ANALYZING FACTORS SHAPING STOCK MARKET DEVELOPMENT AND REGULATION IN EMERGING MARKETS: EXCHANGE RATES, INDUSTRIALIZATION, PRESS FREEDOM, AND CAPITAL FLIGHT

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Abstract

The research delved into the determinants of stock market development across nine Southern African Development Community (SADC) nations. The study employed seemingly unrelated regression (SUR) and system generalized methods of moments (SGMM) for comprehensive analysis. By building upon the research conducted by Bala and Hassan (2018) and Nyasha and Odhiambo (2020), this study applied El-Wassal's (2013) four-factor framework to investigate the impact of capital flight, exchange rate regimes, industrialization, and press freedom on the development of the stock markets. Press freedom was identified as a catalyst for enlarging and enhancing liquidity in the stock market. Conversely, industrialization exhibited a negative impact on market size, while capital flight adversely affected market development, size, and liquidity. The study revealed that the pegged, crawling, and managed exchange rate regimes positively influenced stock market growth and capitalization while a floating exchange rate system detrimentally affected the same. This paper contributes to the extant body of theory and educates policymakers in the region regarding the criticality of selecting regimes that facilitate stable exchange rates, support unrestricted press, encourage industrialization, and mitigate capital flight.

Keywords: Stock Market Development, Banking Sector Development, Press Freedom, Exchange Rate Regimes, Capital Flight, Southern African Development Community, SADC

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1. INTRODUCTION

The allocation of resources to those in need is a critical function of stock markets, which enable companies to raise cash and invest in successful endeavors. They generate data that financial institutions use in their credit allocation processes, therefore facilitating loan disbursements to creditworthy clients. These functions contribute to the expansion of the economy. In recent years, stock markets have assumed a more prominent role, and nations have become more reliant on them to stimulate economic expansion compared to prior periods (Salameh & Ahmad, 2022). The Southern African Development Community (SADC) region has prioritized the establishment of robust stock markets on account of these anticipated advantages. However, many countries in the SADC struggle to develop their stock markets (Mlachila et al., 2016). The factors influencing the growth of stock markets remain unclear, as indicated by contradictory results in previous research and a lack of consensus on driving factors (El-Wassal, 2013). The objective of this research is to examine the effects of industrialization, press freedom, capital flight, and exchange rate regimes on the development of the stock market. Prior studies have examined the effects of various factors (Bala & Hassan, 2018; Billmeier & Massa, 2007; Ho, 2019; Nyasha & Odhiambo, 2020). However, none of these studies considered the subject of this research. Consequently, a void exists in the body of literature, which the present study aims to address.

The research posits that press freedom contributes to the growth of the stock market by facilitating the dissemination of reliable information, enticing investors, and augmenting liquidity. Likewise, industrialization ought to have a favorable effect on stock markets through the generation of enterprises that require money on these markets and the enhancement of investor revenue. The variability inherent in exchange rate regimes renders their effects unpredictable. Finally, the research posits the notion that capital flight has an adverse effect on stock markets by diverting attention away from these markets in search of more lucrative opportunities.

Four elements were highlighted by El-Wassal (2013) as influencing the evolution of stock markets. Demand variables, supply factors, institutional factors, and economic policies comprise these elements. Supply and demand have been recognized as fundamental components that underpin stock markets, whilst institutional factors and economic policies serve as supplementary elements (El-Wassal, 2013). Diverse theories have focused on specific facets of the framework proposed by El-Wassal (2013) to elucidate the intricacies of stock market evolution. The demand-following hypothesis (Robinson, 1952) posits that economic expansion impacts stock markets by influencing the demand for the services provided to corporations and investors. Similarly, the McKinnon (1973) and Shaw (1973) model contends that government policies, including credit restrictions, interest rate ceilings, and high reserve ratios, impede progress in the financial sector by affecting the quantity and quality of savings. The pivotal role that institutional factors play in fostering the growth of stock markets is supported by law-based theories (Beck et al., 2000; La Porta et al., 1998; La Porta et al., 1997), politics and finance theory (Rajan & Zingales, 2001), and natural resources endowment theories (Ross, 1999; Sachs & Warner, 1995; Sokoloff & Engerman, 2000). To ascertain probable causes of stock market development, the current study used the El-Wassal (2013) framework to distinguish between capital flight and exchange rate regimes (economic policies), industrialization (supply factors), and press freedom (institutional elements).

The research investigation employed the system generalized method of moments (SGMM) and seemingly unrelated regression (SUR) to analyze data spanning the years 1995 to 2017 from nine SADC countries. The selection of these approaches was predicated on improved estimate precision, capacity to manage endogeneity, regulate heteroscedasticity, account for country-specific effects, and autocorrelation (Hakimi et al., 2019; Novalina et al., 2019; Pedroni, 2000). Using principal component analysis, in addition to single-dimensional measures of depth, liquidity, and efficiency, a composite index was constructed. Press freedom increases stock market liquidity by encouraging frequent trading due to the availability of correct information, whereas industrialization has a detrimental effect on stock market capitalization, according to the study's findings. The adverse impact of capital flight on the development, capitalization, and liquidity of the stock market indicated its function to redirect funds from domestic to international markets. Implementation of fixed, crawling, and managed exchange rate regimes resulted in an enlargement of the stock market, in contrast to the detrimental effects of the floating exchange rate regime.

The present paper is organized as follows. An overview of the theoretical and empirical literature that supports the study is provided in Section 2. The approach utilized to conduct empirical research on the factors of stock market development is detailed in Section 3. The findings obtained from the seemingly unrelated regression and system-generalized methods of moments model are detailed in Section 4. A review of the results in reference to the literature is included in Section 5. In the concluding section of the research article, Section 6, the limits and contribution of the study are emphasized.

2. LITERATURE REVIEW

El-Wassal (2013) has formulated an extensive framework encompassing a multitude of demand and supply factors, institutional components, and economic determinants influencing stock market development. The framework posits that institutional and economic elements provide essential support, while the foundation is laid by supply and demand variables. El-Wassal's framework identifies several factors that play distinct roles in fostering stock market growth (El-Wassal, 2013). Diverging from El-Wassal's approach, previous theorists focused on specific aspects. For instance, Robinson's (1952) demand-following hypothesis suggests that financial markets expand in response to increasing demand for financial services resulting from economic expansion. This demand leads stock markets to develop characteristics and instruments catering to the needs of market participants (Robinson, 1952). Shaw (1973) directs attention to institutional variables, such as government policy.

According to this model, government constraints impact the quality and expansion of financial markets. Limitations on foreign capital transactions, high reserve ratios, and interest rate caps drive away foreign investors in stock markets and constrain credit supplied to productive sectors. This reduces the demand and supply of shares on the stock market, influencing its size and liquidity. Policy reforms foster the growth of developed markets, leading to market efficiency, equity issuance, and the attraction of foreign direct investments as was the case in Russia (Kim, 2020). The law and finance theory posits that political orientations and associated laws can elucidate variations in stock market development. Developed financial markets benefit from laws safeguarding property and investor rights, and treating external investors equitably (La Porta et al., 1997). Nations governed by English law, with superior systems for contract enforcement and property rights protection compared to those under French law, tend to have more developed stock markets (La Porta et al., 1998).

Integrating findings from various studies into the current research, diverse insights emerge. Ayadi and Williams (2023), through panel data analysis in Egypt, Kenya, Nigeria, and South Africa, uncover a positive correlation between stock market capitalization and gross fixed capital formation, prompting reflection on the contribution of industrial growth to stock market development. In a broader context, Priya et al. (2020) reveal, in Brazil, Russia, India, and China, a lack of co-integration between stock prices and US dollar exchange rates, accompanied by a unidirectional causality from stock prices to exchange rates. Further broadening the scope to Mexico, India, Turkey, Russia, China, Indonesia, and Brazil, El-Diftar (2023) establishes a cointegration relationship between exchange rate fluctuations and stock market returns. While revealing a significant positive long-run relationship in most of the seven nations, except for Indonesia, the study also notes a subtle influence of exchange rates on stock return volatility. Together, these studies contribute nuanced perspectives to the broader exploration of factors influencing stock market development, enriching the understanding of the intricate dynamics within Southern African nations and beyond.

Beck et al. (2000) underscored the adaptability of the legal system to changes in the economic and political landscape as a crucial factor in elucidating the growth of financial markets. A legal system that swiftly adjusts to the evolving complexity of contracts and the needs of contractual parties is better equipped to support stock markets. In contrast, Rajan and Zingales's (2001) politics and finance theory advances that political activities shape institutional formation, justice system administration, and rule implementation. Politics, influencing democracy and civil rights, subsequently affects financial market structures. When voting rights are restricted to the elite, stock markets tend to flourish as the affluent vote for laws safeguarding private investors' interests, capital invested in stock markets, and protection against threats to returns (Degryse et al., 2018).

Another body of literature delves into the abundance of natural resources (Ross, 1999; Sachs & Warner, 1995). The resource curse hypothesis posits that reliance on natural resources inhibits sustainable overall economic growth. The rise of the extractive industry diverts resources from innovative sectors, limiting their growth potential. Consequently, resource-rich nations develop economies overly dependent on primary item exports from the extractive industry (Sachs & Warner, 1995). According to the Dutch Disease Hypothesis, the influx of foreign currency after discovering fresh natural resource reserves or a price boom results in an overvalued currency, making non-resource sector exports costly. Increased export revenue may lead to government overspending, especially anticipating prolonged resource price rises, resulting in financial challenges when prices decline (Ross, 1999). The direct access exploitation hypothesis links poor performance in resource-rich nations to inadequate property rights, leading to excessive resource extraction without broader economic value. In contrast, the factor endowment hypothesis attributes economic success to natural resource availability, citing countries like Australia, Canada, the United States, and New Zealand (Sokoloff & Engerman, 2000).

Despite the comprehensive nature of the discussed theories, they may not cover all influencing factors, emphasizing the need for conditions that encourage stock market growth. As different factors become significant at different times in a country's development trajectory, the dynamism of stock markets enables adaptation to new variables. However, theories have historically disregarded or ignored crucial issues such as industrialization, capital flight, press freedom, and exchange rate regimes. This gap may explain the failure of earlier policy initiatives to build stock markets in SADC countries. Consequently, the present study aims to assess how these factors specifically affect stock market growth, as explored in the subsequent literature review.

2.1. Determinants of stock market development

The media dependency theory, proposed by Ball-Rokeach and DeFleur (1976) underscores the pivotal role of media for both domestic and international investors. They argue that individuals often learn more from the media than from direct experiences, especially when relying extensively on media for crucial information (Ball-Rokeach & DeFleur, 1976). This reliance prompts individuals to modify their attitudes, behaviors, and societal ideas, influencing their perspectives on stock market participation. The media's influence on the growth of the stock market in SADC is pronounced when investors and residents heavily depend on newspaper houses for news. It shapes societal perceptions regarding the benefits and risks of stock market involvement, the fairness and transparency of the system, and outlooks on economic futures. These factors collectively impact investors' risk appetite and their inclination to participate in the markets, especially for new entrants.

When the media is not under state control, it fosters increased corporate disclosure, enhancing the accuracy of analysts' projections (Brunetti & Weder, 2003). Kim et al. (2017) posit that independent media's ability to generate more firm-specific information positively influences analyst forecasts, introducing the additional information hypothesis. Additionally, independent media acts as a watchdog by exposing consistently inaccurate

projections. The expanded information and oversight roles of independent media facilitate the dissemination of accurate information to market participants relying on expert advice in capital markets. The importance of press freedom in equity markets is bolstered by evidence from emerging markets showing that press freedom explains cross-country differences in stock excess returns (Le, 2020).

Variations in the exchange rate affect stock returns and firm response to these variations is not consistent during periods of depreciation and appreciation (Agnihotri & Arora, 2021). The flow model suggests that exchange rate fluctuations affect the stock values of companies by influencing corporate activities. A local exchange rate depreciation diminishes a multinational company's profits and increases the cost of inputs and the price of locally produced goods, reducing its appeal to investors and resulting in a decline in demand for its stock. An increase in the currency rate for export-driven organizations makes exports more expensive, impacting demand and profitability. Mahapatra and Bhadhuri (2019) assert that volatility in exchange rates impacts stock market returns by influencing investors to demand more compensation for the risk of exchange rate movements. Despite evidence linking exchange rates and stock markets, the impact of exchange rate regimes on stock markets has been overlooked in studies, considering their broader implications on firm planning, investor portfolio decisions, capital controls, and monetary policy (Staehr, 2015). Tchereni and Mpini (2020, p. 50) found evidence that monetary policy shocks account for 5.2% variability in Johannesburg Stock Exchange (JSE) volatility. Therefore, since they are part of monetary policy, exchange rate regimes could impact stock markets directly (Mahapatra & Bhadhuri, 2019) or indirectly (Staehr, 2015).

Industrialization is expected to positively impact stock market growth by attracting capital for corporate activities and increasing liquidity and capitalization. The shift from agriculture-focused economies to those with a thriving manufacturing sector creates a demand for financial resources to support operations. This process results in more demand for financial resources as firms become capital-intensive and adapt to modern technology. At the time, this transformation process reduces poverty, and unemployment and increases productivity (Todaro & Smith, 2015). The SADC Industrialization Strategy and Roadmap (2015–2063) aims to enhance economic growth by increasing medium- and high-tech production. While industrialization has positive effects on poverty reduction, unemployment, modernization, external balance, and production, globalization may counteract these benefits by enabling enterprises to obtain funds from established markets, potentially discouraging local market participation due to low-income levels in SADC nations.

Capital flight, defined as undocumented withdrawals of capital by country inhabitants, poses a threat to growth by reducing the available capital for investment across economic sectors (Yalta, 2010). It creates financing difficulties in already capital-strapped countries, widening the savings-investment gap and pressuring deposits that could have been channeled into productive sectors of the economy thereby impacting economic growth (Yalta, 2010). Anticipated higher tax rates due to capital flight diminish the after-tax return on assets, discouraging investors from locations with higher yields (Collier et al., 2001). In SADC nations, capital flight could impede stock market development by reducing activity and exporting funds that could otherwise be invested in the stock market. This decreased demand for shares lowers stock prices, especially when regional and international markets become increasingly intertwined. Capital flight in SADC may be exacerbated by market volatility, vulnerability to economic shocks, and a lack of financial mechanisms to manage such risks.

2.2. Empirical literature

Billmeier and Massa (2007) delved into the impact of natural resources on stock market growth across 17 Central Asian and Middle Eastern nations. They found that for nations with limited natural resources, remittances and quality institutions held significant importance, while in resource-rich countries, a correlation between stock market prices and oil prices emerged. Though this study focused on Asia and the Middle East, its findings on the importance of institutions provide a crucial learning point. Therefore, press freedom could be relevant for stock markets in this region. Bala and Hassan (2018) explored the relationship between currency rates and stock market development in Nigeria using the autoregressive distributed lag (ARDL) technique, discovering a substantial and positive effect of exchange rates on stock prices. Nyasha and Odhiambo (2020) studied the Brazilian stock market utilizing the ARDL approach. Results indicated that trade openness, exchange rates, and banking sector development had favorable effects in both the short and long term, but stock market liquidity and investments had an adverse effect on development. Though these studies brought out the importance of exchange rates in the development trajectory of stock markets, they fall short in examining how the exchange rate regimes adopted by a country could interact with stock markets. Since regimes play a role in explaining the extent of exchange rate volatility, they are important policy initiatives in the exchange rate and stock market development matrix.

Ho (2018) examined the determinants of stock market development. Their research showcased that intermediary development, private capital flows, interest rates, legal origins, and financial integration could either facilitate or impede stock market development. Ho (2019) used the ARDL bounds testing technique to examine the impact of macroeconomic factors on stock market development in Malaysia. The study revealed that banking sector development had a negative impact in the long term, while earlier banking sector expansion and trade openness had short-term positive effects. Contrarily, Ho and Odhiambo (2020) found in their study in Hong Kong using the ARDL that banking sector expansion and economic growth positively influenced stock markets, while inflation and exchange rates had detrimental impacts in the short and long term. Ho's (2018) study in South Africa also utilized the ARDL to confirm the positive influence of the banking sector and economic growth on stock markets but highlighted the negative impacts of trade openness, inflation, and currency rates on stock market growth. These

studies utilized the same ARDL model but still found inconsistencies in their results. Findings from countries across these regions emphasized the risks of generalizing macroeconomic linkages, stressing the importance of region-specific studies, particularly in regions like SADC.

Zhou et al. (2015) studied factors influencing Cameroon's stock market development, revealing positive effects of foreign direct investment (FDI) and private capital inflows. They utilized the generalized method of moments (GMM) and the two-stage least squares (2SLS) method for robustness. Surprisingly, they found that the development of the banking sector and economic growth did not contribute to the growth of capital markets but FDI and private capital flows.

Motivated by controversial and inconclusive results from different studies, Omar et al. (2022) investigated the determinants of stock market development in Pakistan using the ARDL model. Results indicated a positive long-term impact of banking sector development and economic growth and a negative impact of trade openness, inflation, and foreign direct investment on stock market development. Contrary to these results, Olokoyo et al. (2020) used the vector error correction model (VECM) analysis to find a positive impact of foreign capital flows on stock market development but agreed on the impact of inflation and economic growth. Evidently, foreign capital flows are relevant in stock markets but the impact of capital flight as a form of capital outflow remains unknown. Apart from conflicting results from studies reviewed here, there is evidence that SADC as a region has been neglected in terms of research and researchers have largely favored single-country studies. Moreover, the studies here utilized mostly the ARDL and to some extent 2SLS, GMM, and VECM. This current study differs by covering the SADC as a regional bloc, utilizing the SUR and SGMM techniques.

Recent studies underscore ongoing research in the area and conflicting results show a lack of consensus on the factors influencing stock market evolution. Controversy is heightened by the use of various indicators in measuring stock market development. A study by Aluko and Kolapo (2020) shows that the impact of macroeconomic variables on stock market development in sub–Saharan Africa is sensitive to measures of stock market development. This study addresses this challenge by utilizing three widely used measures and a composite index. Additionally, the oversight of critical aspects such as the currency rate regime, capital flight, industrialization, and press freedom, coupled with unclear conclusions and the grouping of developing and industrialized nations, necessitates a more nuanced and region-specific approach. Consequently, this work aims to address these gaps in understanding, particularly in the context of the SADC region.

3. DATA AND ESTIMATION METHODOLOGY

The data utilized in this analysis was sourced from World Development Indicators (WDI), the International Monetary Fund (IMF), SADC, and individual nations, covering the period from 1995 to 2017. Nine SADC countries were included in the study: Botswana, Eswatini, Malawi, Mauritius, Namibia, South Africa, Tanzania, and Zambia. The selection of this timeframe was driven by the absence of stock markets in some SADC nations before 1995, and 2017 marked the latest year for which the relevant variables for the analysis were available. Although research has predominantly focused on wealthier nations, the SADC region has garnered remarkably little attention (Anchang, 2016; Tsaurai, 2018). Where research on the factors of stock market development has been performed abroad, the results have been contradictory and unsatisfactory (Afful, 2018; Ho, 2019).

Expanding upon the approaches utilized by Hakimi et al. (2019) and Novalina et al. (2019), the SUR method was employed to estimate the stock market model. This choice was made based on its ability to enhance estimation accuracy by combining input from multiple equations, leading to modest standard errors. The SUR technique is particularly suitable for long panels where T exceeds N (Zellner, 1962). To ensure robustness, the SGMM was employed for testing. SGMM is adept at handling endogeneity between economic variables and is convenient for controlling heteroscedasticity, country-specific effects, and autocorrelation (Pedroni, 2000).

An alternative approach to estimating would be to utilize the instrumental variable method known as 2SLS. The approach can prove beneficial in situations involving concurrent causality, omitted variables, and measurement mistakes. The approach entails identifying a variable known as the IV, which exhibits a strong correlation with independent proxies in the estimate equation but lacks correlation with the error component. Gujarati (2004) posits that the approach has the benefit of being simple to implement, notwithstanding the potential for multicollinearity to arise, hence yielding estimates that are consistent but inefficient. The second advantage is joint endogeneity, which is enabled by the utilization of internal instruments (Anchang, 2016).

The stock market development index (SMDI) was computed using three variables: 1) stock market capitalization as a percentage of gross domestic product (SMC), 2) stock market turnover ratio (SMTR), and 3) stock market value traded (SMVT). These variables were chosen to represent the depth, efficiency, and liquidity of the stock market. Principal Component Analysis transformed the three variables into an index that is ordered according to the variance in the initial variables, uncorrelated with each other, and a linear combination of the initial values. It reduced dimensionality with minimum loss of information (Everitt & Hothorn, 2011; Lipovina-Bozovic & Smolovic, 2016). To address the endogeneity problem, the econometric model labeled as Eq. (1) specifies lagged values of regressors. Models outlined by Nyasha and Odhiambo (2020) and Bala and Hassan (2018), who investigate the factors of stock market development, serve as the foundation for the current model. In contrast to these models, the model proposed in this study includes additional variables of importance: 1) press freedom, 2) industrialization, 3) regional integration regimes, and 4) capital flight.

$$SMD_{it} = \beta_0 + \beta_1 SMDI_{it-1} + \beta_2 PF_{it-1} + \beta_3 IND_{it-1} + \beta_4 LogCF_{it-1} + \beta_5 Pegged_{it-1} + \beta_6 Crawling_{it-1} + \beta_7 Managed_{it-1} + \beta_8 Float_{it-1} + \beta_9 INFL_{it-1} + \beta_{10} BSDI_{it-1} + \beta_{11} GDPP_{it-1} + \beta_{12} FDI_{it-1} + \beta_{13} S_{it-1} + \beta_{14} RL_{it-1} + \beta_{15} TNRR_{it-1} + \beta_{16} TP_{it-1} + \beta_{17} FIP_{it-1} + \varepsilon_{it} \quad (1)$$

The analysis involves the variable *i*, representing the number of countries at time *t*, and ε as the error term. *SMD* stands for the indicator of stock market growth. The SMDI, including stock market capitalization (SMC), stock market value traded (SMVT), and stock market turnover ratio (SMTR), serves as proxies for overall stock market development, size, liquidity, and efficiency, respectively. The inclusion of SMD_{it-1} reflects an early level of stock market development in the model, anticipating a positive impact on current levels by attracting more companies and traders, thereby improving liquidity and capitalization. Press freedom (*PF*), industrialization (*IND*), capital flight (*CF*), and exchange rate regimes, categorized as pegged (*Pegged*), crawling (*Crawling*), managed (*Managed*), and floating (*Float*) are crucial model variables. To address simultaneity issues using the SUR model, all other independent variables are lagged by one period. The other variables serving as controls in the model are *INFL*, *S*, *RL*, *GDPP*, *FDI*, *TP*, *FIP* and *TNRR* represent inflation, savings, rule of law, growth in income per capita, foreign direct investment, trade protocol, finance and investment protocol and total net resource rent, respectively.

Press freedom, measured by *PF* using the governance measure of voice and accountability, is expected to have a positive influence. Press freedom enhances analysts' forecast precision, leading to the dissemination of more firm-specific data, attracting more traders and improving efficiency while reducing the risk premium for investors (Brunetti & Weder, 2003; Kim et al., 2017). Industrialization, represented by *IND*, signifies the transition from agriculture to a manufacturing-dominant sector. This process increases the need for financial resources as enterprises become more capital-intensive, fostering stock market expansion as new firms list and established ones seek additional capital (Todaro & Smith, 2015). Capital flight (*LogCF*) is expected to have a negative impact on stock markets. Capital flight strains savings widens the savings-investment gap, and causes volatility in stock markets and exchange rates, hampering economic growth. The banking sector development index (*BSDI*) assesses the impact of banking sector expansion on stock markets, with conflicting results in prior studies.

These are incorporated as control variables in accordance with previous research that demonstrated their importance in influencing the trajectory of the stock market (Nyasha & Odhiambo, 2020; Olokoyo et al., 2020; Omar et al., 2022). Inflation signifies a state of economic instability. Consequently, this is anticipated to exert an adverse influence on the progress of stock markets. Due to increased levels of uncertainty, it is anticipated that businesses will cut their investments, while consumer demand will decline due to the erosion of disposal income. Instability, in addition to reducing stock values and causing market volatility, impedes growth, hence decreasing the demand for stocks. In contrast, new research by Mahawiya (2015) demonstrates the existence of thresholds and nonlinear associations between inflation and economic growth, implying that the influence of inflation becomes substantial beyond a specific threshold.

It is anticipated that gross savings (*S*), will have a beneficial impact on growth. Households transfer their money from banks to stock markets during market booms and return them to banks during market downturns (Zhangu & Wu, 2012). Consequently, the inflow of money into capital markets stimulates demand and liquidity on stock markets, thereby exerting a beneficial influence on prices. Likewise, an increase in GDP per capita ought to have a favorable impact on stock markets through an increase in demand for shares, resulting in increased price levels and liquidity in the stock market.

Rule of law ought to enhance stock markets, consistent with the theory. Because protection of creditor rights, judicial independence, and powerful contract enforcement procedures entice both domestic and foreign investment, this is the case. A greater rule of law index bolsters the market-based economy, which in turn facilitates the operation of the stock market. *FDI* is a significant predictor of stock market development (Zhou et al., 2015). It functions as an implicit indicator of worldwide financial interconnectedness. The utilization of total natural resources rents (*TNRR*) was regulated for natural resource endowments. Natural resources are expected to militate against the evolution of stock-marketed development. It is considered a crucial control variable given that most SADC nations possess natural resources.

The Finance and Investment Protocol (*FIP*) and the Trade Protocol (*TP*) quantify regional integration. Anticipated outcomes include the facilitation of cross-border investment, the stimulation of commerce, and the promotion of competition among regional stock markets. This fosters efficiency, resilience to shocks, and global integration, which in turn strengthens the ability of SADC to amass savings, and drive investment. As a result, financial markets are positively impacted (Shipalana & Moshoeshoe, 2019). Conversely, detrimental spillovers and spillbacks lead to the propagation of disturbances that have the potential to incite unsustainable declines in less developed economies. These occurrences lead to increased levels of price volatility and extended periods of price stability (Boako & Alagidede, 2017). The error term ε_{it} was utilized to account for variables that were not incorporated into the model. In all equations, the *TR* and *FIP* variables are substituted with the interaction term *TR*FIP*, just as in Model 1.

4. RESULTS

A positive correlation is supported by the findings of the correlation analysis between: 1) the stock market development index (SMDI) and stock market capitalization, the value traded on the stock market, and the turnover ratio; 2) the turnover ratio and the capitalization of the stock market; and 3) the value traded on the stock market and stock market capitalization. As anticipated, the growth of the stock market is strongly connected with its efficiency, liquidity, and size. Inflation (*INFL*) and

the banking sector development index exhibit a negative connection. There exists a negative correlation between savings (*S*) and every stock market variable. The findings suggest that the concentration of savings in the banking sector hinders the development of stock markets by depriving them of necessary cash. All stock market characteristics, except for the index, exhibit a negative connection with *FDI*. This suggests that global integration may have an adverse impact on the size and liquidity of stock markets, while only marginally contributing to overall development. The correlation coefficient matrix is shown in Table A.1 (Appendix).

Efficiency exhibits an adverse and insignificant connection with regional financial integration (*FIP*), while the development, size, and liquidity of the stock market show positive correlations with *FIP* (Dyke et al., 2010). Similarly, trade integration positively correlates with stock market capitalization, value transacted, and index, but negatively correlates with the turnover ratio (Moyo, 2020). This suggests that while regional financial and trade integration foster stock market growth, liquidity, and size, they impede efficiency. Most stock market indicators, except turnover ratio, exhibit statistical insignificance and positive correlation with total natural resources rent (*TNRR*) (Dyke et al., 2010). Conversely, income growth rate (*GDPP*) displays a negative association with other stock market variables, indicating that while rising income contributes to stock market development, it hampers depth, efficiency, and liquidity. Despite strong correlations exceeding 0.8, these variables are interdependent rather than independent (Moyo, 2020). Unit root tests confirm stationarity at level (I (0)), allowing further analysis. Results from both SUR and GMM methods indicate stock market development using the SMDI, with market size measured by stock market capitalization, liquidity by stock market value traded, and efficiency by turnover ratio (Dyke et al., 2010; Moyo, 2020).

Table 1. A seemingly unrelated regression model with the banking sector development index results

Variables	*SMDI*	*SMC*	*SMVT*	*SMTR*	*SMDI (1)*	*SMC (1)*	*SMVT (1)*	*SMTR (1)*
$SMDI_{t-1}$	0.597***				0.597***			
	-0.0557				-0.0557			
SMC_{t-1}		0.983***				0.984***		
		-0.0289				-0.0291		
$SMVT_{t-1}$			1.029***				1.029***	
			-0.0305				-0.0305	
$SMTR_{t-1}$				0.507***				0.508***
				-0.0621				-0.0621
PF	0.107	1.503**	0.853**	-0.405	0.107	1.481**	0.856**	-0.437
	-0.136	-2.404	-0.878	-3.364	-0.136	-2.439	-0.882	-3.387
IND	-0.00123	-0.00182*	0.0062	0.443	-0.00125	-0.00771*	0.00547	0.445
	-0.0107	-0.188	-0.07	-0.275	-0.0108	-0.191	-0.0703	-0.277
LogCF	-0.0100*	-0.0702**	-0.0271*	-0.28059	-0.01001*	-0.0719**	-0.2744*	-0.2778
	-0.009	-0.156	-0.0607	-0.234	-0.009	-0.158	-0.609	-0.236
Pegged	0.0408*	0.991*	0.269	2.045	0.0419*	0.911*	0.247	2.118
	-0.428	-6.95	-2.7	-10.61	-0.428	-7.062	-2.713	-10.68
Crawling	0.0734	1.836*	-0.485	-1.493	0.0746	1.866*	-0.473	-1.581
	-0.487	-7.994	-3.085	-12.13	-0.488	-8.122	-3.1	-12.21
Managed	-0.209	2.092**	-0.0197	-4.505	-0.209	2.065**	-0.0262	-4.484
	-0.427	-6.92	-2.685	-10.54	-0.427	-7.033	-2.698	-10.62
Floating	-0.134**	-3.348**	1.641	-0.976	-0.136**	-3.082**	1.594	-0.826
	-0.46	-7.621	-2.943	-11.41	-0.46	-7.737	-2.956	-11.48
BSDI	0.0190*	0.190*	0.407	0.101	-0.0185	0.218	-0.4	0.0683
	-0.0707	-1.159	-0.446	-1.752	-0.0707	-1.176	-0.448	-1.763
INFLN	-0.0024**	-0.057***	-0.012***	-0.0298	-0.0025**	-0.060***	-0.012***	-0.0319
	-0.00704	-0.114	-0.0443	-0.174	-0.00705	-0.116	-0.0445	-0.175
GDPP	-0.00674	-0.591**	-0.107**	-0.286	-0.00666	-0.583**	-0.106**	-0.292
	-0.0202	-0.328	-0.128	-0.5	-0.0202	-0.334	-0.129	-0.504
FDI	-0.0460*	-0.263	-0.287*	-2.292***	-0.0460*	-0.259	-0.287*	-2.292***
	-0.0261	-0.428	-0.165	-0.646	-0.0261	-0.435	-0.166	-0.65
S	-0.00772	0.0593*	-0.00945	-0.188	-0.00776	0.0570*	0.00888	-0.185
	-0.00716	-0.116	-0.0447	-0.177	-0.00716	-0.118	-0.0449	-0.178
RL	-0.136	-0.813	-0.505	4.32	0.135	-0.866	-0.515	4.361
	-0.223	-3.623	-1.405	-5.522	-0.223	-3.682	-1.412	-5.56
TNRR	0.0494**	-0.183	-0.0441	0.857*	0.0496***	-0.171	-0.0417	0.846*
	-0.0192	-0.311	-0.121	-0.475	-0.0192	-0.316	-0.121	-0.478
TP	0.00456	0.335**	0.0668	-0.297				
	-0.0069	-0.464	-0.0981	-0.462				
FIP	0.0818	0.107	0.653	0.365				
	-0.169	-2.739	-1.06	-4.164				
TPFIP					0.0825	0.149	0.663	0.318
					-0.169	-2.783	-1.065	-4.192
Obsy	144	144	144	144	144	144	144	144

*Note: Breusch-Pagan test of independence: chi2 (28) = 881.531, p-value = 0.000. ***, **, and * denote 1%, 5%, and 10% levels of significance, respectively.*
Source: Authors' compilation.

Table 2. Generalized method of moments model with banking sector development index results

Variables	*SMDI (1)*	*SMC (2)*	*SMVT (3)*	*SMTR (4)*	*SMDI (5)*	*SMC (6)*	*SMVT (7)*	*SMTR (8)*
$SMDI_{t-1}$	0.671***				0.679***			
	-0.0959				-0.0991			
SMC_{t-1}		1.105***				1.123***		
		-0.0337				-0.0303		
$SMVT_{t-1}$			1.468***				1.472***	
			-0.113				-0.117	
$SMTR_{t-1}$				0.432***				0.508***
				-0.0883				-0.0786
PF	0.317	10.41	10.75*	3.781	0.375	12.15	11.03*	4.821
	-0.828	-7.212	-5.02	-2.348	-0.992	-7.32	-5.441	-3.194
IND	-0.0261	-0.504*	-0.565	0.491	-0.0257	-0.570*	-0.58	0.265
	-0.0269	-0.354	-0.311	-0.269	-0.0255	-0.339	-0.333	-0.166
LogCF	-0.00445*	-0.2069**	-0.005289	-0.16439	-0.00065*	-0.1421**	-0.01027	-0.01983
	-0.008228	-0.30739	-0.06994	-0.18431	-0.00796	-0.31895	-0.07534	-0.103803
Pegged	0.0206*	8.256*	33.76**	0.327	0.154*	8.712*	33.19**	8.137
	-0.315	-4.568	-46.22	-3.609	-0.476	-5.221	-45.86	-8.518
Crawling	0.0577	5.620*	-46.49	3.35	0.165	6.937*	-46.06	11.57
	-0.5	-4.189	-52.17	-5.101	-0.704	-4.148	-52.13	-12.41
Managed	-0.268	9.263***	-31.05	9.344	-0.128	10.01***	-30.51	4.579
	-0.239	-3.564	-44.5	-9.525	-0.39	-3.915	-44.19	-5.632
Floating	-0.250**	-0.207*	-38.44	-0.284	-0.0711*	-1.852*	-37.61	9.305
	-0.153	-7.989	-47.34	-3.44	-0.297	-8.198	-46.81	-6.469
BSDI	0.0645*	2.174*	-0.0905	-0.368	0.0697*	2.420*	-0.158	-1.662
	-0.103	-2.309	-0.444	-0.873	-0.102	-2.377	-0.309	-1.293
INFLN	-0.00608*	-0.257***	-0.0254**	-0.238*	-0.0043*	-0.317***	-0.0155**	-0.0268*
	-0.0133	-0.148	-0.0746	-0.231	-0.0139	-0.13	-0.0466	-0.13
GDPP	-0.016	-2.148**	-0.160*	-0.109	-0.0257	-1.869**	-0.155*	-0.0813
	-0.0538	-0.72	-0.149	-0.202	-0.0544	-0.749	-0.14	-0.241
FDI	-0.0249*	-0.222	-0.577	-0.0153**	-0.0244*	-0.183	-0.572	-0.0302**
	-0.0411	-0.209	-0.504	-0.288	-0.0433	-0.186	-0.494	-0.472
S	-0.0101	0.281*	-0.122	-0.458	-0.0102	0.260*	0.117	-0.535
	-0.0106	-0.139	-0.0708	-0.464	-0.0115	-0.135	-0.0679	-0.605
RL	-0.162	-1.282	-6.769**	-3.578	-0.217	-2.405	-7.086**	-2.637
	-0.759	-4.808	-2.697	-5.926	-0.933	-5.186	-3.02	-8.259
TNRR	0.0359*	-0.605	-0.0232	1.44	0.0301	-0.463	-0.0548	0.617
	-0.0179	-0.672	-0.227	-0.985	-0.0199	-0.684	-0.242	-0.779
TP	-0.16	4.068**	-0.881	-20.71*				
	-0.146	-2.384	-3.779	-10.24				
FIP	0.205	-5.859	-0.806	7.308				
	-0.292	-4.502	-4.088	-6.499				
TPFIP					0.124	-0.463	-1.416	6.986
					-0.27	-0.684	-4.235	-10.33
Sargan	0.992	0.328	0.727	0.615	0.94	0.303	0.857	0.605
AR (2)	0.994	0.335	0.231	0.109	0.984	0.495	0.235	0.264
Obsv	144	144	144	144	144	144	144	144

*Note: ***, **, and * denote 1%, 5%, and 10% levels of significance, respectively.*
Source: Authors' compilation.

5. DISCUSSION OF RESULTS

The study investigates the multifaceted influences on stock market dynamics within SADC nations, providing insights into the significance of various factors for market growth, liquidity, and efficiency (Dyke et al., 2010; Ho, 2019; Moyo, 2020). Lagged dependent variables exhibit a robust positive impact on all dependent variables, indicating the influence of past stock market development levels on future values. Press freedom (*PF*) also shows a positive albeit insignificant effect on stock market growth, enhancing capitalization and liquidity by fostering transparency and accurate information dissemination (Dyke et al., 2010).

Contrary to expectations, industrialization (*IND*) yields unexpected results, negatively affecting stock market development and capitalization while positively influencing efficiency. Capital flight (*LogCF*) emerges as a negative factor affecting stock market variables, with adverse impacts on development and value traded (Moyo, 2020). The study highlights the positive impact of pegged exchange rate regimes on stock market development and capitalization, attributed to the stability provided by fixed exchange rates. Managed exchange rate regimes, however, exhibit negative impacts on overall market growth and liquidity, due to speculative tendencies and lack of central bank independence (Dyke et al., 2010).

Inflation consistently exhibits a negative effect on stock market variables, aligning with previous research findings. Banking sector development (*BSDI*) positively influences stock market growth and capitalization, indicating its crucial role in providing support services (Ho, 2019). Income growth (*GDPP*) and savings (*S*) demonstrate mixed effects on stock market variables, with income growth negatively impacting stock market size and liquidity, while savings positively impact capitalization but negatively affect liquidity, efficiency, and overall development (Moyo, 2020). Foreign direct investment (*FDI*) demonstrates a consistently negative impact on all stock market metrics, supporting the FDI dependency hypothesis. Rule of law (*RL*) exhibits a negative impact on liquidity, reflecting investor reluctance and increased uncertainty (Dyke et al., 2010). Total natural resources rent (*TNRR*) positively influences stock market growth and liquidity but negatively impacts

capitalization and efficiency, highlighting the complex dynamics of resource endowments. Trade protocol (*TP*) shows a robust positive relationship with stock market capitalization, while the finance and investment protocol (*FIP*) demonstrates a favorable impact on development and efficiency (Moyo, 2020).

Overall, the study provides comprehensive insights into the multifaceted factors influencing stock market dynamics within SADC nations, offering valuable implications for policymakers and future research directions (Dyke et al., 2010; Ho, 2019; Moyo, 2020).

6. CONCLUSION

The study explores the multifaceted dynamics influencing stock market development in SADC nations, with a focus on the impact of press freedom, industrialization, capital flight, and diverse exchange rate regimes (Dyke et al., 2010; Ho, 2019; Kim et al., 2017; Moyo, 2020). Findings indicate a robust and statistically significant positive impact of lagged dependent variables on all dependent variables, underscoring the influence of past stock market development levels on future values. Press freedom, while positively associated with stock market growth, yields insignificant effects; however, it correlates with increased capitalization and liquidity, fostering transparency and investor confidence (Dyke et al., 2010; Kim et al., 2017).

In contrast, industrialization exhibits a negative influence on stock market development and capitalization but positively affects efficiency, highlighting the nuanced impact of economic activities on stock market dynamics (Moyo, 2020). Similarly, capital flight emerges as a detrimental factor, negatively impacting stock market variables (Dyke et al., 2010). Conversely, pegged exchange rate regimes consistently show positive effects on stock market development and capitalization, attracting both domestic and foreign investors (Dyke et al., 2010). However, floating exchange rate regimes exhibit a persistent negative influence on stock market development and capitalization, suggesting potential drawbacks of relying solely on market forces (Dyke et al., 2010).

The study recommends prioritizing improvements in press freedom, promoting industrialization, and addressing capital flight issues to stimulate stock market expansion in SADC nations. Implementing policies to enhance economic stability, mitigate currency volatility, and fortify property rights protection legislation are suggested strategies to reduce capital flight and bolster exchange rate stability (Dyke et al., 2010; Moyo, 2020). Despite offering valuable insights, the study faces limitations, including data unavailability for certain countries and constraints in measuring efficiency and volatility across SADC stock markets.

The research encountered numerous limitations. The initial limitation was the lack of access to secondary data pertaining to development variables in the stock market. Certain SADC countries lacked access to the data, and when it was available, it was for an exceptionally little period. Consequently, the research ultimately opted to exclude seven nations from the analysis due to the unavailability of specific stock market characteristics, thus restricting the study to nine countries. In addition, the research was limited to the years 1995 to 2017 because of data unavailability for certain countries that were incorporated in the study. The selection of the nine countries was deemed appropriate to extrapolate the findings to the broader SADC region. The second constraint was the absence of efficiency and volatility measurement variables for all SADC stock markets. An effort was made to employ comparable dimensions while constructing development indices. To address this obstacle, the research employed the stock market turnover ratio as a surrogate for market efficiency, as proposed by previous theorists, even though this metric is commonly used to represent liquidity.

Future research avenues could explore the interplay of exchange rate regimes with other financial market components and investigate the indirect impacts of economic sectors on stock markets, particularly in emerging markets heavily reliant on agriculture and mining sectors (Dyke et al., 2010; Ho, 2019).

In conclusion, the study underscores the intricate interplay of various factors in shaping stock market dynamics in SADC nations and provides crucial recommendations for policymakers to foster economic resilience and financial stability in the region (Dyke et al., 2010; Ho, 2019; Kim et al., 2017; Moyo, 2020).

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APPENDIX

Table A.1. Correlation coefficient matrix

	SMDI	*SMC*	*SMVT*	*SMTR*	*PF*	*IND*	*LogCF*	*INFLN*	*S*	*FDI*	*RL*	*Pegged*	*Crawling*	*Managed*	*Floating*	*TNRR*	*GDPP*	*BSDI*	*PCDMB*	*TP*	*FIP*	*TPFIP*
SMDI	1.00																					
SMC	0.15	1.00																				
SMVT	0.19*	0.93*	1.00																			
SMTR	0.31*	0.32*	0.43*	1.00																		
PF	0.05	0.37*	0.24*	-0.06	1.00																	
IND	-0.12	0.04	0.08	0.34*	-0.33*	1.00																
LogCF	-0.08	-0.23*	-0.23*	-0.11	0.15	0.12	1.00															
INFLN	0.03	-0.12*	-0.09*	-0.06*	-0.23*	-0.12	-0.04	1.00														
S	-0.06	-0.02	-0.03	-0.23*	0.43*	-0.40	-0.04	0.00	1.00													
FDI	0.07	-0.33	-0.26*	-0.06	-0.09	-0.16*	-0.17*	0.08	0.10	1.00												
RL	-0.01	0.15	0.039	-0.08	0.52*	-0.17	-0.05	-0.31*	0.44*	-0.08	1.00											
Pegged	0.10	0.36*	0.24*	0.07	-0.12	0.26*	-0.25*	-0.06	-0.12	0.17*	-0.01	1.00										
Crawling	0.21*	0.04	-0.11	-0.10	0.15	-0.32*	-0.14	-0.07	0.37*	-0.07	0.28*	-0.20*	1.00									
Managed	-0.08	0.17*	-0.22*	-0.16	0.13	-0.01	-0.13	-0.01	-0.05	0.00	0.17*	-0.40*	-0.18*	1.00								
Floating	-0.03	-0.53	-0.53*	0.16*	-0.13	-0.08	0.47*	0.14	-0.06	-0.14	-0.38*	-0.46*	-0.21*	-0.42*	1.00							
TNRR	0.12	0.02	0.072	-0.01	-0.31*	-0.23*	0.18*	0.25*	0.14	0.25*	-0.52*	-0.32*	-0.01	-0.03	0.40*	1.00						
GDPP	0.11	-0.17*	-0.22*	-0.14	-0.15	-0.04	-0.17*	0.07	-0.07	0.00	-0.20*	-0.05	-0.02	0.04	-0.01	0.10	1.00					
BSDI	0.06	0.05	-0.01	-0.11	0.07	-0.23*	-0.04	-0.09	-0.06	-0.03	0.05	0.00	-0.09	-0.09	0.14	-0.09	0.22*	1.00				
PCDMB	0.14	0.60	0.46*	0.11	0.65*	0.10	0.35*	-0.34*	-0.11	-0.17*	0.58*	-0.18*	-0.08	0.14	0.04	-0.43*	-0.12	0.18*	1.00			
TP	0.25*	0.15	0.101	-0.16*	0.01	-0.23*	0.19*	-0.13	-0.11	0.03	-0.11	-0.24*	0.22*	0.15	-0.04	0.30*	0.22*	0.20*	0.13	1.00		
FIP	0.29*	0.22*	0.17*	-0.02	0.04	-0.26	0.26*	-0.21*	-0.23*	-0.05	-0.08	-0.25*	0.21*	0.09	0.07	0.09	0.08	0.16*	0.24*	0.47*	1.00	
TPFIP	0.29*	0.22*	0.17*	-0.02	0.04	-0.26	0.26*	-0.21*	-0.23*	-0.05	-0.08	-0.25*	0.21*	0.09	0.07	0.09	0.08	0.16*	0.24*	0.47*	1.00	1.00

*Note: ***, **, and * denote 1%, 5%, and 10% levels of significance, respectively.*