterly*, 47(2), 203-228.

Higgins, D. & Reddy, W. (2010). The impact of political risk on Australian house prices. *Australia and New Zealand Property Journal*, 2(7), 413-422.

Howell, L.D. (2012). International country risk guide methodology. East Syracuse, NY: PRS Group. https://www.prsgroup.com/wp-content/uploads/2012/11/icrgmethodology.pdf

Hui, E.C. and Yue, S. (2006). Housing price bubbles in Hong Kong, Beijing, and Shanghai: a comparative study. *The Journal of Real Estate Finance and Economics*, 33(4), 299-327. https://doi.org/10.1007/s11146-006-0335-2

Kirk McClure (2022) The great American housing bubble: What went wrong and how we can protect ourselves in the future, by Adam Levitin and Susan Wachter. *Journal of Urban Affairs*, 44:3, 445-447. https://doi.org/10.1080/07352166.2021.1956272

Kruger, A. (2013), "House prices to rise by 20%", *Fin24*, available at: https://www.news24.com/fin24/property-issue/news/house-prices-to-rise-by-20-20131025-2 (accessed 10 April 2021).

Kwoun, M.J., Lee, S.H., Kim, J.H. & Kim, J.J. (2013). Dynamic cycles of unsold new housing stocks, investment in housing, and housing supply–demand. *Mathematical and Computer Modelling*, 57(9-10), 2094-2105. https://doi.org/10.1016/j.mcm.2011.08.005

Jones, C. (2019). The impact of political risk on real estate investment: evidence from the Scottish 'neverendum'. *Property Management,* 37(5), 610-626. https://doi.org/10.1108/PM-01-2019-0006

Local Government (South Africa) (2004), "Municipal Property Rates Act 2004", *Government Gazette*, 26357, 17 May.

Mahan, W. (2021), "SA property market roars back to life following hard lockdown", available at: https://www.ooba.co.za/resources/property-market-south-africa/ (accessed 24 March 2021).

Meldrum, D. (2000). Country risk and foreign direct investment. *Business Economics*, 35(1), 33-40.

Moody's Investor Service (2020), "Moody's Downgrades South Africa's Ratings to Bal Maintains Negative Outlook" available at: https://www.moodys.com/research/Moodys-downgrades-South-Africas-ratings-to-Ba1-maintains-negative-outlook--PR_420630 (accessed 31 March 2021).

Muzindutsi, P.F., Jamile, S., Zibani, N. & Obalade, A.A. (2021). The effects of political, economic and financial components of country risk on housing prices in South Africa. *International Journal of Housing Markets and Analysis*, 14(3), 523-537. https://doi.org/10.1108/IJHMA-05-2020-0060

Muzindutsi, P.F., Apau, R., Muguto, L., & Muguto, H.T. (2023). The impact of investor sentiment on housing prices and the property stock index volatility in South Africa. *Real Estate Management and Valuation*, 31(2), 1-17. https://doi.org/10.2478/remav-2023-0009

Muzindutsi, P-F., Mbhele, N., Gopal, T., Rambaran, N., Mthembu, T., Ramjiyavan, P.J. and Dube, F. (2024). A comparative analysis of housing price bubbles in the South African major cities. *International Journal of Economic Policy in Emerging Economies,* 20, (3/4), 265–277. https://doi.org/10.1504/IJEPEE.2024.10066311

News24. (2020), "Rand breaches R19/$ mark as Fitch downgrades SA further into 'junk'", available at: https://www.news24.com/fin24/Markets/Currencies/rand-weakens-to-all-time-low-as-analysts-warn-it-may-breach-r20-20200403 (accessed 31 March 2021).

Nguyen, V. & Vergara-Alert, C. (2023). Political uncertainty and housing markets. *Journal of Housing Economics*, *61*, 1-18. https://doi.org/10.1016/j.jhe.2023.101952

Olaleye, A. (2011). Property Portfolio Diversification Strategies: A Review of the Options. *Ife Journal of Environmental Design and Management*, 5(1), 15-30.

Ong, T. (2013). Factors Affecting the Price of Housing in Malaysia. *Journal of Emerging Issues in Economics, Finance and Banking*, 1(5), 414-429.

Smith, K. (2021), "How to Diversify", available at: https://education.howthemarketworks.com/how-do-i-diversify-a-portfolio/ (accessed 24 March 2021).