

ASSESSING THE RELATIONSHIP BETWEEN FOREIGN INVESTMENT FLOWS AND
FOREIGN EXCHANGE RESERVES IN NAMIBIA

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ABSTRACT

The purpose of this study was to examine the relationship between foreign investment flows (FIF) and foreign exchange reserves (FER) in Namibia for the period of 32 years, from 1991 to 2022, using exchange rate (EXR), real interest rate (RIR), and political stability (POLSTB) as the control variables. The study sought further to determine the nature of the relationship between the variables, as well as the direction of causality. To attain these objectives, the study used macroeconomic time series data and analysed them using various econometrics tools in EViews software, version 9. In detail, the study conducted a unit root test and found the data stationary at mixed orders [I(0) and I(1)]. Thus, the study employed the bound test of cointegration to measure whether the variables are cointegrated in the long-run. The results reveal that a long-run exists between the variables. Therefore, the study applied the ARDL-ECM model to estimate the short-run and long run relationships between the variables. In that light, the results indicate a negative but not statistically significant relationship between EXR and FER in both lags. Against that, the results show a positive but insignificant relationship between RIR and FER, as well as between POLSTB and FER in both lags. Additionally, the results also reveal a positive relationship between FIF and FER, which is significant in lag 2, unlike in lag 1. Finally, the study employed the unrestricted Granger causality test to establish the direction of causality between the variables. The results indicate a unidirectional causality from EXR to FIF, while the rest of the variables are independent of each other. Based on the results, the study recommends that policymakers should enhance foreign investment policies aimed at attracting and retaining foreign investment flows, sustain political stability by implementing effective governance and institutional reforms, and diversify of reserves management to mitigate risks and maximise returns. Finally, the study suggests future research to examine the dynamic impacts of monetary and fiscal policy, assess the effects of global economic trends such as commodity price volatility, and analyse the impact of regional integration agreements on foreign exchange reserves.

Keywords: Foreign exchange reserves, Foreign investment flows, Exchange rate, Real interest rate, Political stability, ARDL, ECM, Namibia

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LIST OF ABBREVIATIONS AND ACRONYMS

BON	: Bank of Namibia
DEC	: Decentralised Research Ethics Committee
FDI	: Foreign Direct Investments
FER	: Foreign Exchange Reserves
FPI	: Foreign Portfolio Investment
FIF	: Foreign Investment Flows
GDP	: Gross Domestic Products
LNEXR	: Log of Exchange Rate
LNFER	: Log of Foreign Exchange Reserves
LNFIF	: Log of Foreign Investment Flows
LNPOLSTB	: Log of Political Stability
LNRIR	: Log of Real Interest Rate

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DEDICATION

This work is dedicated to God, my fortress, my deliverer, my shield, in whom I take refuge. It is also dedicated to my parents, Mr. Junias Shefeni and Mrs. Priskilla Vilbard, and my siblings whose words of encouragement never stop ringing in my ears and their helping hand. I will always cherish and be grateful to the almighty God for surrounding me with love and these wonderful people.

DECLARATION

I, Trofimus Sheefeni, declare hereby that this study is a true reflection of my own research, and that this work, or part thereof has not been submitted for a degree in any other institution of higher education.

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02 April 2024
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Date

CHAPTER ONE

INTRODUCTION AND BACKGROUND

1.1 Introduction

Attaining sufficient national savings to support investments continues to be one of the economic challenges faced by emerging nations (Jacob et al., 2022; Kaphle, 2021). Undoubtedly, developing countries are in continual need of both direct and indirect foreign capital infusions (Matsumoto, 2019). Thus, the majority of these countries rely on foreign investors for money since they are unable to fulfil their capital needs through domestic sources alone (Jacob et al., 2022), where Namibia is no exception. In that view, statistics show that Namibia's infrastructure financing gap was estimated to reach N\$ 154 607.3 billion between 2017/2018-2019-2020 (Namakalu et al., 2014). This financing gap is specifically for transport infrastructure (N\$ 123 351.5 billion), energy (N\$ 50 837.4 billion), water (N\$ 1 630.7 billion), information and communication technology (N\$ 2 688.0 billion), and housing (N\$ 45 000.0 billion). In addition to that, climate financing gap stands at US\$ 5.3 billion of a period of 2021 to 2030 (African Development Bank, 2023). This makes both the foreign exchange reserves and foreign investment flows crucial in various economies, and it is for that reason that they continue to attract the interest of academic and practical researchers (Grenville, 2012).

According to Rahman and Bristy (2015), foreign exchange reserves are cash and other reserve assets such as gold held by a central bank. On the other hand, foreign investment flows are the value of cross-border transactions related to direct investment during a given period (Grenville, 2012). For this study, foreign investment flows encompass both the inbound private and public long term foreign direct investment and foreign portfolio investment. In brief, direct investment is the sum of equity capital, reinvestment of earnings, and other capital, while portfolio foreign investment includes net inflows from equity securities other than those recorded as direct investment and including shares, stocks, depository receipts, and direct purchases of shares in local stock markets by foreign investors (World Bank, 2023).

Generally, foreign investment flows contribute significantly to a nation's long-term economic growth by bridging the gap between savings and investment, increasing the availability of capital, and boosting productivity (Jacob et al., 2022). Hence, several developing nations opened their economies to foreign capital flows in the late 1980s and early 1990s. According to Rahman and Bristy (2015), the country's trends in foreign exchange reserves are affected by various macroeconomic factors, such as foreign investment flows in the form of foreign direct investments (FDI) and foreign portfolio investment (FPI). In developing and emerging countries, FPI that serves as an important type of foreign capital flow, started at a fair size in the early 1990s (Demirhan & Masca, 2008). In addition, FDI that serves as an international direct investment

characterised by a long-term connection and substantial influence over the management of the firm in the host country, where the idea of control and ownership of another entity is fundamental to the definition of FDI (Giuseppina, 2016). That is, the enduring interest indicates the presence of a long-term connection between the direct investor and the firm, as well as a large amount of control over the enterprise's management (Giuseppina, 2016).

Over the years, the subject of the role of foreign investment flows in the economic growth of nations in a free market has long been at the core of international economics theory. According to Samborskyi et al. (2020), the foreign direct investment includes the organisation of new production, the acquisition of existing production, and the formation of joint ventures in a nation other than the investor's home country. As a long-term investment, FDI influences economic growth, which is defined as the existence of a long-term trend of rising output, consumption, and well-being in a nation (Samborskyi et al., 2020). Similarly, Kuksa et al. (2020) concur that FDI stimulates economic growth directly through technology and management practices, increased investment resources available to the industry, reorientation of consumption of goods produced by foreign-owned enterprises, and indirectly through positive externalities.

In addition, foreign exchange reserves are essential in stimulating economic activities by not only earning foreign exchange but also driving higher economic growth (Kaphle, 2021). Thus, to enhance the economic growth of

developing countries, foreign exchange reserves are vital in the country's economy as they provide a framework for a country to meet its external obligation (Samborskyi et al., 2020). In that view, the Bank of Namibia (2018) underscores that most central banks across the world are charged with the responsibility of managing their nations' gold and foreign exchange reserves. Foreign exchange reserve serves as a vital indicator that predicts a country's external economic relationships in terms of exports and capital inflow (Giuseppina, 2016).

While both foreign direct investment (FDI) and foreign portfolio investment (FPI) play a significant role in fostering foreign exchange reserves, prior studies (Jacob et al., 2022; Lily et al., 2014; Matsumoto, 2019; Rahman & Bristy, 2015; Yasir et al., 2012) have merely focused on the role of FDI, while neglecting the role of FPI. This implies the existence of a practical knowledge gap in the literature, which this study sought to address. In so doing, it examined the relationship between foreign investment flows in terms of inbound public and private long-term FDI and FPI and foreign exchange reserves within the Namibian context. Having noted that, there are aspects that influence the nexus between foreign exchange reserves and foreign investment flows, which include the real interest rate (Arce et al., 2022), exchange rate (Aidoo & Maredza, 2017; Lily et al., 2014; Osigwe & Uzonwanne, 2015; Yasir et al., 2012), and political climate of the country (Groznykh et al., 2020), among

others. In that view, this study incorporated real interest rate, exchange rate, and political and political stability as the control variables.

1.2 Statement of the Problem

Namibia strives for consistent and varied foreign investment inflows to promote economic development, backed by robust foreign currency reserves in usual circumstances (Mbai, 2017). However, challenges including external shocks, sectoral dependency, policy uncertainty, and imbalances in the balance of payments might impede these objectives, requiring policy changes and diversification initiatives for sustainable growth (Kamuinjo et al., 2021; Sheefeni, 2015, 2016). Besides that, the impact of foreign investment flows on foreign exchange reserves is crucial for the economy to be guided by well-informed economic policies (Jacob et al., 2022; Kaphle, 2021; Lily et al., 2014; Matsumoto, 2019).

However, little study has been done on this matter in Namibia, predominantly on the direction of causality since the available study of Mbai (2017) that focused on the Namibian economy did not measure the direction of causality. A few studies (Huang & Dennis, 2011; Osigwe & Uzonwanne, 2015) that measured the direction of causality focused on China and Nigeria and their findings cannot be generalised to the Namibian economy, given the differences in macroeconomic levels. Generalising the findings from large economies to a small economy like Namibia will mislead the policymakers to make policies that do not fit the nature of the country's economy, which deter the country to attain

its development goals as stipulated in the country's 5th National Development Plan (National Planning Commission, 2017).

Therefore, this study was conducted to examine the relationship between foreign investment flows and foreign exchange reserves in Namibia, using exchange rate, real interest rate, and political stability as the control variables. In so doing, the study addressed the practical knowledge and methodological gaps in the literature and provided recommendations for policymakers in pursuit of the national development goals.

1.3 Research Objectives

The main objective of this research is to examine the relationship between foreign investment flows and foreign exchange reserves in Namibia, using interest rate as a control variable. The study seeks further to attain the following specific objectives:

- To determine the nature of the short and long-run effect of foreign investment flows on foreign exchange reserves in Namibia.
- To establish the direction of the relationship between the foreign investment flows and foreign exchange reserves in Namibia.

1.4 Hypotheses

The study aims to test two sets of hypotheses. The sets are respectively associated with the three specific objectives of the study. In that view, the study specified the sets of hypotheses as follows, where in each set, H_0 represents the null hypothesis while H_1 and H_2 represent the alternative hypotheses.

H₀: There is no short and long run effect of foreign investment flows on foreign exchange reserves in Namibia.

H₁: There is a short and long run effect of foreign investment flows on foreign exchange reserves in Namibia.

H₀: There is no causal relationship between foreign investment flows and foreign exchange reserves.

H₂: There is a causal relationship between foreign investment flows and foreign exchange reserves.

1.5 Significance of the Study

The study serves twofold significance. Firstly, in determining the relationship between foreign investment flow and foreign exchange reserves, the study incorporated exchange rate, real interest rate, and political stability, which addresses the weaknesses of the existing similar study of Mbai (2017) conducted within the Namibian context. Thus, the study extends the body of

knowledge by determining how exchange rate, real interest rate, and political stability influence foreign exchange reserves, which will guide monetary policymakers in devising effective policies based on empirical evidence. Secondly, the practical knowledge gap in the literature, as prior studies (Jacob et al., 2022; Lily et al., 2014; Matsumoto, 2019; Rahman & Bristy, 2015; Yasir et al., 2012) neglected foreign portfolio investment, as part of foreign investment flows. Moreover, the study is also significant as it addresses the methodological gap in the literature since the available studies used VECM and SPSS analytical approaches, while this study used the ARDL-ECM. Finally, this study also addresses the empirical gap in the literature given that existing studies (Huang & Dennis, 2011; Osigwe & Uzonwanne, 2015) that measured causality focused on China and Nigeria, respectively.

1.6. Limitations of the Study

The study encountered twofold limitations. Regarding the first fold of limitations, the study experienced a few cases of data unavailability, which could have posed a challenge to the analyses and results. To mitigate this limitation, the study used the replacement method of imputing the mean value for missing values. In reference to the second fold of limitation, the foreign investment flow and foreign exchange reserves are measured in USD while the interest rate is measured in percentage, which posed a challenge of the non-stationarity of the data after the first differentiation. To address this limitation,

the study enhanced the linearity of the data by transforming them into their logged forms.

1.7. Delimitations of the Study

Delimitations of this study are twofold. First is the time delimitation in such a way that the study only used the data for a period of 32 years from 1991 to 2022. This is because some data were only readily available for that period. The scope of the study was restricted to the Namibian economy in terms of foreign investment flow, interest rate, and foreign exchange reserves. Consequently, the findings of this study may not be generalised to other nations, which did not form part of the study due to differences in macroeconomic indicators between countries. However, this leaves a population gap according to the postulation of Miles (2017) on research gaps, which future studies should address by conducting a panel analysis.

1.8. Structure of the Study

The study is made up of five chapters. The current chapter is the introduction and background of the study that defines the research problem, highlights the objectives, significance, and hypotheses of the study, as well as the limitations and delimitations of the study. Following is Chapter 1, which is the second chapter that reviews the literature, which covers the overview of foreign investment flow and foreign exchange reserves, elucidates the theories

underpinning the study, and reviews the empirical literature with the overall purpose of discovering the research gaps. Subsequent to that is Chapter 3 which discusses the study's methodology, while Chapters 4 and 5, correspondingly present the data analysis and results discussion, as well as the conclusion and recommendation derived from the analysis of the study. In that view, the following chapter reviews the literature.

CHAPTER TWO

AN OVERVIEW OF FOREIGN INVESTMENT FLOWS AND FOREIGN EXCHANGE RESERVES IN NAMIBIA

2.1. Introduction

This chapter provides an overview of foreign investment flows and foreign exchange reserves in Namibia. Section 2.1 covers foreign investment flows, section 2.2 discusses foreign exchange reserves, while section 2.3 gives an overview of the control variables used in the study. The final section, 2.4, offers a summary of the entire chapter.

2.2. Overview of Foreign Investment Flows in Namibia

In Namibia, capital flows are quantified in terms of foreign direct investment and foreign portfolio investments (Bank of Namibia [BoN], 2022). The reinvested profits of foreign direct investment organisations operating in Namibia are an important component of foreign direct investment (FDI) in Namibia, whereas portfolio investment consists of equities and debt instruments (Mbai, 2017). The other investment category represents monies borrowed by Namibians from foreigners, particularly Namibian subsidiaries borrowing from their parent businesses for capital expenditures and other purposes (Mbai, 2017).

Over the years, an unceasing increase in globalisation and integration of global financial markets has resulted in a substantial rise in foreign investment and global capital flows (Mbai, 2017). In that regard, the capital and financial account showed a larger surplus in the first quarter of 2016 owing to significant net capital inflows from FDI and other long-term investments although the surplus decreased significantly from quarter to quarter (BoN, 2016). While decreasing investments in Namibian shares precipitated a sharp reduction in FDI in 2009, FDI levels returned in 2010 and remained stable in 2011 despite the continuing global economic downturn (Mbai, 2017). A considerable rise in the third quarter of 2011 resulted in total inflows that were already far higher than any prior year on record and growth was attributable to both the reinvested profits and other capital subcategories (BoN, 2016). Also, the rise under other capital represents money borrowed from the parent firms by Namibian subsidiaries, mostly for capital expenditures. Over the years, portfolio investment outflows continued to exceed inflows, even though this is often the situation in Namibia (BoN, 2011).

According to UNCTAD's 2022 World Investment Report, FDI flows to Namibia increased to USD 412 million in 2021 from USD -156 million the previous year. The overall FDI stock amounted to USD 6.3 billion, or little more than 51.4% of the country's GDP. The industries that have attracted the greatest foreign direct investment in Namibia include mining, tourism,

agriculture, and infrastructure development (Azémar & Giroud, 2023). The mining industry has been a key receiver of FDI where foreign investors are drawn to the country's significant natural resources, such as uranium, diamonds, zinc, copper, and oil, which attract the bulk of FDI (Azémar & Giroud, 2023). In view of the earlier said, China has made substantial foreign investments, particularly in the uranium mining industry of Namibia. Similarly, South Africa has made substantial investments in the diamond mining and banking industries, while Canada has invested in the gold, zinc, and lithium mining industries (Azémar & Giroud, 2023). There are also Spanish and Russian interests in the Namibian fishing sector, while investors from the United Kingdom, the Netherlands, the United States, and other nations have made investments in oil exploration (Azémar & Giroud, 2023).

In a nutshell, this study used foreign investment flows which encompasses both the foreign direct investment and foreign portfolio investment (FPI). Briefly, foreign direct investment refers to the long-term direct investment equity inbound flows in the reporting economy. It is the sum of equity capital, reinvestment of earnings, and other capital. Direct investment is a category of cross-border investment associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy. Ownership of 10 percent or more of the ordinary shares of voting stock is the criterion for revealing the existence of a direct investment relationship, as defined by the World Bank (2023), where the

data are sourced from. Similarly, foreign portfolio investment includes net inflows from equity securities other than those recorded as direct investment and including shares, stocks, depository receipts, and direct purchases of shares in local stock markets by foreign investors (World Bank, 2023). The study employed foreign investment flows to address the weaknesses of early studies (Jacob et al., 2022; Lily et al., 2014; Matsumoto, 2019; Rahman & Bristy, 2015; Yasir et al., 2012), which focused merely on FDI, while neglecting FPI.

2.3. Overview of Foreign Exchange Reserves in Namibia

In Namibia, foreign exchange reserves are the foreign assets, which consist of gold, or a particular foreign currency owned or managed by the central bank, and they serve to mitigate the impact of a foreign currency-liquidity shortage when access to foreign borrowing and credit lines is limited (BoN, 2018). They may also be special drawing rights and marketable assets denominated in foreign currencies, such as treasury bills, government bonds, corporate bonds and stocks, and foreign currency loans (BoN, 2023). In December 2022, Namibia's foreign currency reserves grew to N\$ 47 969 million (Trading Economics, 2023).

In line with section 27 of the Bank of Namibia Act of 1997, BoN is responsible for developing and maintaining foreign reserves comprised of certain external assets (BoN, 2023). As stipulated by the Bilateral Monetary Agreement between the governments of the Republic of Namibia and the Republic of South Africa, the reserve assets are maintained to support the issuance of local

currency (BoN, 2023). According to section 28(2) of the Bank of Namibia Act of 1997, reserves are also maintained to facilitate the financing of the country's overseas transactions (BoN, 2022). In addition to preserving trust in the country's monetary and exchange rate policies, assuring the international community that the government can pay its external commitments, and ensuring the economy's resilience to external shocks, reserves are retained for additional purposes (BoN, 2016). According to the BoN (2016), one of the reasons for retaining reserves is to support the issuance of local currency in accordance with the Common Monetary Area (CMA) agreement and to facilitate the financing of foreign transactions.

In 2016, the country's reserves were more than sufficient to fulfill CMA requirements and maintain the currency peg (BoN, 2006). In terms of the currency peg, the official foreign currency reserves consist of the South African Rand (ZAR), the European Currency Unit (EUR), and the United States Dollar (USD). The reserves are further subdivided into three sub-portfolios or tranches depending on the following threefold objectives (Mbai, 2017). First, the purpose of the working capital tranche is to satisfy the predicted daily liquidity needs or anticipated payments and outflows. Second, the liquidity tranche is intended to fulfill short-term external loan commitments and import coverage due within twelve months. Third, the investment tranche meets the country's medium- and long-term payment demands. This portfolio consists of funds that exceed the working capital and liquidity tranches and seek long-term profits (Mbai, 2017).

As detailed by the Bank of Namibia (2015), foreign currency reserves are handled in very volatile and severe market circumstances. The current relatively low prices for commodities such as oil, copper, and uranium, the European Central Bank's quantitative easing program, and the Swiss National Bank's plan to abandon its currency peg with the Euro all contribute to market instability (Mbai, 2017). In addition, the timing of the Fed rate hike by the Federal Reserve of the United States, slower growth in some of the biggest developing countries, such as China, the Greek debt crisis, and Rand's plunge to 14-year lows versus most major currencies all added to the turbulent markets (Mbai, 2017).

2.4. Overview of the Control Variables

In examining the relationship between foreign investment flows and foreign exchange reserves, the study utilised three control variables, which include exchange rate, real interest rate, and political stability. According to the World Bank (2023), where the data are sourced from, official exchange rate refers to the exchange rate determined by national authorities or to the rate determined in the legally sanctioned exchange market. It is calculated as an annual average based on monthly averages (local currency units relative to the U.S. dollar). In addition, real interest rate is the lending interest rate adjusted for inflation as measured by the GDP deflator. The terms and conditions attached to lending rates differ by country, however, limiting their comparability. Finally, political

stability and absence of violence/terrorism measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism. Percentile rank indicates the country's rank among all countries covered by the aggregate indicator, with 0 corresponding to lowest rank, and 100 to highest rank. Percentile ranks have been adjusted to correct for changes over time in the composition of the countries covered by the WGI. Percentile rank upper refers to upper bound of 90 percent confidence interval for governance, expressed in percentile rank terms.

2.5. Summary

The current chapter presented an overview of the foreign investment flows and foreign exchange reserves in Namibia. Foreign direct investment (FDI) outflow has fluctuated between 2016 and 2021, reaching the highest of USD 98 million in 2018 and the lowest of USD -65 million in 2017. Besides that, foreign direct investment inflow decreased significantly from USD 280 million in 2016 to USD -179 million (lowest) in 2019 and picked up significantly to reach USD 412 million (highest) in 2021. The rise in FDI was due to a high attraction of foreign investors, mainly from China, South Africa, Canada, Russia, Spain, the United Kingdom, the Netherlands, and the United States in Namibia's mining sector, precisely in uranium, diamonds, zinc, copper, oil, the tourism sector, agriculture sector, and infrastructure development.

More to that, foreign exchange reserves play a key role in the rights and marketable assets denominated in foreign currencies and they are retained to support the issuance of local currency in accordance with the Common Monetary Area (CMA) agreement and to facilitate the financing of foreign transactions. In 2016, the overview of foreign exchange reserves showed that Namibia had sufficient reserves to fulfil requirements and maintain the currency peg. In 2022, Namibia's foreign currency reserves grew to N\$ 47 969 million in December 2022. Finally, the chapter also provided an overview of the control variables utilised in the study, which encompass exchange rate, real interest rate, and political stability. Besides that, the chapter that follows provides a comprehensive review of the literature.

CHAPTER THREE

LITERATURE REVIEW

3.1. Introduction

This chapter reviews the theoretical literature and the empirical literature, which have been used to explain the relationship between foreign investment flows and foreign exchange reserves. Firstly, section 3.2 presents theoretical literature, followed by a discussion of the empirical literature in section 3.3 while section 3.4 summarises the chapter.

3.2. Theoretical Literature Review

Within the domain of global economics, the administration of foreign currency reserves has significant importance as a fundamental component of a nation's economic policy toolkit. Foreign exchange reserves act as a safeguard against unexpected events from outside sources, guaranteeing stability in response to changes in the worth of currencies and the movement of capital. Comprehending the factors that influence foreign currency reserves is crucial for policymakers, particularly in growing economies such as Namibia, where the maintenance of sufficient reserves is vital for ensuring economic stability and progress. Foreign exchange reserves are often guided by theoretical frameworks that include several economic theories, such as the Portfolio Balance Theory, the Mundell-Fleming model, and the Political Economy

model. These theories provide significant insights when analysing the nexus between foreign currency reserves, inbound foreign investment flows, real interest rate, exchange rate, and political stability.

3.2.1. The Portfolio Balance Theory

The Portfolio Balance Theory suggests that central banks maintain foreign currency reserves as a component of their comprehensive portfolio to effectively manage risks and diversify investments across various assets (Sharpe, 1964). Based on the notion of this theory, the need for reserves is influenced by many variables, such as the anticipated yield on other assets, the instability of currency exchange rates, and the level of capital mobility (Markowitz, 1991). Greater levels of foreign investment inflows might result in a rise in foreign exchange reserves as the central bank amasses foreign currency to stabilise the value of the local currency (Fabozzi et al., 2008). Therefore, in countries like Namibia where the economy relies heavily on foreign investment, Portfolio Balance Theory posits that an upsurge in inbound foreign investment could result in an augmented need for foreign exchange reserves. This is because the central bank aims to stabilise the currency and reduce fluctuations in the exchange rate.

3.2.2. The Mundell-Fleming Model

The Mundell-Fleming theory elucidates the intricate relationship that exists among capital mobility, fiscal and monetary policies, and exchange rate regimes, as they pertain to the determination of foreign exchange reserve levels

(Fleming, 1962). In that light, Namibia is a country that heavily relies on real interest rates to manage inflation and attract foreign investment. According to the Mundell-Fleming model, fluctuations in real interest rates have the potential to impact the demand for foreign exchange reserves, as well as inbound foreign investment flows (Mundell, 1963). The consequence of a higher real interest rate is that it could incentivize greater infusions of foreign investment, thereby prompting the central bank to augment reserves in an effort to preserve exchange rate stability. In a nutshell, the model elucidates that when the local currency becomes stronger, the central bank may react in the foreign exchange market by acquiring reserves to avoid an excessive increase in the currency's value.

3.2.3. Political Economy Theory

On one hand, political instability has the potential to induce investors to leave and devalue currencies (Acemoglu et al., 2001). As a result, central banks amass reserves as a precautionary measure against speculative assaults and to preserve confidence in the currency. On the other hand, the stability of a country's political situation is a vital factor in determining its foreign currency reserves. Political stability cultivates investor assurance and promotes the influx of foreign investments, since investors regard the nation as a secure and appealing investment hub (Groznykh et al., 2020). Nations that possess stable political climates are more prone to seeing increased levels of incoming foreign investment, which, therefore, may aid in the buildup of foreign currency

reserves (Rodrik, 1999). In Namibia where there is a significance of stable governance, where political stability serves as a critical aspect for attracting foreign investment and promoting economic growth, which highlights the relevance of the Political Economy Theory. These factors serve to fortify reserves and protect against external vulnerabilities.

3.2.4. The Theory of Exchange Rate

Exchange rate movements (purchasing power) play a crucial role, as fluctuations in the exchange rate can affect the valuation of foreign reserves held by the central bank (Bayoumi et al., 1996). Empirical research (Aidoo & Maredza, 2017; Lily et al., 2014; Osigwe & Uzonwanne, 2015; Yasir et al., 2012) has underscored the significance of exchange rate regimes and management in influencing the fluctuations of foreign exchange reserves. Flexible exchange rate regimes reduce the necessity for substantial reserve holdings to maintain currency benchmarks or fixed exchange rates, thereby permitting greater exchange rate flexibility (Bayoumi et al., 1996). The exchange rate regime in Namibia, which is governed by a currency peg (linked to the South African rand), impacts the reserve accumulation strategy of the central bank and its capacity to react to external disturbances.

3.2.5. The Theory of Monetary Policy

The efficacy of monetary policy in shaping foreign exchange reserves is contingent upon the central bank's credibility and independence (Markowitz, 1991). Monetary policy frameworks that are credible have the capacity to influence the demand for reserves by bolstering investor confidence and mitigating the volatility of capital flows through the implementation of transparent communication, defined objectives, and operational independence (Arce et al., 2022). Real interest rates and exchange rates are important control variables that influence the relationship between inbound foreign investment flows and foreign exchange reserves. Real interest rates reflect the opportunity cost of holding reserves, as higher real interest rates may incentivize the central bank to invest in domestic assets rather than accumulating foreign reserves. In that frame of reference, monetary policy institutions in Namibia, where the central bank is responsible for ensuring price stability and the credibility of exchange rates, must maintain their credibility to effectively manage reserves. Besides that, the following section reviews the empirical literature.

In brief, theories related to foreign exchange reserves highlight the complex interplay between inbound foreign investment flows, real interest rates, exchange rates, and political stability. Portfolio Theory emphasizes the role of reserves as a hedge against currency risk, while the Mundell-Fleming Model elucidates the impact of capital flows on exchange rates and reserves. Political Economy Theory underscores the importance of political stability in attracting

foreign investment and maintaining reserves. Real interest rates and exchange rates serve as critical control variables that influence the dynamics of foreign exchange reserves. By considering these theories and control variables, policymakers can better understand the determinants of foreign exchange reserves and formulate appropriate policy measures to ensure economic stability and resilience.

3.3. Empirical Literature Review

In addition to the theory, the literature presents scanty evidence of studies that assessed the relationship between foreign investment inflows and foreign exchange reserves. In that light, several scholars conducted studies relating to foreign direct investment (FDI) flows and foreign exchange reserves (FER).

From the global perspective, Huang and Dennis (2011) conducted a Johansen test of cointegration analysis and the Granger causality test using the data of 1982 - 2008 to determine the relationship between foreign direct investment (FDI) and foreign exchange reserve (FER) in China. The results displayed that there is a long run equilibrium likelihood and significant bi-directional Granger causality between China's FER and FDI. Nonetheless, the study of Huang and Dennis (2011) did not include foreign investment portfolio. In that light, this study includes inbound foreign investment flows, which is a combination of foreign direct investment and portfolio flows.

In Pakistan, Yasir et al. (2012) empirically examined the relationship between Pakistan's broad macro variables, such as foreign exchange reserves, foreign direct investment, and nominal exchange rate, using a sample of 30 annual data sets from 1980 to 2010. The unit root test was utilised to examine the stationarity of data at level or at 1st difference. According to the ADF unit root test, the exchange rate, foreign direct investment, and foreign exchange reserves were stationary at first difference. Thus, for the investigation of long-term relationships, the study used the Johansen cointegration test and the results reveal that a long-term relationship exists between the variables. Therefore, the Vector Error Correction method was utilised to examine the long-run relationship among the variables. Moreover, the results also indicate that the exchange rate has a significant positive effect on foreign exchange reserves, while foreign direct investment has a negligible effect on foreign exchange reserves.

Furthermore, Lily et al. (2014) empirically analysed the foreign direct investment (FDI) and foreign exchange reserves using exchange rate movements relationship using annual data on ASEAN economies, that is, Malaysia, the Philippines, Thailand, and Singapore. Using the ARDL bounds test methodology, the empirical findings demonstrate the existence of significant long-run cointegration between exchange rate and FDI for Singapore, Malaysia, and the Philippines, with all three countries recording negative coefficients, indicating that the appreciation of the Singapore dollar,

Malaysian ringgit, and the Philippine peso has a positive effect on FDI inflows. Using the ECM-based ARDL approach for causality testing, Singapore and the Philippines demonstrate long-run bidirectional causality between exchange rate and FDI, whereas Malaysia demonstrates long-run unidirectional causality from exchange rate to FDI. In addition, this analysis uncovered a short-run unidirectional causal link between the exchange rate and FDI in Singapore. Like the study of Huang and Dennis (2011), the study of Lily et al. (2014) is also delimited to foreign direct investment, while excluding foreign investment portfolio.

In the South Asian Association for Regional Corporation Countries, Rahman and Bristy (2015) examined the impact of foreign direct investment (FDI) flows on six macroeconomic variables using multiple linear regression analysis in Statistical Package for the Social Sciences (SPSS) software, version 16. The macroeconomic variables include gross domestic product (GDP), inflation, current account balance, government revenue, total foreign exchange reserve, and gross capital formation. The data were collected from the World Bank and International Monetary Fund websites over eleven years, from 2002 to 2012. In that light, the results show that as FDI inflows increase, the country's GDP, inflation, government revenue, foreign reserves, and gross capital formation also increase. Moreover, Wang (2019) conducted a study on foreign direct investment (FDI) and foreign exchange reserve (FER) accumulation in emerging economies in East Asia between 1980 and 2017. The scholar adopted

an Instrumental Variables methodology and found a positive relationship between FDI flows and FER. However, these studies (Rahman & Bristy, 2015; Wang, 2019) have also merely focused on FDI, while neglecting foreign investment portfolio.

In Japan, Matsumoto (2019) conducted a quantitative model of a small, open economy to assess the optimal rate of foreign reserve accumulation by emergent and developing nations. According to the model, reserve accumulation depreciates the real exchange rate and attracts foreign direct investment (FDI) inflows, which stimulates productivity growth through endogenous firm dynamics. Additionally, the economy is subject to abrupt halts in the form of occasionally binding restrictions on foreign borrowing, and accumulated reserves are used to prevent severe economic downturns. The model demonstrates that the optimal rate of reserve accumulation is determined by two factors, which include the elasticity of the foreign borrowing spread relative to foreign debt and the entrance cost for FDI entry. The model suggests that these two variables can account for a significant proportion of the cross-country variation in the observed rate of reserve accumulation FDI. Nonetheless, the study of Matsumoto (2019) has also excluded foreign investment portfolio.

In India, Jacob et al. (2022) employed the unit root test to detect the stationary of the data running from 1995 to 2020 and a Vector Error Correction Model to

estimate the relationship between foreign portfolio investment and exchange rate. The results show that foreign portfolio investment, foreign direct investment, the index of industrial production, the interest rate, and the wholesale price index have a positive impact on the exchange rate. Nonetheless, the study of Jacob et al. (2022) treated exchange rate as the dependent variable, while excluding foreign exchange reserves.

Groznykh et al. (2020) conducted a study to determine the effect and influence of different measures of political stability on foreign direct investment inflows using the Pseudo Poisson Maximum Likelihood (PPML) regression. The research was based on a database of cross-country FDI inflows for 66 FDI-importing nations and 98 FDI-exporting countries from 2001 to 2018. The results show that political stability attracts inbound foreign direct investment in most countries, leading to an increase in foreign exchange reserves.

From the continental perspective, Osigwe and Uzonwanne (2015) used the Granger causality between Nigeria's foreign reserves, exchange rate, and foreign direct investment to establish the causal relationship among these variables. According to the results of the augmented Dicky-Fuller and Philip-Perron unit root test for stationarity of the variables, all the variables were non-stationary at levels, but stationary after the first difference. Thus, the study performed a Johansen co-integration test, and the results revealed the variables'

long-run relationship. Moreover, the results of the Granger causality test suggested a unidirectional causal relationship between exchange rates and foreign reserves. From lag one to lag two, a unidirectional causal relationship existed between foreign direct investment and foreign reserves. At lag three, bidirectional causality between foreign reserves and foreign direct investment was discovered. In lag one and three, evidence of unidirectional causality from exchange rate to foreign direct investment was discovered, while at lag two, there was no causality between the pair.

In Algeria, Bourenane et al. (2022) used the Auto-Regressive Distributed Lag (ARDL) Error Correction Model (ECM) model to analyse the influence of foreign currency reserves on foreign direct investment in Algeria for the period 1990-2020. The ARDL model demonstrated that the variables are co-integrated. In addition, the result reveal that foreign currency reserves have a favourable effect on foreign direct investment at a rate of 44% only over the long term. However, the study of Bourenane et al. (2022) treated FDI as the dependent variable and did not cover foreign portfolio investment.

From the national perspective, there remains a paucity of studies that addressed the phenomenon. In that view, Mbai (2017) examined the relationship between foreign investment flows and foreign exchange reserves in Namibia from 2005Q₂ to 2016Q₄ using unit root test techniques and simple regression

methods to analyse the data. According to the Augmented Dickey-Fuller (ADF) results, the two variables were all stationary at level forms, indicating that they are zero-order integrated. The regression results uncovered a strong positive and statistically significant relationship between foreign investment flows and foreign exchange reserves. Nevertheless, the study of Mbai (2017) used a weak model that did not consider the control variables, which may influence the results, as guided by the theories. Furthermore, the study did also not assess the direction of causality between the variables.

Thus, the direction of causality between foreign investment flows and foreign exchange reserves is still unknown from the national perspective, which implies a knowledge gap according to the motion of Miles (2017) on research gaps. To address that, the present study was conducted to examine the relationship between foreign investment flows and foreign exchange reserves using a multiple regression model by incorporating exchange rate, real interest rate, and political stability, as the control variables and further establish the direction of causality.

3.4. Summary

This chapter reviewed the literature. The chapter highlighted the theories that inform the study as the Portfolio Balance Theory, The Mundell-Fleming Model, the Political Economy Theory, the Theory of Exchange Rate, and the Theory

of Monetary Policy. Furthermore, the chapter reviewed the empirical literature. In that regard, evidence from the comprehensive review of the literature highlight a paucity of studies that addressed the relationship between inbound foreign investment flows that combines FDI and foreign investment portfolio and foreign exchange reserves and assessed the direction of causality. Briefly, prior studies (Jacob et al., 2022; Lily et al., 2014; Matsumoto, 2019; Rahman & Bristy, 2015; Yasir et al., 2012) from Nepal; the Philippines, Thailand, and Singapore; Japan; South Asian Association for Regional Corporation Countries; and Pakistan have focused merely on FDI, while neglecting foreign portfolio investment. Moreover, Jacob et al. (2022) in India treated exchange rate as the dependent variable and excluding foreign exchange reserves. Relying on the postulation of Miles (2017) on research gaps, this indicates a practical knowledge gap in the literature.

In addition, these studies used VECM and SPSS analytical approaches. Nonetheless, evidence from Africa, precisely the study of Bourenane et al. (2022) in Algeria that used the ARDL model treated FDI as the dependent variable and excluded foreign portfolio investment. According to the notion of Miles (2017) on research gaps, this indicates a methodological gap in reference to the relationship between inbound foreign investment flows in terms of FDI and foreign portfolio investment and foreign exchange reserves.

Finally, while a similar study conducted in Namibia by Mbai (2017) reveals a strong positive relationship between foreign investment flows and foreign exchange reserves, the used a simple model that did not include control variables, as advised by theory. Furthermore, the study did also not assess the establish the direction of causality. Based on the taxonomy of Miles (2017) on research gaps, this signifies an empirical gap in the literate since the available studies (Huang & Dennis, 2011; Osigwe & Uzonwanne, 2015) that measured causality focused on China and Nigeria, respectively. However, the findings from other countries such as China in a different continent and Nigeria in West Africa cannot be generalised to Namibia because of the differences in macroeconomic factors between the countries, such as population size, economic growth level, and other aspects. Otherwise, generalising the findings to Namibia equates to providing spurious results, which will mislead policymakers in devising policies for that fits the nature of the country.

Hence, this study was conducted to examine the relationship between foreign investment flows and foreign exchange reserves in Namibia using exchange rate, real interest rate, and political stability, as the control variables and employed the ARDL model to address the practical knowledge and methodological gaps in the literature. The study was also conducted to establish the direction of causality, which addresses the empirical gap in the literature. Having noted that, the following chapter describes the research methodology adopted in the study.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1. Introduction

This study sought to empirically establish the relationship between foreign exchange reserves (FER) and foreign investment flow (FIF) in Namibia with exchange rate (EXR), real interest rate (RIR), and political stability (POLSTB) as the control variables. To attain that, this chapter provides the methodological approaches applied in this study. The chapter begins with the research design, followed by the empirical framework and model specification, a description of data analysis procedures, and a detailed explanation of the model's efficacy. In that light, the following subsection presents the research design of the study.

4.2. Data and Data Collection

The study used macroeconomics time series data for a period of 32 years running from 1991 to 2022. The study picked this period because the data for some variables like foreign portfolio investment and political stability were not readily available before 1991. The variables include foreign exchange reserves, which is measured as total foreign exchange reserves in current U.S. dollars and treated as the dependent variable. Inbound foreign investment flows are treated as the independent variable, covering both the long-term foreign direct investment, which is measured in current U.S. dollars as net inflows (BoP,

current US\$), as well as long-term foreign portfolio investment, which measured in current U.S. dollars as portfolio equity, net inflows (BoP, current US\$). Furthermore, the control variables include the exchange rate, which is measured as official exchange rate (local currency units relative to the U.S. dollar, period average), real interest rate, which is measured in percentage and adjusted for inflation as measured by the GDP deflator, and political stability, which is expressed in percentile rank terms as political and absence of violence/terrorism (upper bound of 90% confidence interval). Finally, the study collected the data from the World Bank database and supplemented it with the data from Bank of Namibia.

4.3. Empirical Framework and Model Specification

This research used the Autoregressive Distributed Lag Error Correction Model (ARDL-ECM) method to estimate the short-run and long-run relationships between foreign exchange reserves (FER) and foreign investment flows (FIF) in Namibia, with exchange rate (EXR), interest rate (RIR), and political stability (POLSTB) as the control variables. By doing so, the study addressed the methodological gap in the literature, given a paucity of similar studies that applied the same model. Precisely, the study of Bourenane et al. (2022) in Algeria that used the ARDL model treated FDI as the dependent variable and excluded foreign portfolio investment, while the study of Mbai (2017) used a simple model without control variables. In that view, the study determines the model's function as follows:

$$FER = f(EXR, RIR, POLSTB, FIF) \dots \dots \dots (3.1)$$

Hence, the study determined the econometric model as follows:

$$\ln FER = \beta_0 + \beta_1 \ln EXR + \beta_2 \ln RIR + \beta_3 \ln POLSTB + \beta_4 \ln FIF + \mu_t \dots \dots \dots (3.2)$$

In the model (equation 3.2), FER represents foreign exchange reserves, which is the dependent variable, β_0 is the constant, EXR is exchange rate, RIR is real interest rate, and POLSTB represent political stability, which are the control variable. In addition, FIF is the foreign investment flows, which is the independent variable, constituting both the inbound long-term foreign direct investment and foreign portfolio investment. Finally, β_1 , β_2 , β_3 , and β_4 are the coefficients of EXR, RIR, POLSTB, and FIF, respectively, μ is the error term, while t stands for the time period. The following section describes the data analysis procedures of the study.

4.4. Data Analysis

To analyse the data, the study used various econometrics analytical tools in EViews software, version 9. These analytical tools include descriptive analysis, lag length criteria determination, the unit root test, cointegration test and the ARDL-ECM test, the Ramsey’s RESET model specification test, the serial

correlation test, the stability test, and the Granger causality test, as detailed in the following subsections, starting with descriptive analysis.

4.4.1. Descriptive analysis

The study performed descriptive analysis to determine the nature of the data prior to the analysis, which is crucial in either quantitative or qualitative research, as they determine the structural properties of the data (Jacob *et al.*, 2022; Nautwima and Asa, 2022). The mean is the average of the data set, the median is the middle number after sorting data ascending or descending, and the mode is the most common value. All three measures are necessary for determining the central tendency. In addition, the standard deviation, maximum, and lowest values quantify dispersion or the degree to which data diverge from the mean. Normal skewness is symmetrical in all directions (has a zero symmetric) around the mean. According to the rule of thumb, the data are normally distributed when the absolute value of skewness is less than 3.

Similarly, kurtosis measures the peak and flatness of the series distributions, where a normal distribution has an absolute value smaller than 3 (Kline, 2011). If the kurtosis value of a series is positive, the variable has more extreme values than the mean, while a negative value suggests extremely low values than the mean. The Jarque-Bera test analyses the data's normality based on the degree of likelihood. In this regard, the data are normally distributed when the

probability value surpasses 5% (Jacob *et al.*, 2022). As there were no missing data, the research examined the nature of the data using a common sample technique.

4.4.2. Lag length criteria

The study determined the optimum number of lags for each variable, which is crucial for assuring the model's goodness of fit (Shrestha & Bhatta, 2018). The lag length was calculated using the VAR model. In that regard, the rule of thumb indicates that the criterion with the lowest value should be used to determine the lag length criteria, which in most cases is the Akaike Information Criterion (AIC) (Gujarati, 2004). Thus, the study relied on the determined optimum number of lags to determine the subsequent analyses such as the cointegration test and Autoregression Distributed Lags model.

4.4.3. Unit root test

After the preliminary analysis of the data and determination of the optimum lag, the study conducted a unit root test for stationarity of the data. According to Gujarati (2004), a unit root test is essential to check for trends in time series variables. Therefore, to ascertain if the data are stationary or not, the unit root test was performed. In that light, the study used the unit root test to identify the order of integration between the variables, whether they are integrated of order zero $I(0)$ or one $I(1)$, or higher order of integration $I(n)$. Considering that,

a stationary variable has a mean of zero, a variance that remains constant across time, and a covariance that includes an error factor with a mean of zero while the unit root is present in non-stationary variables (Phiri et al., 2020). Consequently, there will be an issue with erroneous regression estimated results if the variables are regressed without establishing the order of trends and without differentiating the variables when the data are non-stationary or have a unit root (Nautwima et al., 2023). Therefore, variables must be differentiated when there is a unit root present before the regression estimate.

Moreover, when the data are stationary at level form, then the fundamental Ordinary Least Square (OLS) regression is carried out to estimate the short-run relationship between dependent and independent variables using the Autoregressive Distributed Lag (ARDL) model (Nautwima and Asa, 2021; Phiri et al., 2020). However, if the data become only stationary after differentiation, then a cointegration test should be done to determine if the data are cointegrated in the long run. In that light, the Johansen test of cointegration is used when the variables are all integrated of the same order, either order zero [I(0)] or one [I(1)], and not mixed (Johansen & Juselius, 1990), while the Bound test of cointegration can be used when the variables are integrated of mixed orders, order zero [I(0)] and one [I(1)]. In this investigation, the Augmented Dicky-fuller (ADF) was used to conduct unit root, which is specified as follows:

$$\Delta y_t = b_0 + b_1 t + b_2 y_{t-1} + u_t \quad (\text{Model with constant and trend})$$

..... (3.3)

$$\Delta y_t = b_0 + b_2 y_{t-1} + u_t \quad (\text{Model with constant but no trend})$$

..... (3.4)

$$\Delta y_t = b_2 y_{t-1} + u_t \quad (\text{Model excludes both constant and trend})$$

..... (3.5)

These unit root equations (3.3, 3.4, and 3.5) demonstrate three different unit root tests, where Δ denotes the difference operator even if a variable may be differentiated more than once. In addition, there are several methods to represent the model specification for the unit root. The model may take into account both constant and trend, just constant, or neither constant nor trend. In that regard, the unit root hypotheses are detailed as follows:

H₀: Variables are non-stationary (have a unit root)

H₁: Variables are stationary (have no unit root)

The study relied on the t-test and the p-values to test the unit root test hypotheses. That being so, the null hypothesis is rejected in favour of the alternative hypothesis when the t-calculated value exceeds the t-critical value and when the p-value is less than a 5% significance level (Nautwima and Asa, 2021; Phiri et al., 2020). Otherwise, the null hypothesis cannot be rejected. Besides that, the following section details the cointegration test.

4.4.4. Co-integration and short-run estimation

Time series data were used in this research. According to Shrestha and Bhatta (2018), variables with such data are likely to be found cointegrated with mixed orders of cointegration, I(0) and I(1). Hence, to determine if the variables in the

model have a long-run relationship, a cointegration test must be performed (Peracchi, 2001). In this view, the overall sequence of integration specifies the cointegration test to be conducted (Phiri et al., 2020). This study used the Bound test of cointegration, which is appropriate for mixed orders of integration (Pesaran et al., 2001) and it eliminates the limitations of Engle and Granger (1987) and Johansen and Juselius (1990), which limit the cointegration steps to variables with the same order of integration $I(1)$ (Phiri et al., 2020). That is, despite the variables' uncertain order of integration, either purely $I(0)$, strictly $I(1)$, or a mix of $I(0)$ and $I(1)$, which is incompatible with standard techniques, the Bound test of cointegration may still be utilised. When there is no cointegration, the short-run estimation should be performed with the ARDL model, while when there is cointegration, the Error Correction Model (ECM) should be run to estimate the rate of adjustment between the variables (Nautwima and Asa, 2021; Phiri et al., 2020).

In that sense, the study specified the cointegration hypotheses as follows:

H_0 : No long-run relationships exist (variables are not cointegrated).

H_1 : Long-run relationships exist (variables are cointegrated).

Given that, the decision rule is to reject the null hypothesis (H_0) when the F-statistics value is greater than both the lower bound $I(0)$ and upper bound $I(1)$.

Otherwise, fail to reject H_0 if the F-statistics value is less than the lower bound.

Besides that, when the F-statistics value falls between the lower bound and the upper bound, the relationship between the variables is inconclusive (Nautwima and Asa, 2021).

In that context, this study used the Autoregression Distributed Lags (ARDL) model, which is a common econometric method to examine the short-run relationship between the variables (Finger, 2008). The idea behind the ARDL technique is that once the order of the ARDL is established, Ordinary Least Squares (OLS) may be used to estimate the short-run relationship between the variables (Pesaran et al., 2001). The following is a description of the generic ARDL model:

$$\Delta \ln Z_t = \alpha_0 + \sum_{i=1}^n \alpha_i \Delta \ln \chi_{t-1} + \sum_{i=1}^n \beta_i \ln \chi_{t-1} + \varepsilon_t \dots \dots \dots (3.6)$$

Therefore, the ARDL model is specified as follows:

$$\begin{aligned} \Delta \ln FER_t = & \alpha_0 + \sum_{i=1}^n \alpha_1 \Delta \ln FER_{t-1} + \sum_{i=1}^n \alpha_2 \Delta \ln EXR_{t-1} + \\ & \sum_{i=1}^n \alpha_3 \Delta \ln RIR_{t-1} + \sum_{i=1}^n \alpha_4 \Delta \ln POLSTB_{t-1} + \sum_{i=1}^n \alpha_5 \Delta \ln FIF_{t-1} + \\ & \beta_1 \ln FER_{t-1} + \beta_2 \ln EXR + \beta_3 \ln RIR_{t-1} + \beta_4 \ln POLSTB_{t-1} + \\ & \beta_5 \ln FIF_{t-1} + \varepsilon_t \dots \dots \dots (3.7) \end{aligned}$$

In equation 3.7, n is the number of optimum lag length, Δ is the difference operator, $(\alpha_1 - \alpha_5)$ represent the coefficients of the long-run relationship, $(\beta_1 - \beta_5)$ represent the short-run dynamic model coefficients, α_1 is the drift component while ε_t is the white noise error-term. That being so, the study specifies the regression hypotheses as follows:

$\mathbf{H}_0: = \beta_1 = \beta_2 = \beta_3 = 0$, there exists no long relationship between the variables.

$\mathbf{H}_1: \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq 0$, there exists a long relationship between the variables.

4.4.5. Error Correction Model (ECM) on ARDL form

Performing the error correction model (ECM) depends on the results of cointegration test. In that frame of reference, the ECM is conducted when there exists a long-run relationship between the variables. Therefore, the ECM is specified as follows:

$$\begin{aligned} \Delta \ln FER_t = & \alpha_0 + \sum_{i=1}^n \alpha_1 \Delta \ln FER_{t-1} + \sum_{i=1}^n \alpha_2 \Delta \ln EXR_{t-1} + \\ & \sum_{i=1}^n \alpha_3 \Delta \ln RIR_{t-1} + \sum_{i=1}^n \alpha_4 \Delta \ln POLSTB_{t-1} + \sum_{i=1}^n \alpha_5 \Delta \ln FIF_{t-1} + \\ & \gamma ECM_{t-1} + \varepsilon_t \dots \dots \dots (3.8) \end{aligned}$$

3.4.5. Model efficacy test

The study assessed the model's efficacy in terms of the model specifications, serial correlations, heteroskedasticity, and stability. For test the accuracy of the linear regression model specification, the study used the Ramsey RESET test. This test is essential to determine that there is no functional form misspecification in the model. In that regard, the hypotheses of the Ramsey RESET test are specified as follow:

H₀: The model is correctly specified, meaning that there is no functional form misspecification.

H₁: The model is not correctly specified, meaning that there is functional form misspecification.

The decision rule is to reject the null hypothesis (H_0) if the p-value associated with the RESET test is less than 0.05.

Furthermore, to test whether the model is suffering from serial correlation, the study used the Breusch-Godfrey test for serial correlation. In this sense, the null hypotheses for the Breusch-Godfrey test are as follows:

H₀: There is no serial correlation in the model.

H₁: There is a serial correlation in the model.

The decision rule is to reject the null hypothesis if the F-statistic falls below a 5% significance level of significance.

In addition, the study performed heteroskedasticity to measure the model's efficiency using the ARCH test for heteroskedasticity, which is generally popular in linear regression analysis, as it regresses the squared residuals on lagged squared residuals and a constant. The hypotheses are as follows:

H₀: There is no heteroskedasticity (there is homoskedasticity).

H₁: There is heteroskedasticity (there is no homoskedasticity).

The decision rule is to reject the null hypothesis if the probability value of the F-statistic is less than 5%. Otherwise, fail to reject the null hypothesis.

Regarding the model's stability, the research employed the combination of the Cumulative Sum of Recursive Residuals (CUSUM) test and the CUSUM of squares test at a significance level of 5%, which are crucial for short-run correlations to guarantee the stability of the model (Nautwima and Asa, 2021).

In that view, the study specified the hypotheses of the stability test as follows:

H₀: The mode is not stable.

H₁: The model is stable.

Given that, the model is deemed stable when its standard deviation falls below 5%. Hence, the null hypothesis for the CUSUM and CUSUM of squares tests is rejected when the model's standard deviation falls within 5%.

4.5. Unrestricted Granger causality test

In general, if the previous data of X aids in the prediction of Y, it is said that X Granger causes Y, given that $Y=f(X)$ (Amornbunchornvej et al., 2019). This study applied the pairwise Granger causality test to establish the direction of the relationship between the foreign exchange reserves (dependent variable) and interest rate and foreign investment flow (independent variables). Based on the notion of Granger (1969), the Granger causality equations are simplified as follows:

$$FER_t = + \sum_{i=1}^n a_i \chi_{t-i} + \sum_{j=1}^m \beta_j FEF_{t-j} + \varepsilon t_1 \dots \dots \dots (3.9)$$

$$X_t = \sum_{i=1}^n \lambda_i \chi_{t-i} + \sum_{j=1}^m \delta_j FER_{t-j} + \varepsilon t_2 \dots \dots \dots (3.10)$$

In the equations (3.9 and 3.10), α_i , β_i , λ_i , and δ_j are the coefficients, FER_t is foreign exchange reserves and X_t , represents the independent variables. Similarly, εt_1 and εt_2 are error terms that capture other variables that are not included in the equation but do affect the variables to be tested, t denotes the period. The lag length is denoted by "i" and "j", while n and m are the numbers of lags in the model. Regarding that, the study specified the hypothesis for the Granger causality test as follows:

H₀: X (Foreign investment flows) do not Granger cause Y (foreign exchange reserves).

H₁: X (Foreign investment flows) do Granger cause Y (foreign exchange reserves).

In that light, the null hypothesis is rejected when the p-value is less than 0.05 at a 5 percent level of significance. Besides that, the following chapter presents the empirical analysis and results.

The ethical clearance certificate (see Appendix: 1) was awarded by the University of Namibia's Decentralized Research Ethics Committee (DEC) in carrying out this research.

4.6. Summary

This chapter provided a description of the research methodology. The chapter detailed that the study employed macroeconomic time series data for foreign exchange reserves (dependent variable), foreign investment flows (independent variable) in terms of foreign direct investment and foreign portfolio investment, as well as exchange rate, real interest rate, and political stability (control variables). The chapter also highlighted that the data collected from the World Bank database, as well as the Central Bank of Namibia and covered the period of 32 years from 1991 to 2022. The chapter further elaborated that the study performed descriptive analysis and determined the optimum number of lags before commencing with in depth analysis. In addition, the chapter underscored that the study performed the unit root test to determine stationarity of the data,

cointegration test to test whether a long-run relationship exists between the variables, as well as the ARDL-ECM model to estimate short-run and long-run relationships. Subsequently, the chapter detailed that the study measured the model efficacy and finally performed the unrestricted Granger causality test to establish the direction of causality. On that note. The following chapter presents the empirical analysis and results.

CHAPTER FIVE

EMPIRICAL ANALYSIS AND RESULTS

5.1. Introduction

This chapter analyses the data to present empirical findings of the relationship between foreign exchange reserves (FER) and foreign investment flow (FIF) in Namibia, using exchange rate (EXR), real interest rate (RIR), and political stability (POLSTB) as the control variables. In detail, the chapter begins with descriptive analysis, followed by the determination of the appropriate lag length, unit root test, cointegration test, long run and short run estimations, model efficacy test, and granger causality tests.

5.2. Descriptive Analysis

This section provides a brief introduction to descriptive statistics to understand the nature of the data prior to the analyses. This is essential in determining the

structural properties of the data (Jacob et al., 2022; Nautwima & Asa, 2022). In that light, the research examined the nature of the data using a common sample technique since there were no missing data, and the results are presented in Table 5.1.

Table 5.1: Descriptive analysis results

	LNFER	LNEXR	LNRIR	LNPOLSTB	LNFIF
Mean	20.1597	1.9962	1.4081	4.4366	19.4904
Median	19.7915	1.9899	1.5561	4.4567	19.5075
Maximum	21.7541	2.7946	2.7970	4.6052	20.6554
Minimum	17.7219	1.0157	-2.3228	4.0819	17.8469
Std. Dev.	1.1924	0.4991	1.0754	0.1393	0.8446
Skewness	-0.3141	-0.3275	-1.6885	-1.1672	-0.2302
Kurtosis	2.1020	2.3633	1.6776	2.9607	1.8794
Jarque-Bera	1.4013	0.9734	29.0831	7.4344	1.7122
J-B Probability	0.4963	0.6147	0.0678	0.06243	0.4248
Sum	564.4718	55.8925	39.4257	124.2236	545.7314
Sum Sq. Dev.	38.3861	6.7247	31.2262	0.5238	19.2624
Observations	31	31	31	31	31

Source: Author's compilation (2023)

As shown in Table 5.1, the average foreign exchange reserves (FER) were US\$ 20.1597 between 1991 and 2022 with a minimum of US\$ 17.7219 and a maximum of US\$ 21.7541. For exchange rate (EXR), the average between the same period was US\$ 1.9962 with a minimum of US\$ 1.0157 and a maximum of US\$ 2.7946. In addition, the average real interest rate (RIR) during the same period was 1.4081%, the minimum was -2.3228%, while the maximum was 2.7970%. Similarly, political stability (POLSTB) had an average of 4.4366 points with a minimum and maximum of 4.0819 points and 4.6052 points, respectively. Finally, inbound foreign investment flows (the combination of foreign portfolio and foreign direct investment) (FIF) had an average of US\$

19.4904 with corresponding minimum and maximum of US\$ 17.8469 and US\$ 20.6554.

In terms of the normality of the data, the results presented in Table 5.1 show that the skewness and kurtosis values for all the variables are less than 3 in absolute values. Also, the probability values of the Jarque-Bera for all the variables are greater than 0.05. In brief, these results imply that the data are normally distributed. Hence, the applicability of linear test. The following section determines the number of optimum lags.

5.3. Lag Length Criteria

Before estimating the cointegration and the ARDL model, the study determined the optimal number of lags, which is crucial for assuring the model's goodness of fit (Shrestha & Bhatta, 2018). In doing so, the research applied the vector autoregression (VAR) model, and the corresponding number of lags is shown by an asterisk (*) in Table 5.2.

Table 5.2: Lag length criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-61.1117	NA	0.00017	5.509311	5.754739	5.574423
1	17.03337	117.2177	0.000002	1.080552	2.55312	1.471225
2	59.00445	45.4687*	7.13e-07*	-0.3337*	2.366003*	0.382529*

* Indicates lag order selected by the criterion

Source: Author's extraction from the analysis (2023)

The results based on the sequential modified LR test statistic (each test at 5% level) (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information (SC) Criterion, and Hannan-Quinn Information Criterion (HQ) indicate that the optimal number of lags is 2. As a result, the study based its analyses on 2 lags to ensure the precision of the estimations. Following this section is the test of the data's stationarity.

5.4. Unit Root Test

This research employed a combination of the Phillips-Perron (PP) test and the Augmented Dicky-Fuller (ADF) test to ensure robustness of the unit root test. The study conducted this analysis to make sure that the variables are not integrated with order two [I(2)]. Nonetheless, before opening with unit root testing, a pre-analysis was conducted on each variable to determine the degree of statistical significance of the constant and trend, which gives guidance about whether they should be included in the model or not. At a 5% level of significance, both constants and trends were found to be statistically significant for all the variables (LNFER, LNEXR, LNRIR, LNPOLSTB, and LNFIF). Thus, the model included both the constant and trends for all the variables when testing for stationarity. After this, a unit root test was conducted to identify the order of integration and Table 5.3 presents the results.

Table 5.3: Unit Root Test Results

Variable	Phillips-Perron Test		Augmented Dickey-Fuller Test		Decision
	Levels	1st Difference	Levels	1st Difference	
LNFER	0.322	0.004	0.061	0.004	I(1)
LNEXR	0.472	0.018	0.193	0.012	I(1)
LNRIR	0.001	0.000	0.009	0.000	I(0)
LNPOLSTB	0.147	0.000	0.206	0.000	I(1)
LNFIIF	0.284	0.000	0.251	0.001	I(1)

Source: Authors' compilation (2023)

Source: Author's compilation (2023)

Unit root testing hypotheses

H₀: The data are not stationary (have unit root)

H₁: The data are stationary (have no unit root)

Decision rule: Reject H₀ when the p-value is less than 5% significance level.

As displayed in Table 5.3, only LNRIR has yielded p-values less than 0.05 in level forms I(0) and after the first difference I(1) for both the PP and ADF tests. This indicates that the data are level-stationary, which necessitates a short-run relationship assessment. Based on these results, the study rejected the null hypothesis related to stationarity of LNRIR to illustrate that the data had no unit root at level forms. Nonetheless, the p-values for LNFER, LNEXR, LNPOLSTB, and LNFIIF are all exceeding 0.05 in level forms for both the ADF and PP tests. This indicates that data are not stationary in level forms. Thus, the study failed to reject the null hypotheses for LNFER, LNEXR, LNPOLSTB,

and LNFIF at levels, indicating the need for differentiation. After the first difference $I(1)$, all the p-values reduces to less than 0.05 for both the PP and ADF tests, indicating that the data are stationary at the first difference and a cointegration test is necessary.

Overall, these results demonstrate that the mix orders of integration, highlighting the need of using the Bound to measure cointegration since it is appropriate for data with mixed orders of integration (Pesaran et al., 2001). These findings contradict the findings of Yasir et al. (2012), and Huang and Dennis (2011), which found all the variables to be stationary after first differentiation, enabling the researchers to use the Johansen test of cointegration. Besides that, the section that follows measures cointegration using the Bound test.

5.5. Bound Test of Cointegration

Following the results of the unit root test stated in the previous section, evidence indicates that the variables are stationary under mixed orders of integration. That is, integration at level form $I(0)$ for LNRIR and integration at first difference $I(1)$ for LNFER, LNEXR, LNPOLSTB, and LNFIF. Thus, the study applied the Bound test to test for cointegration, which is fits well to data with mixed orders of integration (Pesaran et al., 2001). The The results are displayed in Table 5.4.

Table 5.4: Bound test of cointegration results

F-statistics	Significance level	Lower Bound	Upper Bound	Conclusion
		I(0)	I(1)	
5.190	10%	1.900	3.010	Cointegration
	5%	2.260	3.480	
	1%	3.070	4.440	

Source: Author’s compilation (2023)

Bound test of cointegration hypotheses

H₀: No long-run relationship between the dependent variable and the independent variables.

H₁: Long-run relationships exist between the dependent variable and the independent variables.

Decision rule: Reject H_0 when the F-statistics is greater than both the lower bound $I(0)$ and upper bound $I(1)$. Otherwise, fail to reject H_0 .

Table 5.4 displays the results of the Bound test of cointegration. The F-statistic value is 5.190. This value exceeds both the lower bound $I(0)$ at 10% (1.900), 5% (2.260), and 1% (3.070), as well as the upper bound $I(1)$ at 10% (3.010), 5% (3.480), and 1% (4.440). Therefore, the results indicate that there is cointegration between the variables. Hence, the study rejected the null hypothesis to signify that there is a long-run relationship between the dependent variable and the independent variables. Overall, these results support the

findings of Huang and Dennis (2011), Osigwe and Uzonwanne (2015), and Yasir et al. (2012), which reveal a long-run relationship between FDI and FER in China, Nigeria, and Pakistan, respectively. Based on that, the next section that follows estimates the long-run and short-run relationships between the variables.

5.6. ARDL long-run and short-run estimations

Following the unit root test results that demonstrate no long-run relationship between LNFER and LNRIR, as well as the results of cointegration test, which reveal a long-run relationship between LNFER and LNFER, LNEXR, LNPOLSTB, and LNFIF, the study used the Autoregression Distributed Lags (ARDL) model to estimate both long-run and short-run relationship between the variables. Also, in accordance with the unit root test results that LNRIR is stationary in level forms while LNFER, LNEXR, LNPOLSTB, and LNFIF are stationary after the first difference, the study estimated LNRIR based on its logged data, while LNFER, LNEXR, LNPOLSTB, and LNFIF were based on the differentiated data. In this context, Table 5.5 displays the long-run and short-run estimations, where $D(LNFER)$ is treated as the dependent variable.

Table 5.5: ARDL long-run and short-run estimation results

Dependent variable (LNFER) – Long-run				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.050	0.093	0.540	0.604
D(LNFER(-1))	0.599	0.212	2.822	0.022
D(LNFER(-2))	0.117	0.180	0.651	0.534
D(LNEXR(-1))	-0.114	0.435	-0.262	0.800
D(LNEXR(-2))	-0.505	0.437	-1.156	0.281
LNRIR(-1)	0.079	0.049	1.629	0.142
LNRIR(-2)	0.052	0.038	1.361	0.211
D(LNPOLSTB(-1))	0.857	0.407	2.107	0.068
D(LNPOLSTB(-2))	0.609	0.466	1.306	0.228
D(LNFIF(-1))	0.001	0.104	0.005	0.996
D(LNFIF(-2))	0.250	0.091	2.757	0.025
ECM(-1)	-0.855	0.148	-5.774	0.000
Dependent variable (LNFER) – Short-run				
LNRIR(-1)	-0.073	0.053	-1.379	0.193
LNRIR(-2)	-0.034	0.058	-0.582	0.571
R-squared	0.976			
Adjusted R-squared	0.956			
F-statistic	48.839			
Prob(F-statistic)	0.000			

Source: Author's compilation (2023)

As shown in Table 5.5, the signs of the coefficients disclose the direction of the relationship, with a positive sign suggesting a direct relationship and a negative sign indicating an inverse relationship. In the model, the error correction model (ECM) is the speed of adjustment and theory advises that it is expected to be

negative and statistically significant (Pesaran et al., 2001). In that context, the ECM coefficient is -0.855, denoting the rate at which the model transitions from short-run dynamics to long-run equilibrium. More specifically, it signifies the degree to which fluctuations in the long-run equilibrium relationship among the regressors (LNFER, LNEXR, LNPOLSTB, and LNFIF) in the model influence the adjustment of the dependent variable (LNFER). That is, when LNFER experiences a deviation from its long-run equilibrium level, it will revert back to the equilibrium level at an approximate rate of -0.855 units per period. Furthermore, the ECM is statistically significant, given its t-statistic value of -5.774 (exceeding 2.96 in absolute value) and its p-values of 0.000, which is less than 0.05. This indicates that the model promptly corrects deviations from the long-run equilibrium at which LNFER adjusts to its equilibrium level, which underscores the importance of short-term deviations from this equilibrium in determining the rate at which adjustment occurs.

In addition, c represents the constant of 0.050, which is not statistically significant at a 5% level of significance, given a p-value of 0.604, which exceeds 0.05. This indicates that, in the long run, LNFER stands at 5 percent when LNFER, LNEXR, LNRIR, LNPOLSTB, and LNFIF are equal to zero, holding everything else constant.

In terms of the impact measure, theories advise that foreign exchange reserves can influence their own level. In accordance with the precautionary demand for reserves, nations may amass reserves to fulfil international obligations or as a safeguard against external disruptions (Krušković & Maričić, 2015). Hence, LNFER is expected to positively influence its own level. As evident in Table 5.5, the results indicate that the past realisation of LNFER is associated with a corresponding average rise of 59.9 percent in lag 1 of LNFER, which is statistically significant ($p = 0.022$) and 11.7 percent in lag 2 of LNFER, which is not statistically significant ($p = 0.534$), *ceteris paribus*. These results are consistent with the notion of precautionary demand for reserves, where foreign exchange reserves serve as a buffer against external shocks and as a precautionary measure for economic stability.

Regarding exchange rate, the Mundell-Fleming model states that high exchange rate (appreciation) reduces foreign currency reserves (Fleming, 1962; Mundell, 1963). Therefore, the impact of LNEXR is expected to be negative. Based on the findings in Table 5.5, evidence shows that a 1% increase in LNEXR leads to a decrease of 11.4 percent and 50.5 percent in lag 1 and lag 2 of LNFER, respectively, holding everything else constant. While these results are supporting the Mundell-Fleming model (Fleming, 1962; Mundell, 1963), they are however, not statistically significant. Also, these findings conform the empirical evidence of Yasir et al. (2012), which show positive impact of

exchange rate on foreign exchange reserves in Pakistan using the Vector Error Correction Model (VECM).

In reference to real interest rate, the interest rate parity theory posits that high interest rate reduces foreign exchange reserves, as the central bank reallocates its assets to domestic investments (Chinn, 2006). Hence, LNRIR is expected to have negative impacts on LNFER. As emerged from the analysis, the results show that when LNRIR increases by 1%, LNFER increases by 7.9 percent in lag 1 and by 5.2 percent in lag 2, which opposes the ideology of the interest rate parity theory (Chinn, 2006). However, the impacts are not statistically significant, given the corresponding p-values of 0.142 and 0.211. Besides that, the short form estimation reveals that as LNRIR rises by 1%, LNFER reduces by 5.3 percent and 5.8 percent in lag 1 and lag 2, respectively. Although these results support the notion of the theory of interest rate parity (Chinn, 2006), the impacts are proven to be not statistically significant, given the corresponding p-values of 0.193 and 0.571. Besides that, the literature presents a paucity of empirical evidence that addressed the impact of real interest rate on foreign exchange reserves. The existing study of Jacob et al (2022) in India rather shows the positive impact of interest rate on exchange rate and not on foreign exchange reserves. Therefore, by establishing these impacts, this study addressed the knowledge gap in the literature, based on the ideology of Miles (2017) on research gaps.

Regarding political stability, the Political Economy Theory postulates that foreign investment increases in countries with stable political environments, which result in higher foreign exchange reserves (Groznykh et al., 2020; Rodrik, 1999). In that context, LNPOLSTB is expected to positively impact LNFER. Relying of the results in Table 5.5, evidence shows that a 1 percent increase in political stability leads to a rise of 85.7 percent in lag 1 and 60.9 percent in lag 2 of LNFER, holding everything else constant. This implies that political stability is a crucial determinant of investor confidence and may influence foreign investment flows, thereby affecting reserves.

Nevertheless, while these findings are consistent with the theory of Political Economy, the impacts are not statistically significant, as evidenced by the p-value of 0.068 and 0.228, respectively. More to that, the results also corroborate the findings of (Groznykh et al., 2020), which used the Pseudo Poisson Maximum Likelihood (PPML) regression and the results reveal that political stability attracts inbound foreign investment flow in most countries, which results in increased foreign exchange reserves.

Finally, in terms of inbound foreign investment flows, Portfolio Theory posits that foreign investment inflows might result in a rise in reserves as the central bank amasses foreign currency to stabilise the value of the local currency (Fabozzi et al., 2008; Markowitz, 1991). Given the results presented in Table

5.5, evidence demonstrates that a 1 percent rise in inbound foreign investment flows (LNFIF) is associated with slight increase of 0.1 percent in lag 1, which is however, not statistically significant ($p = 0.996$), as well as an increase of 25 percent in lag 2, which is statistically significant ($p = 0.025$). This evidence aligns with Portfolio Theory, which suggests that higher levels of foreign investment inflows contribute to an accumulation of reserves as a hedge against currency risk and to ensure liquidity (Fabozzi et al., 2008; Markowitz, 1991).

Empirically, these results are similar to the findings of Mbai (2017), which found a strong positive and statistically significant impact of foreign investment flows on foreign exchange reserves in the short-run, which, however, used a simple regression method. Besides that, the results are in line with the findings of Yasir et al. (2012), which highlight the positive, but insignificant impact of foreign direct investment (which is a part of foreign investment flows) on foreign exchange reserves in Pakistan using the VECM. Similarly, the results are also in line with the findings of Rahman and Bristy (2015), which show the positive impact of foreign direct investment (FDI) on foreign exchange reserves in South Asian Association for Regional Corporation Countries using the linear regression analysis in Statistical Package for the Social Sciences. The results are also similar to the findings of Wang (2019), which concluded that FDI and stimulates foreign exchange reserve in East Asian emerging economies using the Instrumental Variables methodology.

Since there is scanty evidence in the literature that addressed the impact of inbound foreign investment flows (covering both foreign direct investment and foreign investment portfolio), this study addressed the practical knowledge gap, according to the taxonomy of Miles (2017) on research gaps. Besides that, the following section measures the model efficacy.

5.6.1. Model efficacy

Regarding the model efficacy, Table 5.5 depicts that the R-square value of the model is 0.976, indicating that LNEXR, LNRIR, LNPOLSTB, and LNFIF explain 97.6 percent of the variance in foreign exchange reserves. In addition, probability of the F-value is 0.000, which is less than 5%, proving that the model is statistically significant at a 5% level of significance. To confirm the model's efficacy, the study measured serial correlation, heteroscedasticity, and stability of the model, as illustrated in the following subsections.

5.6.1.1. Model specification

To ensure that there is no functional form misspecification in the model, the study used the Ramsey RESET test. In that view, the Ramsey RESET test results are presented in Table 5.6.

Table 5.6: Ramsey RESET test results

	Value	df	Probability
F-statistic	4.565605	(2, 6)	0.062
Likelihood ratio	18.5	2	0.070

Source: Author's compilation (2023)

The null hypothesis of the Ramsey RESET test indicates that the model is correctly specified, while the alternative hypothesis states that the model is not correctly specified. The null hypothesis is specified when the probability value of the F-statistics is less than 0.05. As shown in Table 5.6, the results indicate that the probability value of the F-statistics is 0.062, which exceeds the threshold of 0.05. This implies that the model is correctly specified. Hence, the study failed to reject the null hypothesis. Furthermore, probability of the likelihood ratio is also not significant at 5%, which indicates that the additional terms introduced in the RESET test do not significantly improve the fit of the model, implying that the original model is well-specified, at least in terms of functional form.

5.6.1.2. Serial correlation

The study used the Breusch-Godfrey test for serial correlation to examine the errors of autocorrelation. Table 5.7 presents the results.

Table 5.7: Serial correlation

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.59454	Prob. F(2,6)	0.5813
Obs*R-squared	3.308016	Prob. Chi-Square(2)	0.1913

Source: Author's compilation (2023)

The null hypothesis suggests there is no serial correlation in the model, while the alternative hypothesis contradicts the null hypothesis. The decision rule is to reject the null hypothesis if the F-statistic falls below a 5% significance level of significance. According to the data in Table 5.7, the F-statistic is 0.5813, which exceeds 5%. Hence, the study failed to reject the null hypothesis, indicating that the model is not suffering from autocorrelation. Overall, these findings suggest that the model captured the linear relationship between the dependent and independent variables adequately, and the residuals exhibit randomness and independence over time. Therefore, the model's estimates and inferences are likely to be reliable and unbiased.

5.6.1.3. Heteroscedasticity

The heteroskedasticity test was performed to ascertain the model's efficacy at a 5% level of significance. In that light, Table 5.8 presents the results of heteroskedasticity.

Table 5.8: Heteroskedasticity test results

Heteroskedasticity Test: ARCH			
F-statistic	1.723737	Prob. F(2,12)	0.2198
Obs*R-squared	3.347609	Prob. Chi-Square(2)	0.1875

Source: Author's compilation (2023)

The null hypothesis states that there is no heteroskedasticity (there is homoskedasticity), whereas the alternative hypothesis indicates heteroskedasticity exists. According to the outcomes presented in Table 5.8, the probability value of the F-statistic is 0.2198, which is greater than the 5% significance level. In this case, the study failed to reject the null hypothesis. Therefore, it can be concluded that the model is not affected by heteroscedasticity.

5.6.2. Stability test

In addition to the serial correlation test, the study performed the Cumulative Sum of Recursive Residuals (CUSUM) and CUSUM of squares test at a significance level of 5% to further test for the ARDL model's stability.

5.6.2.1. CUSUM test

The CUSUM test is crucial for short-run correlations to guarantee the stability of the model (Nautwima and Asa, 2021). Hence, the study performed a CUSUM test, and the results are presented in Figure 5.1.

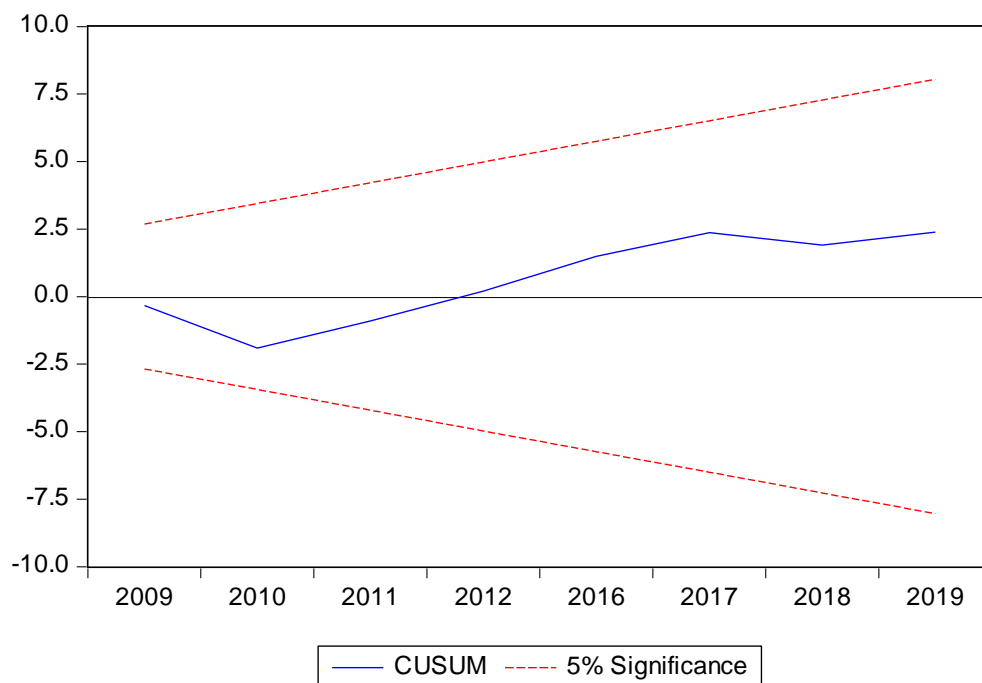


Figure 5.1: CUSUM test

Source: Author's extraction from the stability test (2023)

If the cumulative sum falls outside the region between the two critical lines, the test identifies parameter instability (Brown et al., 1975). Thus, the model is deemed stable when its standard deviation falls below 5% (Nautwima and Asa, 2021). As seen in Figure 5.1, the result of the CUSUM test suggests that the

cumulative sum falls within the permitted range of 5%. Hence, the model is stable.

5.6.2.2. CUSUM of squares test

The CUSUM of squares test is also necessary for determining the stability of the model for short-run estimations (Nautwima and Asa, 2021). Hence, the study performed the CUSUM of squares test, and the results are displayed in Figure 5.2.

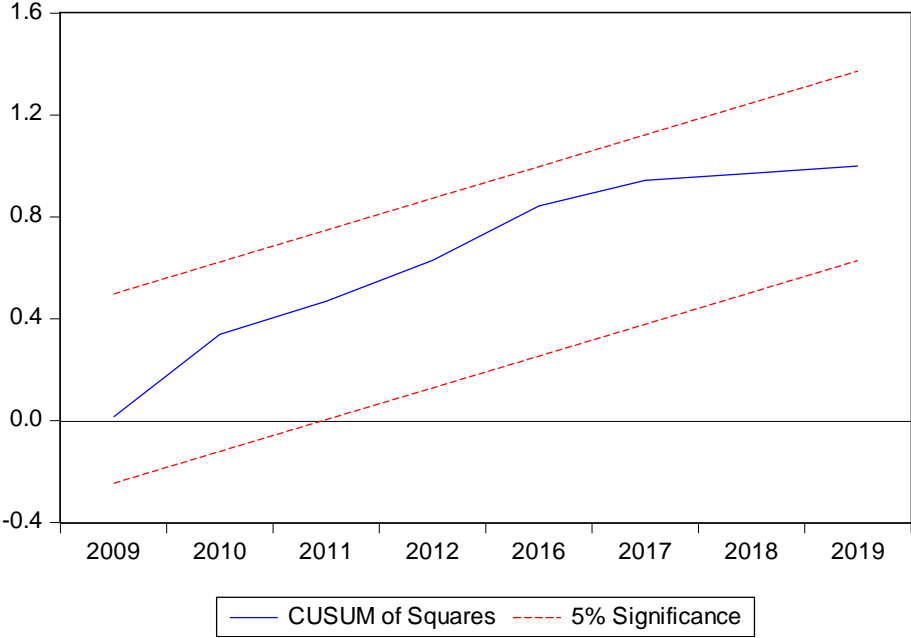


Figure 5.2: CUSUM of squares test
Source: Author’s extraction from the stability test (2023)

Brown et al. (1975) underscores a cumulative sum that falls outside the region between the two critical lines signified instability of the parameter. The model is stable if the cumulative sum falls below 5% (Nautwima & Asa, 2021). Following the CUSUM of squares test results presented in Figure 4.2, the model is considered stable, as the cumulative sum of squares falls within the threshold of 5%.

5.7. Unrestricted Granger-causality Test

The current study performed unrestricted pairwise Granger causality test to determine the direction of causality between foreign exchange reserves (LNFER), exchange rate (LNEXR), real interest rate (LNRIR), political stability (LNPOLSTB), and foreign investment flows (LNFIF). The results are presented in Table 5.9.

Table 5.9: Unrestricted Granger-causality test results

Null Hypothesis:	Obs	F-Statistic	Prob.
D(LNEXR) does not Granger Cause D(LNFER)	29	0.887	0.425
D(LNFER) does not Granger Cause D(LNEXR)		0.487	0.620
LNRIR does not Granger Cause D(LNFER)	23	0.749	0.487
D(LNFER) does not Granger Cause LNRIR		0.187	0.831
D(LNPOLSTB) does not Granger Cause D(LNFER)	29	0.389	0.682
D(LNFER) does not Granger Cause D(LNPOLSTB)		0.263	0.771
D(LNFIF) does not Granger Cause D(LNFER)	25	1.066	0.363
D(LNFER) does not Granger Cause D(LNFIF)		0.667	0.524
LNRIR does not Granger Cause D(LNEXR)	23	0.048	0.953
D(LNEXR) does not Granger Cause LNRIR		0.049	0.952
D(LNPOLSTB) does not Granger Cause D(LNEXR)	29	2.733	0.085
D(LNEXR) does not Granger Cause D(LNPOLSTB)		2.210	0.132

D(LNFIF) does not Granger Cause D(LNEXR)	25	1.443	0.260
D(LNEXR) does not Granger Cause D(LNFIF)		4.001	0.035
D(LNPOLSTB) does not Granger Cause LNRIR	23	0.172	0.843
LNRIR does not Granger Cause D(LNPOLSTB)		0.821	0.456
D(LNFIF) does not Granger Cause LNRIR	19	1.030	0.382
LNRIR does not Granger Cause D(LNFIF)		2.681	0.103
D(LNFIF) does not Granger Cause D(LNPOLSTB)	25	0.074	0.929
D(LNPOLSTB) does not Granger Cause D(LNFIF)		0.350	0.709

Source: Author's compilation (2023)

In this case, the decision rule is to reject the null hypothesis if the p-value is less than 0.05 at a 5% significance level of significance; otherwise, fail to reject the null hypothesis. As displayed in Table 5.9, the results show that exchange rate (LNEXR) Granger causes foreign investment flows (LNFIF), given a p-value of 0.0335, which is less than 5%. Hence, the study rejected the null hypothesis to indicate that LNEXR Granger causes LNFIF. However, evidence from the results does not demonstrate that LNFIF Granger causes LNEXR, given a p-value of 0.260, which exceeds 5%. Therefore, the study failed to reject the null hypothesis to indicate that LNEXR does not Granger LNFIF. Briefly, these results indicate a unidirectional causality from LNEXR to LNFIF. These findings are similar to the findings of Lily et al. (2014), which show unidirectional causality from exchange rate to FDI (which is a part of foreign investment flows) in Malaysia and Singapore, using the the ECM-based ARDL approach for causality testing. However, the results contradict the bidirectional causality between exchange rate and FDI in Philippines (Lily et al., 2014).

Besides that, the rest of the p-values are all exceeding 5%, indicating that there is no significant evidence to suggest that changes in one variable do not consistently provide useful information for predicting changes in the other variables. Therefore, the study rejected the rest of the null hypotheses to demonstrate that the variables are independent of each other. Overall, these results contradict the findings of early studies (Huang & Dennis, 2011; Osigwe & Uzonwanne, 2015), which illustrate a bidirectional causality between foreign reserves and foreign direct investment in China and Nigeria, respectively.

5.8. Summary

This chapter analysed the data and presented the results with a comprehensive discussion of the findings. In so doing, the Chapter commenced with descriptive analysis, which assessed the nature of the data. This was followed by the lag length criteria that determined the optimum number of lags as 2 lags, and unit root test that found the variables to be cointegrated on mixed order. In that light, the mixed order of integration informed the study to test for cointegration using the Bound test, which revealed the presence of cointegration. Hence, the chapter performed both the short-run and long-run estimations using the ARDL-ECM. Subsequently, the study tested for the model efficacy in terms of the model specification, serial correlation, and heteroskedasticity using the Ramsey RESET test, Breusch-Godfrey test for serial correlation, and ARCH heteroskedasticity test, respectively. The chapter also measured stability of the model using the CUSUM and CUSUM of squares tests. Finally, the chapter performed unrestricted Granger causality to determine the direction of causalities between the variables. Besides that, the following chapter presents the conclusions and recommendations of the study.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1. Introduction

The current chapter follows Chapter 5 which analysed the data, presented the results, and discussed the findings. The chapter aims to conclude the study and present recommendations in terms of policy recommendations and suggestions for future study. In that view, the following section provides the study's overall conclusions.

6.2. Conclusions

This section concludes the research with respect to the findings of the study. In brief, the study sought to attain threefold objectives. First, to examine the relationship between foreign investment flows and foreign exchange reserves in Namibia. Second, to determine the nature of the relationship between foreign investment flows and foreign exchange reserves in Namibia. Finally, to establish the direct of causality between foreign direct flows and foreign exchange reserves in Namibia. To achieve these objectives, the study incorporated exchange rate, real interest rate, and political stability as the control variables. The study used Namibia's macroeconomic time series data for a period of 32 years since independence, running from 1991 to 2022.

To determine the nature of the relationship between foreign direct flows and foreign exchange reserves in Namibia, the study used the bound test of cointegration since the data were stationary at mixed order of integration. In that view, the results from the bound test of cointegration reveal that a long run relationship exists between the variables. Therefore, the study performed the Autoregressive Distributed Lag (ARDL) and Error Correction Models (ECM) models to estimate the long-run and short-run relationships between the variables. In that context, evidence indicates a positive relationship between inbound foreign investment flows (which include foreign direct investment and foreign portfolio) and foreign exchange reserves. The findings support the Portfolio Theory, which underscores that a rise in inbound foreign investment flows enhances foreign exchange reserves (Fabozzi et al., 2008; Markowitz, 1991).

In addition to that, the results indicate that exchange rate reduces foreign exchange reserves, which conform the notion of the Mundell-Fleming model (Fleming, 1962; Mundell, 1963). The results also demonstrates the positive nexus between political stability and foreign exchange reserves, which aligns with the postulations of the Political Economy Theory (Groznykh et al., 2020; Rodrik, 1999). Finally, the study reveal a positive relationship between real interest rate and foreign exchange reserves in the long-run, which opposes the ideology of the interest rate parity theory (Chinn, 2006). However, in the short-

run, evidence demonstrates an negative nexus between real interest rate and foreign exchange reserves, which support the postulation of the theory of interest rate parity (Chinn, 2006).

Lastly, the study conducted the unrestricted pairwise Granger causality test to determine the causal relationship between the variables. In that regard, the results indicate a unidirectional causality from exchange rate to foreign investment flows. Thus, the study concludes that the past information of exchange rate can be used to predict foreign investment flows. Nonetheless, the Granger causality test results also indicate that there is no significant evidence to suggest causal relationships between foreign exchange reserves and the examined variables, including exchange rates, real interest rates, political stability, and inbound foreign investment flows. Finally, the study reveals no evidence of significant serial correlation or heteroskedasticity in the regression model, which signifies that the model's estimates are reliable. Given that, the following section presents the study's recommendations.

6.3. Contributions of the study

This study makes notable contributions. Firstly, the study contributes to the global body of knowledge by documenting the impact of inbound foreign investment flows covering both foreign direct investment and foreign investment portfolio on foreign exchange reserves, which has been scanty

presented in the literature. This is because early studies (Jacob et al., 2022; Lily et al., 2014; Matsumoto, 2019; Rahman & Bristy, 2015; Yasir et al., 2012) focused mainly on the nexus between foreign direct invest on foreign exchange reserves without considering foreign portfolio investment, as part of foreign investment flows. As such, the study addressed the practical knowledge gap in the literature. Secondly, the study contributes to knowledge by incorporating political stability as a control variable, which is inadequately considered by prior studies. Finally, the study makes methodological contributions by examining the investigation using the ARDL-ECM model, in such a way that prior studies used the VAR or ARDL or VECM. The study also used the unrestricted Granger causality test, which is different from the restricted Granger causality test employed other studies (Huang & Dennis, 2011; Osigwe & Uzonwanne, 2015). By so doing, the study addressed the methodological gap existing in the literature.

6.4. Recommendations

The current section presents the recommendations of the study, which are informed by the findings and delimitations of the study. That being so, the section categorised them into policy recommendations and directions for future studies. In that frame of reference, the following section details the policy recommendations of the study.

6.4.1. Policy recommendations

The study relied on the findings of the research to draw policy recommendations. That is, in pursuit of sufficient direct and indirect foreign capital infusions, various countries rely on foreign investors to supplement their domestic sources to fulfil their capital needs (Jacob et al., 2022). This demonstrates the vitalness of foreign exchange reserves and foreign investment flows in various economies (Grenville, 2012). Given that, the study provides the following threefold policy recommendations:

- Firstly, the study recommends that policymakers should enhancing foreign investment policies aimed at attracting and retaining foreign investment flows through the provision of incentives, increased transparency, and diminished regulatory obstacles. This can strengthen economic stability and contribute to the accumulation of foreign exchange reserves.
- Secondly, the study recommends that policymakers should sustaining political stability by implementing effective governance and institutional reforms. This is because a political climate that is stable promotes investor confidence and stimulates the inflow of foreign investment, both of which are essential for the accumulation of reserves.
- Thirdly, the study recommends that policymakers should diversification of reserves management to mitigate risks and maximise returns in order to optimise the efficiency of reserve management.

6.4.2. Suggestions for future studies

Despite the insights gained from this study, several areas warrant further research. Therefore, this section presents suggestions for future research to supplement the results obtained from this investigation, as policymakers and scholars can augment their comprehension of the factors that influence foreign exchange reserves in Namibia.

This, in turn, will enable policymakers to develop and assimilate policies that are grounded in adequate empirical evidence and aim to foster economic stability and prosperity. Having noted that, the suggestions for future research are detailed as follows:

- Firstly, the study suggests future research to examine the dynamic impacts of monetary and fiscal policy interventions on Namibia's foreign exchange reserves, with a particular focus on the implications for reserve management and economic stability in the short and long term.
- Secondly, the study suggests future research to assess the effects of global economic trends such as the influence of geopolitical events and commodity price volatility on Namibia's foreign exchange reserves. There is also need for evaluating the resilience of the nation to external disturbances and investigate possible approaches risks mitigations.
- Thirdly, the study suggests future research to analyse the impact of regional integration agreements, specifically the Southern African Development Community (SADC), on trade dynamics and foreign

exchange reserves of Namibia. This should assess the merits and demerits associated with regional economic collaboration in the context of economic growth and the accumulation of reserves.

REFERENCES

- Acemoglu, D., Johnson, S., & Robinson, J. (2001). *The colonial origins of comparative development* (Working Paper 7771; Vol. 3).
<https://www.nber.org/papers/w7771.pdf>
- African Development Bank. (2023). *Country focus report country focus report*.
- Aidoo, L., & Maredza, P. A. (2017). *The impact of exchange rate volatility on foreign direct investment and domestic investment in South Africa* (Issue 21924384). North West University.
- Amornbunchornvej, C., Zheleva, E., & Berger-Wolf, T. Y. (2019). Variable-lag granger causality for time series analysis. *Proceedings - 2019 IEEE International Conference on Data Science and Advanced Analytics, DSAA 2019*, 21–30.
<https://doi.org/10.1109/DSAA.2019.00016>
- Arce, F., Engui, J., & Bianchi, J. (2022). *A macroprudential theory of foreign* (Working Paper, No. WP 2022-16). <https://doi.org/10.21033/wp-2022-16>
- Azémard, C., & Giroud, A. (2023). World Investment Report 2022: International tax reforms and sustainable investment. In *Journal of International Business Policy*.
<https://doi.org/10.1057/s42214-023-00148-1>
- Bank of Namibia, 2015. *Economic Outlook*, Windhoek: Bank of Namibia.
- Bank of Namibia, 2018. *Economic Outlook*, Windhoek: Bank of Namibia.
- Bank of Namibia, 2022. *Bank of Namibia releases annual report 2021*, Windhoek: Bank of Namibia.

Bank of Namibia & NAMFISA, 2023. *Namibia financial stability report*, Windhoek:

Bank of Namibia.

Bayoumi, T., Bartolini, L., & Klein, M. (1996). Foreign direct investment and the exchange rate. *IMF Occasional Papers*, 1996(145), 47–58.

Bourenane, B., Rezig, K., & Djorfi, Z. (2022). Measuring the effect of foreign exchange reserves on foreign direct investment in Algeria during the period 1990-2020 using the ARDL model. *International Journal of Economic Performance*, 5(1), 302–315.

Chinn, M. D. (2006). The (partial) rehabilitation of interest rate parity in the floating rate era: Longer horizons, alternative expectations, and emerging markets. *Journal of International Money and Finance*, 25(1), 7–21.
<https://doi.org/10.1016/j.jimonfin.2005.10.003>

Demirhan, E., & Masca, M. (2008). Determinants of foreign direct investment flows to developing countries: A cross-sectional analysis. *Prague Economic Papers*, 17(4), 356–369. <https://doi.org/10.18267/j.pep.337>

Fabozzi, F. J., Markowitz, H. M., & Gupta, F. (2008). Portfolio Selection Professor. In *The practice of finance*.

Fleming, J. M. (1962). Domestic financial policies under fixed and under floating exchange rate. *IMF Staff Papers (International Monetary Fund)*, 9(3), 369–380.

Giuseppina, T. (2016). Foreign direct investment flows and the global economic crisis. *Corporate Ownership and Control*, 13(4Continued1), 266–274.

<https://doi.org/10.22495/cocv13i4c1p11>

Groznykh, R., Mariev, O., Plotnikov, S., & Fominykh, M. (2020). The role of political stability in foreign direct investment attraction: Cross-country analysis. *Proceedings of CBU in Economics and Business*, 1, 76–83. <https://doi.org/10.12955/peb.v1.22>

Hnatenko, I., Kuksa, I., Shtuler, I., Orlova-Kurilova, O., & Rubezhanska, V. (2020). Innovation Cluster As a Mechanism for Ensuring the Enterprises Interaction in the Innovation Sphere. *Management Theory and Studies for Rural Business and Infrastructure Development*, 41(4), 487–500. <https://doi.org/10.15544/mts.2019.39>

Huang, H., & Dennis, W. Y. H. (2011). Spatial-temporal patterns and determinants of foreign direct investment in China. *Erdkunde*, 65(1), 7–23. <https://doi.org/10.3112/erdkunde.2011.01.02>

Jacob, T., Raphael, R., & Antony, A. (2022). *Relationship between foreign portfolio investment and exchange rate : The case of India using VECM testing approach*. 1–17.

Johansen, S., & Juselius, K. (1990). Maximum Likelihood Estimation and Inference on Cointegration — With Applications To the Demand for Money. *Oxford Bulletin of Economics and Statistics*, 52(2), 169–210. <https://doi.org/10.1111/j.1468-0084.1990.mp52002003.x>

Kamuinjo, A. V., Rena, R., & Maredza, A. (2021). Impact of credit risk and profitability on liquidity shocks of Namibian banks: An application of the

- structural VAR model. *Journal of Life Economics*, 8(3), 349–359.
<https://doi.org/10.15637/jlecon.8.3.07>
- Kaphle, R. R. (2021). Impact of Foreign Exchange Reserve on Economic Growth in Nepal. *Journal of Management and Development Studies*, 30(1), 14–23.
<https://doi.org/10.3126/jmnds.v30i1.36347>
- Krušković, B. D., & Maričić, T. (2015). Empirical analysis of the impact of foreign exchange reserves to economic growth in emerging economics. *Applied Economics and Finance*, 2(1), 102–109. <https://doi.org/10.11114/aef.v2i1.653>
- Lily, J., Kogid, M., Mulok, D., Thien Sang, L., & Asid, R. (2014). Exchange Rate Movement and Foreign Direct Investment in Asean Economies. *Economics Research International*, 2014, 1–10. <https://doi.org/10.1155/2014/320949>
- Markowitz, H. M. (1991). Foundations of portfolio theory. *The Journal of Finance*, 46(2), 469–477.
- Matsumoto, H. (2019). *Foreign reserve accumulation, foreign direct investment, and economic growth* (IMES Discussion Paper Series 2019-E-4).
<https://www.imes.boj.or.jp>
- Mbai, J. (2017). *Examining the relationship between foreign investment flows and foreign exchange reserves in Namibia for the period 2005Q2 to 2016Q2* (Vol. 21, Issue 2) [University of Namibia]. [https://www.oecd.org/dac/accountable-effective-institutions/Governance Notebook 2.6 Smoke.pdf](https://www.oecd.org/dac/accountable-effective-institutions/Governance%20Notebook%202.6%20Smoke.pdf)
- Miles, D. A. (2017). A taxonomy of research gaps: Identifying and defining the seven

- research gaps methodological gap. *Journal of Research Methods and Strategies*, August, 1–15.
- Mundell, R. A. (1963). Capital mobility and stabilization policy under fixed and flexible exchange rates. *The Canadian Journal of Economics and Political Science*, 29(4), 475–485.
- Namakalu, H., Niishinda, E., Kadhila, I., Helvi, F., Mukasa, N., & Mushendami, P. (2014). *Infrastructure financing in Namibia* (Issue September).
- National Planning Commission. (2017). *Namibia's 5th National Development plan (NDP5)* (Vol. 5). https://www.npc.gov.na/national-plans-ndp-5/?wpfb_dl=298
- Nautwima, J. P., Asa, A. R., & Atiku, S. O. (2023). Testing unemployment–entrepreneurship nexus in Namibia using the Schumpeterian approach. *Sustainability (Switzerland)*, 15(18), 1–15. <https://doi.org/10.3390/su151814023>
- Osigwe, A. C., & Uzonwanne, M. C. (2015). Causal relationship among foreign reserves, exchange rate and foreign direct investment: Evidence from Nigeria. *International Journal of Economics and Financial Issues*, 5(4), 884–888.
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16(3), 289–326. <https://doi.org/10.1002/jae.616>
- Phiri, J., Malec, K., Majune, S. K., Appiah-Kubi, S. N. K., Maitah, M., Maitah, K., Gebeltová, Z., & Abdullahi, K. T. (2020). Agriculture as a determinant of Zambian economic sustainability. *Sustainability (Switzerland)*, 12(11), 1–14.

<https://doi.org/10.3390/su12114559>

Rahman, S. M. Z., & Bristy, J. F. (2015). Study on impact of foreign direct investment in retail sector. *Journal of Management Research and Analysis*, 2(1), 63–71.

Rodrik, D. (1999). Where did all the growth go? External shocks, social conflict, and growth collapses. *Journal of Economic Growth*, 4(December), 385–412.

Samborskyi, O., Isai, O., Hnatenko, I., Parkhomenko, O., Rubezhanska, V., & Yershova, O. (2020). Modeling of foreign direct investment impact on economic growth in a free market. *Accounting*, 6(5), 705–712.
<https://doi.org/10.5267/j.ac.2020.6.014>

Sharpe, W. F. (1964). A theory of market equilibrium under conditions of risk. *The Journal of Finance*, 19(3), 386–408.

Sheefeni, J. P. S. (2015). The impact of macroeconomic determinants on non-performing loans in Namibia. *International Research Journal*, 1(4), 2311–3200.
www.globalbizresearch.org

Sheefeni, J. P. S. (2016). The effects of interest rate spread on non-performing loans in Namibia. *European Journal of Business, Economics and Accountancy*, 4(5).
<https://www.researchgate.net/publication/308201743>

Shrestha, M. B., & Bhatta, G. R. (2018). Selecting appropriate methodological framework for time series data analysis. *Journal of Finance and Data Science*, 4(2), 71–89. <https://doi.org/10.1016/j.jfds.2017.11.001>


Wang, M. (2019). Foreign direct investment and foreign reserve accumulation. *Review*

of Economic Dynamics, 8, 1–61.

Yasir, M., Shahzad, F., Ahmed, K., Sehrish, S., & Saleem, F. (2012). Relationship among exchange rate, FDI and foreign exchange reserves: An empirical investigation in Case of Pakistan. *Interdisciplinary Journal Of Contemporary Research In Business*, 4(March 2015), 225–232.

Appendices

Appendix 1: Ethical Clearance



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Approval for Exemption from Ethical Clearance

Ethical clearance exemption reference N0: DEC FOC/ 39/ 11

Review Date: 09/11/2023
Title of Project: **THE RELATIONSHIP BETWEEN FOREIGN INVESTMENT FLOWS AND FOREIGN EXCHANGE RESERVES IN NAMIBI**

Student Name: TROFIMUS N SHEEFENI
Student Number: 201402676

Supervisor(s): DR SAKARIA KALUMB


Dear Sir/Madam,

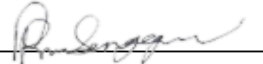
This letter certifies that the application for the procedure stated above has been reviewed by the Faculty of Commerce, Management and Law Decentralized Ethics Committee (DEC). The Ethics Committee has given due consideration and concludes that the said proposal be exempted from review as it does not involve direct contact with human participants and in addition your study relies on secondary data which does not require ethical clearance. This is aligned to the University research ethics policy on ethical exemptions page no.16 (C1.3). Please note that any changes to the procedure must be brought to the notice of the DEC. The DEC must determine whether the requested procedure changes alter the risks.

Please contact the DEC office if you have any questions. Any correspondence with the DEC office regarding this action should mention the allocated Ethical clearance exemption reference number indicated at the top of this letter.

The ethics committee wishes you the best in your research.

Regards,


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Prof. Davis Mumbengegwi ((Head, Multidisciplinary Research)

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Regards,

A handwritten signature in black ink, appearing to read 'J. Pangeiko'.

Ms. Johanna Pangeiko Nautwima
Founder on behalf of the Editorial Team
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