



**NEAR EAST UNIVERSITY
INSTITUTE OF GRADUATE STUDIES
DEPARTMENT OF BANKING AND FINANCE**

**THE IMPACT OF FDI AND OIL PRICES ON STOCK
MARKET DEVELOPMENT IN SOUTH AFRICA (1980-2020)**

MSc. THESIS

DAVE Q. TOGBA, JR.

**Nicosia
JUNE, 2023**

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Approval

We attest to having read the thesis submitted by “**DAVE Q. TOGBA, JR. Titled THE IMPACT OF FDI AND OIL PRICE ON STOCK MARKET DEVELOPMENT IN SOUTH AFRICA (1980-2020),**” In addition, we are of the view that it fulfills all of the requirements, both in terms of its breadth and its level of quality, to be a thesis for the Master of Social Sciences degree, and hereby recommended for approval and acceptance.

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Declaration

I, the undersigned, hereby certify that all of the materials, documents, analysis, and findings included within this thesis have been gathered and presented in accordance with the academic regulations and ethical principles of the Institute of Graduate Studies at Near East University. I further declare that, in accordance with these rules and conduct, I have thoroughly cited and referenced any material and data that are not unique to this research. This statement was made so that these rules and conduct could be followed.

Dave Q. Togba, Jr.

...../06/2023

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As I have learned during the past years, writing a dissertation in Banking and Finance is not only stimulating but a very challenging undertaking and I have occasionally asked myself whether I would actually be able to take opportunity to express my gratitude to the One and Only Father (Jesus Christ) with gratitude of my highest esteem for being the pillars of my strength, devotion and protection. I would like to thank my Supervisor, Chairman and a father figure Prof. Dr. Turgut Tursoy whose professional and academic advises provided me an extensive personal and professional guidance and taught me a deal about academic and life in general. No body had ever been more passionate and important to me in pursuit of my Educational Achievements than Mrs. Esther Worjloh. Kumorteh (RIP) even though you are No more but your legacy and passion for educating those that were around you are few of the reasons we have transition from just a high School graduate to a Recipient of a Master Degree and I know where ever you are you take proud to this worthy achievement.

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Abstracts**THE IMPACT OF FDI AND OIL PRICE ON STOCK MARKET
DEVELOPMENT IN SOUTH AFRICA (1980-2020)****Dave Q. Togba, Jr.****MSc. Department of Banking and Finance****MAY 2023, Page**

This thesis investigates the influence of FDI and oil prices on South African stock market growth from 1980 to 2020. The stock market is an incredibly important and necessary component of a country's monetary system, and the presence of a strong monetary system is the greatest guarantee of the country's continuing economic growth and expansion. The stock markets are the finest predictors of prospective corporate development, and their health is also a barometer of a country's economic strength. The growth of a country's financial markets is critical if the country's economic development is to improve. Overseas direct investment is a critical source of money for countries that are still economically developing. Foreign direct investment (FDI) enables a host nation to get cutting-edge technology, managerial know-how, and human resources. For data collection, this study makes use of the World Bank data portal. For regression analysis, the ARDL and Granger causality are utilized. The findings indicate that FDI and GDP have a positive influence on stock market development in both the short and long runs, but oil prices and trade are good in the long run but negative in the short run. However, overall research has a long-term negative influence on stock market development and a short-term favorable impact on stock market development. Granger causality test, which shows a unidirectional causal link between total reserve and the stock market. At the 5% level of significance, there is unidirectional causality between trade and stock market development in South Africa. The findings also show that, although oil prices do not directly drive FDI, they do cause it to grow. At 5%, total reserves determine the oil price, rather than the oil price determining total reserves. Since rising oil costs have a negative impact on economic development and, as a consequence, agricultural productivity, there is an urgent need to diversify energy use in this area. If governmental initiatives were adopted to minimize fossil fuel usage and boost the use of a balanced blend of alternative and renewable energy sources, such as solar power, both alimentary stability and environmental stability may see considerable benefits. Moreover, developing an energy consumption strategy and implementing new technologies for

alternative energy sources would attract both local and international direct investment into South Africa's agriculture industry. Strengthening South Africa's legal and institutional framework might help the government attract more foreign direct investment in the industry.

Keywords: GDP growth, Oil price, total reserve, Stock market, Trade, Economic growth

Özet

GÜNEY AFRİKA'DA DYY VE PETROL FİYATLARININ HİSSE PİYASASI GELİŞİMİNE ETKİSİ (1980-2020)

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MAYIS 2023, Sayfa

Bu tez, DYY ve petrol fiyatlarının 1980'den 2020'ye kadar Güney Afrika borsası büyümesi üzerindeki etkisini araştırıyor. Borsa, bir ülkenin para sisteminin inanılmaz derecede önemli ve gerekli bir bileşenidir ve güçlü bir para sisteminin varlığı, ülkenin devam eden ekonomik büyümesi ve genişlemesi. Hisse senedi piyasaları, gelecekteki kurumsal gelişimin en iyi tahmin edicileridir ve sağlıkları aynı zamanda bir ülkenin ekonomik gücünün bir barometresidir. Bir ülkenin ekonomik kalkınması iyileşmek istiyorsa, bir ülkenin mali piyasalarının büyümesi çok önemlidir. Denizaşırı doğrudan yatırım, ekonomik olarak gelişmeye devam eden ülkeler için kritik bir para kaynağıdır. Doğrudan yabancı yatırım (FDI), ev sahibi ülkenin en son teknoloji, yönetim bilgisi ve insan kaynakları elde etmesini sağlar. Veri toplama için, bu çalışma Dünya Bankası veri portalından yararlanmaktadır. Regresyon analizi için ARDL ve Granger nedenselliğinden yararlanır.

Bulgular, DYY ve GSYİH'nın borsa gelişimi üzerinde hem kısa hem de uzun vadede olumlu bir etkiye sahip olduğunu, ancak petrol fiyatları ve ticaretin uzun vadede iyi, kısa vadede ise olumsuz olduğunu göstermektedir. Bununla birlikte, genel araştırma, borsa gelişimi üzerinde uzun vadeli olumsuz bir etkiye ve borsa gelişimi üzerinde kısa vadeli olumlu bir etkiye sahiptir. Toplam rezerv ile borsa arasında tek yönlü bir nedensellik bağı gösteren Granger nedensellik testi. %5 anlamlılık düzeyinde, Güney Afrika'da ticaret ve borsa gelişimi arasında tek yönlü bir nedensellik vardır. Bulgular ayrıca, petrol fiyatlarının doğrudan DYY'yi yönlendirmese de, büyümesine neden olduğunu da gösteriyor. %5'te, toplam rezervler, toplam rezervleri belirleyen petrol fiyatı yerine, petrol fiyatını belirler. Artan petrol maliyetlerinin ekonomik kalkınma ve bunun sonucunda tarımsal üretkenlik üzerinde olumsuz bir etkisi olduğundan, bu alanda enerji kullanımının çeşitlendirilmesine acil bir ihtiyaç vardır. Fosil yakıt kullanımını en aza indirmek ve güneş enerjisi gibi alternatif ve yenilenebilir enerji kaynaklarının dengeli bir

karışımının kullanımını artırmak için hükümet girişimleri benimsenirse, hem beslenme dengesi hem de çevresel istikrar önemli faydalar sağlayabilir. Ayrıca, bir enerji tüketim stratejisi geliştirmek ve alternatif enerji kaynakları için yeni teknolojiler uygulamak, hem yerel hem de uluslararası doğrudan yatırımı Güney Afrika'nın tarım endüstrisine çekecektir. Güney Afrika'nın yasal ve kurumsal çerçevesinin güçlendirilmesi, hükümetin sektöre daha fazla doğrudan yabancı yatırım çekmesine yardımcı olabilir.

Anahtar Kelimeler: GSYİH büyümesi, Petrol fiyatı, toplam rezerv, Borsa, Ticaret, Ekonomik büyüme

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Abbreviations

FDI: Foreign Direct Investment

GDP: Gross Domestic Product

FMD: Financial Market Development

TR: Total Reverse

GLS: Generalized Least Square

ARDL: Auto Regressive Distributed Lag

GMM: Gaussian mixture model

PP: Phillips Perron

WBDC: World Bank Data Center

OLS: Ordinary Least Squares

ADF: Augmented Dickey-Fuller

IMF: International Monetary Fund

SMD: Stock Market Development

VAR: Vector autoregressive

VECM: Vector Error Correction Method

GCC: Gulf Cooperation Council

LSDV: Least Square Dummy Variable

GARCH : Generalized Auto Regressive Conditional Heteroskedasticity

ECM: Error correction model

BOP: Balance of Payments

APPA: African Petroleum Producer Association

SARB: South African Reserve Bank

VAT: Value added Tax

SNA: National Account System

OP: Oil Price

T: Trade

CHAPTER I

1.1 Introduction

The stock market is an extremely vital and indispensable component of a nation's monetary system, and the existence of a robust monetary system is the best assurance of continued economic advancement and expansion within that nation. An effectively organized equity market encourages investment by identifying and encouraging lucrative businesses that will ultimately contribute to economic development. The stock markets are the best indicators of potential business growth, and their vitality is also a measure of a nation's strong economy. The expansion of a country's financial markets is vitally important if that country's economic development is to improve. Direct investment from overseas is an essential funding mechanism for nations that are still developing economically. Foreign direct investment (FDI) allows a host country to get the latest technology, managerial expertise, and human resources. However, the research on FDI and economic growth reveals a complicated pattern of behavior. The growth of the financial market is linked to the growth of the economy, and the growth of the financial market. Foreign direct investment (FDI) in the main industry being studied, may have an adverse effect on business progress, but investment in the industrial sector has been demonstrated to have a beneficial effect on growth. Nevertheless,). According to Nigeria's experience, investment from abroad (FDI) and financial development may be adversely affecting economic development; nevertheless, financial market flexibility can be a catalyst for economic expansion Saibu, et al.(2011). As a consequence, the concepts produce inconclusive predictions about the impact of FDI on economic growth. According to Adam and Tweneboah (2009), there is a three-fold relationship between foreign direct investment and equity market expansion: (I) FDI boosts the economy; (II) economic growth promotes the expansion of the stock market; and (III) growth in the stock market promotes FDI. (III) As a consequence, we conclude that FDI promotes the expansion of stock markets.

The soundness of a country's financial system determines its continued economic development and success. The capital market, which functions as a stimulus, is critical in generating long-term monetary capacity and directing those funds into profitable projects. As a result, a well-functioning financial marketplace is vital for the market's growth and well-being.

The stock market serves as a vital part of the monetary and financial infrastructure for economic growth. It is a means of supporting a new company venture based on its expected degree of profitability. The stock market is an excellent indicator of a country's overall economic health. The formation of a stock market is an imperative requirement in any economy that cannot be overlooked if one wants to see gains in capital, income, and overall economic development.

A stock market's development is influenced by many factors, including the currency exchange rate, the political atmosphere, the volume of foreign direct investment (FDI), and the extent of economic liberalization. In the current age of globalization, investment from abroad (FDI) is a key source of revenue for the majority of developing economies. FDI bridges the asset, innovation, organizational skills, human development creation, and competitive industry environments divide between emerging and established nations. Yet, there is no agreement in the economic literature on the significance of FDI in economic development.

Foreign direct investment, according to Rehman and Salahuddin (2009), will only contribute to economic growth provided specific policy requirements are satisfied. As a consequence, forecasting the effect of FDI based on empirical data yields ambiguous findings. There is a growing consensus that gains in investment from abroad (FDI) are related to the growth of financial systems (FMD). 1 Nevertheless, investigations have often focused on just one side of the origin dyad. As a consequence, it is unclear if what counts for investment is FMD just in countries of origin, FMD only in origin countries, or FMD through both host and origin countries. We are only mindful of two earlier studies that examined the importance of the economic market situation across the home and originating countries for bilateral foreign direct investment (FDI). Coeurdacier, Santis, and Aviat (2009) and Desbordes and Wei (2010) performed these investigations (2017, page 154).

Despite the fact that South Africa does not produce much oil or gas, Davidson and Oberholzer (2021) estimate that the nation possesses total confirmed reserves of oil of around 15 million barrels. The Bredasdorp Basin is now the only reservoir in the country to produce oil on an industrial scale. Off the west coast, in the Pletmos as well as the Tangerine Basins, oil has been discovered; however, none of these discoveries have yet begun commercial oil production. Oberholzer, as well as Davidson (2017), estimate that around 60% of South Africa's fuel supply

requirements are met by foreign crude oil, with 50% of the refined output being produced by domestic crude oil facilities and 10% from foreign refineries. In contrast to other major net importers of oil like China (22.6% of total demand) and the United States of America (12.5% of total demand), South Africa is regarded as a price taker on the global oil market. This is because the country only imports a small amount of oil (0.8% of total demand). Wakeford (2006), Rangasamy (2017), and Workman (2021) are some examples. However, the national liquid fuel industry's downstream segment is regulated by the government. The cost of gasoline and diesel fuel is subject to government regulation. In addition to imposing a number of levies as well as taxes, the authorities also choose the sales and industrial profits that are added to a "basic gasoline price." The basic gasoline price is set by an import parity pricing formula that is based on the current global spot price of refined oil, according to the South African Petroleum Industry Association (SAPIA, 2006a).

Even though democracy has been in existence for more than 22 years, South Africa's main socioeconomic issues are still unemployment, poverty, and inequality. Despite the progress made in addressing these concerns, the struggle towards "jobless" development, poverty, and extreme inequities continues in contemporary South Africa. According to Stats SA (2015), the official rate of joblessness increased during the past 20 years, going from 17% in 1994 to over 26% in the fourth month of 2015. Aiming for 5% annual growth, the nation's economic output (GDP) is only growing by 0% to 1%, which is below ideal. Finding work is clearly one of South Africa's top worries, especially among young people, as seen by the country's high unemployment rate. To address the issues of poverty and unemployment and to promote growth in the economy, development, and job creation, the government has adopted a number of policy initiatives. The Shared and Accelerated Growth Initiative for South Africa (AsgiSA), the newly established New Growth Path (NGP), and the NDP (National Development Plan) that is now in force are among the programmed mentioned by the Presidency (2011). These policies call for increased investment from abroad in order to advance economic growth, create jobs, and raise domestic spending, which accounts for a larger portion of total government investments and outlays. In his 2014 State of the Nation speech (SONA), the head of state of the Republic of South Africa emphasized the need to attract more foreign investment as one of the solutions to joblessness, impoverishment, and severe inequalities. A small number of scholars also think that exporting as well as inflows of foreign direct

investment are the solutions to economic growth and the creation of employment in underdeveloped countries. A few examples are Asiedu (2006), Xolani (2011), Mpanju (2012), and Fuhrmann (2013). These FDI proponents have acknowledged and emphasized the significance of drawing foreign direct investment as a way to hasten the economic growth of developing nations by means of the exchange of knowledge and abilities, the development of jobs, the enhancement of domestic facilities, and other beneficial effects linked to foreign investors. Within this context, this article aims to determine the relationship between FDI inflows and economic growth in South Africa from 1980 to 2014.

Since nations' dependency on oil increases as they become more industrialized and urbanized, oil is seen as the cornerstone of all global economies. Oil prices have a significant influence on how quickly an economy is growing. Changes in the price of petroleum might have an impact on the company's economic health and, as a result, the growth of the stock exchange since oil is a crucial component used in production. Miller and Ratti (2009) Due to its low cost and convenient access, a nation's significant oil output and high price attract international investors for investment. Delgado et al., 2018. The stock market is clearly impacted by changes in oil prices. The future flow of cash and rates of discount for businesses may suffer as a result of the current elevated level of oil prices. (2016) Raboredo and Jammazi Delgado et al. (2018) discovered that whereas exchange rates and inflation have a considerable negative influence on the stock equity indices of developed nations, oil prices have a favorable impact. According to Waheed et al. (2018), although oil prices generally have a strong positive influence on stock returns, in emerging countries, lagging oil costs have a considerable negative impact. According to Khan et al. (2019), the price of oil and the return of stocks on exchanges for equities in key economies throughout the globe are mutually correlated. Oil price volatility has a considerable, time-varying impact on GCC stock returns, according to Alqahtani et al. (2019). According to Abbas et al. (2018), industrial output and oil prices have a big impact on stock market returns in the G7 nations. Oil prices, according to Naser and Alaali (2018), have a significant impact on the return of stocks in advanced nations all over the globe. According to Teixeira et al. (2017)'s study, the major industries in the biggest countries throughout the globe are greatly impacted by oil prices. According to Delgado et al. (2018), changes in the price of energy items like oil may have a considerable influence on the performance of the

primary macroeconomic component. According to Hajzler (2014), regardless of whether there is a substantial danger of expropriation, countries with a richness of resources from nature may attract FDI owing to the low entry barrier and simple accessibility. De Ferranti et al. (2002) claim that FDI assists enterprises reliant on resources from the earth in fostering growth via improvements in technology and know-how. As a consequence, FDI is a key component of the development strategies of nations with abundant natural resources. Economic expansion and monetary stability are guaranteed by a robust financial system. The creation of financial assets for the long term and their re-direction towards innovative companies may be significantly facilitated by the stock market. The two facets of economic and monetary stability are interconnected. Borio (2011); Nasir et al. (2015) A number of factors, such as shifts in oil prices, exchange rates for currencies, personal money transfers, foreign direct investment (FDI), political reliability, gross domestic product, and economic liberalization, have all had an impact on the development of the stock market. The stock market is essentially thought of as the financial front of any economy. It is essential to encourage domestic saving, spending, and financial stability in the country. Those who reside abroad and are considering establishing investments in their native nation will also find it convenient and appealing. By acquiring and incorporating new enterprises, it also encourages FDI inflow. For foreign investors, the stock market serves as a location to invest in the form of offshore investment assets in portfolios. A number of factors, including industrial development, a sound financial sector, government policies, agricultural development, political stability, exchange rate stability, oil price stability, a sound tax system, a strong and independent judicial system, as well as favorable fiscal policy, affect how well stock exchanges perform in developing and emerging economies. The formation of new firms is a crucial part of the expansion and development of an economy. By accelerating structural change, encouraging innovation, and providing consumers with additional product options, business development indirectly affects efficiency. Their study was based on the growth model proposed by Solow, which contends that capital accumulation drives economic development. Some academics claim that FDI and domestic investment don't necessarily lead to the same level of economic growth. Mencinger (2003); Borenztein et al. (1998) Margeirsson (2015) makes further claims that FDI encourages business expansion in the host country, develops domestic competitiveness, increases human capital capabilities, and

stimulates the transfer of technological innovations and knowledge to local businesses. Therefore, FDI has a positive effect on economic growth if the host country has the right political climate. OECD, 2002. Mencinger (2003) emphasizes, however, that FDI could result in a short-term negative effect on the host country when multinational companies (MNEs) force out domestic businesses. Due to a lack of other sources of funding for economic growth during the last several decades, the vast majority of developing countries have primarily depended on FDI. Furthermore, being an attractive destination for FDI is now a key component of their domestic goals. This is in line with a country's policies intended to promote FDI influx, according to Lautier & Moreaub (2012). At least temporarily, hiring domestic employees by foreign companies causes disruptions in the labour market. The main attraction is the possibility that foreign-owned companies would gain from superior manufacturing technologies that they can impart as multinational organizations, which will result in new entries into the local market offering greater pay (Backer & Sleuwaegen, 2003).

Both of these studies concluded that "a deep financial system in both the origin and destination countries greatly favors business worldwide growth via FDI." Crucially, to the best of our knowledge, no research has been conducted to determine if FMD in source and host countries work as complements or replacements, or whether they boost FDI independently of one another. The possible conditionality between receiving country FMD and reference country FMD is particularly pertinent for host countries, such as many developing nations, that have stayed on the margins in the globalized era of FDI. This is due to the fact that developing nations often have low FMD scores, but many of the countries that may possibly invest in these industries have excellent FMD results. This is not to claim that all of these nations have low FMD rates. Desbordes and Wei's disparity analysis (2017) conducted is based on data on Greenfield FDI projects at the company level that is not publicly accessible. The study was conducted in the manufacturing sector.

Desbordes and Wei (2017)'s work is enhanced in a variety of ways by our investigation, which also broadens its reach. The first and most important thing we do is look into whether the effects of FMD in the source country and FMD in the home nation are linked. Furthermore, we use Donaubauer, Meyers, and Nunnenkamp's unexplained sense of this data to derive a more comprehensive evaluation of FMD based on a broader variety of economic variables. This was done

to properly comprehend the relationship between FMD and the evolution of money system (2016a, 2016b). FMD extends much beyond those two, certainly significant, elements of industrialized money system. This extensively specified and time-varying index represents a significant advance over the prior study, which normally approximates capital market conditions only via loanable funds and equity enterprise value. FMD extends much beyond these two features of mature financial systems. Finally, our survey set of statistics spans from years 2001 to 2012, making it much longer in terms of time span than the study undertaken by Desbordes and Wei (2017) that is confined from only 4 years (2003–06). In the end, humans must rely on UNCTAD-disclosed official statistics on reciprocal Fdi inflow. According to what was discussed in further more detail in Chapter 3, researchers feel that this FDI indicator is best suited to assessing the influence of stock market circumstances on global competitiveness for available funding that may be obtained via inward FDI. We find that the origin and hosting nation FMD have positive independent effects on Investments, and that these effects are statistically significant and substantively meaningful. When we examine whether the two FMD measures are conditionally linked to one another, we find no indication of conditionality in the global sample. If we restrict the host countries to developing countries, we discover that FMD in the origin country may be used to replace FMD in the home nation, and conversely.

After a succession of financial and political upheavals, the quantity of investment from abroad (FDI) in developing nations has increased rapidly. To increase their share of FDI flows, the most nations have relaxed limitations on investments from abroad, bolstered price stability, deregulated government entities, implemented household economic regulations, opening up capital controls, and offered income support and incentives World Bank, (1997a). Moreover, equities have emerged as a mechanism of mediating the flow of money toward investment efforts. It should come as no surprise that these structural improvements in FDI Inflow and the ramifications for their money system, particularly their stock market, would elicit a positive response. Direct investment from abroad (FDI) into developing markets, like those in West Africa, increased from approximately \$1.9 billion during 1995 to more than \$15.8 billion by 2006. At the same period, emerging market countries' overall revenue almost doubled, rising from roughly \$2 trillion reaching nearly \$5 trillion. These overseas buyers have grown as prominent players in developing financial markets via the acquisition of existing shares or the recovery

of their investment through the sale of equities in financial system. Yet, little attention has been paid to the degree to which they have influenced the development of nascent stock markets in underdeveloped nations. A significant amount of research was already undertaken in recent years on the elements that influence the development of the financial sector. Yartey and Adjasi (2007), among others, had also investigated a links in between expansion of stock markets and economic determinants, banking regulation, as well as other variables specific to individual countries, as well as the links between the growths of the various components of a financial system. According to past study results, economic growth and the progress of financial reform both tend to coincide with the expansion of financial markets. The growth of the stock market is part of the overall expansion of the financial sector. In other words, the rise of a share price supplements the expansion of other parts of the financial system. A lot of research on the position of investment from abroad (FDI) in homelands suggest that FDI is an essential capital supply, that it enhances private investment in the country, that it is heavily linked with fresh employment possibilities and increased innovation, and that it boosts the general economic expansion in respective countries. Moreover, a vast array of experimental research on the function of Investment of home countries means that Investment generally related to as a consequence, we notice a triangular relationship between the following causes: (1) overseas investment (FDI) boosts the economy (2) income activity promotes the expansion of the stock market; and (3) the conclusion that Financial integration promotes stock market development. Foreign investment, Foreign investment,

according to Yartey (2008), is linked to institutional and regulatory change, sufficient transparency that proves effective, and reasonable trade methods, and they all encourage more confidence within local shops. This leads to a wider investment base and higher investor participation, which enhances the amount that flows.

For the previous three decades, emerging economies have proven to be a substantial component in the growth of the world's stock markets, contributing for a sizable percentage of this increase. As a consequence of the unprecedented rate and depth of stock market growth in emerging countries, a significant shift has happened not just in the banking firms of developing countries but additionally in the money supply of industrialized economies. The equity multiplier total value as a percentage of national income, a leading component of the growth of stocks, increased at an

unprecedented rate in leading developing economies during the (1980s and 1990s), rising from ten to more than eighty-four percent of GDP in countries such as Chile over the course of two decades as a result of the exceptional pace and depth of stock market expansion in emerging countries. The capitalization ratio (market capitalization as a proportion of GDP), a key indicator of stock market development, increased at an extraordinary speed in leading emerging economies during the decade of the (1980s and 1990s), rising from ten to more than eighty-four percent of gross domestic product (GDP) throughout nations like Chile over the span of two generations. New experimental analyses also show that the rise of financial markets may increase GDP, and actual evidence seems to confirm this notion. Some evidence shows that this claim is valid.

A significant amount of research has been undertaken during recent times on the elements that influence the growth of the financial sector. Yartey and Adjasi (2007), among many others, had also examined the links between the growth of financial markets and economic determinants, banking regulation, and other factors specific to individual countries, as well as the links between the growths of the various components of a financial system. According to the findings of the previous research, the growth of the economy and the advancement of financial reform both tend to coincide with the development of the financial markets. The development of the stock market is a component of the wider expansion of the financial sector. In other words, the rise of the stock market supplements the expansion of other components of the banking system. A large number of empirical studies on the role of foreign direct investment (FDI) in host countries suggest that FDI is an important source of capital, that it complements domestic private investment, that it is typically associated with new job opportunities and enhanced technology transfer, and that it boosts overall economic growth in respective countries. Singh (1997) performed one such analysis and discovered a favorable association connecting growth in the economy and the establishment of equity markets. Moreover, a vast array of experimental research on the function of investment in home countries showed that FDI is related to As a consequence, we notice the following causal triangle relationship: (1) FDI encourages growth in the economy; (2) income activity promotes the expansion of the stock market; and (3) the conclusion that FDI promotes stock market development. According to Yartey (2008), foreign investment is associated with institutional and regulatory reform, sufficient transparency, listing

standards, and trading standard methods, all of which inspire higher confidence within small stores.

It also leads to a wider investment base and higher investor participation, which increases the flow of funds. Financial market prices may often be discovered to be considerably different from their underlying value standards. What type of impact can erroneous capital market pricing have on corporate investment patterns? A substantial amount of theoretical study has been conducted on this issue. The great bulk of it predicts a positive relationship between mispricing and real investment. Keynes (1936), for example, emphasizes the impact of financial sector mispricing on the equity price. According to Bernanke et al. (2000), stock mispricing may alter the debt expense through improved security values. In a comparable vein, Shleifer and Vishny (2003) investigated how mispricing affects merger and acquisition activity more recently. They expect that expensive companies will be acquired, while cheap companies will be especially enticing targets. Notwithstanding the fact that actual evidence on the impact of oil price spikes on stock prices has been inconsistent, the financial press tends to work on the strong premise that swings in oil prices are the principal driver of stock market activity. This study shows that the response of aggregate stock returns may change significantly depending on whether the increase in crude oil prices was triggered by consumption or output growth in the oil market. A commonly held idea that rising petroleum prices would necessarily result in reduced returns has been shown to be true only for oil-market-specific demand shocks. Increases in precautionary demand for crude oil, for example, indicate concerns about the availability of future oil supplies and are instances of this sort of demand shock. On the other hand, it has been shown that rises in both real oil prices and stock prices are triggered by positive shocks to global aggregate demand for industrial commodities. Shocks to global crude oil production, although essential, are considerably less relevant for explaining stock price fluctuations than shocks to global aggregate demand and precautionary demand for oil. This is due to the fact that global consumer spending and precautionary demand for oil are more significant than disruptions to global crude oil production.

The responses of particular sectors' dividend yields to demand and supply shocks mostly in market for petroleum may give further information. We examine the options for rebalancing a portfolio in relation with fluctuations in the cost of petroleum and identify the sectors most vulnerable to the aforementioned shocks.

The petroleum market has fluctuated dramatically over the previous decade. During a twenty-year era of relative stability between 1986 and 2006, the price of a barrel of Brent petroleum products rose from \$60 to \$145 from 2007 and 2009 before plunging precipitously below \$30. Following a few more years, in 2014 and 2015, the price of oil fell by about 75% in a matter of months. Such price surges, quick decreases, and volatility have increasingly matched with corresponding changes in stock markets, attracting the attention of academics, operators, regulators, and traders looking to assess underlying interdependence of the two sectors. The correlation among crude oil and stock industries had also captured the media's spotlight, notably the budgetary publisher, throughout major moments pertaining to the energy market, "Oil, Stocks at Tightest Correlation in 2 Years". The impact of the price of petroleum products on equities might have proceeded to pique the interest of academics as well as financial market participants by both analytical and empirical perspectives, as well as industry-level, nation-level, regional-level, and international assessments Dutta, et al. (2017); Ftiti, et al. (2016); Hamdi et al., (2019); Hu et al., (2018); Huang et al., (2017); Ji et al., (2018); Dutt et al., (2019); Dutt et al., (2019);. According to Gourène and Mendy (2018), the increased focus has highlighted the importance of petroleum products as benchmark products in several different industries throughout the world. Despite increased interest in renewable and alternative energy, crude oil consumption has not been adversely affected (Gourène and Mendy, 2018). Petroleum is indeed a prominent fuel, accounting for 39.9 percent of global fuel use IEA, (2016). The growing scientific and theoretical examination of the link among natural prices and share exchanges demonstrates crude oil's relevance to the global economy via its influence on working capital and profit. This is because the cost of crude oil is directly related to financial asset value Badeeb and Lean, (2018). According to the equity valuation theory, the stock price is determined by economic and financial market conditions such as the rate of interest, rising prices, manufacturing costs, consumer spending, and market confidence, and the stock price is the sum of the discounted values of expected future cash flows at a variety of investment horizons. The equity valuation theory explains how the stock price is generated in this theoretical explanation Badeeb and Lean, 2018).

According to Gourène and Mendy (2018), shocks to the price of crude oil have an influence on stock markets because of the impact they have on monetary policy instruments, rising prices, business income, and other sectors of the economy

in both developed and developing countries. During the course of the last four decades, a number of African countries, such as Nigeria, Angola, Algeria, Egypt, Libya, Gabon, Chad, the Democratic Republic of the Congo, Ghana, the Ivory Coast, Senegal, and South Africa, have established themselves as major oil producers on a global or regional scale. Among these countries are: Nigeria, Angola, Algeria, Egypt, Libya, Gabon, Chad, the Democratic Republic of the Congo, Senegal, and South Africa.

Scale As a result, the amount of crude oil that is produced on the African continent is far greater than the amount that is consumed on the continent. The influence of the oil market on African economies can be seen in the establishment of the African Crude Oil Manufacturers' Organization (APPA) in 1987 as an institution that helps with the sharing of knowledge and expertise for all African energy companies Gourène and Mendy, (2018). This association helps with the sharing of knowledge and expertise for all African oil producers. The African Petroleum Producers Association (APPA) was created as an entity in order to facilitate the exchange of information and expertise among African energy companies. The dynamics of an oil market have a range of different effects, and these effects are felt equally on both sides of the market. Previous empirical research Ewing and Thompson, (2018); Ratti and Vespignani, (2016) utilized a variety of macroeconomic variables, including gross domestic product. These In addition, the focus of the majority of other statistical literature on shocks in oil prices and the responses of stock markets is mostly on established countries, while emerging markets are often neglected e.g., Diaz, et al. (2017); Hamdi et al., (2019); Tursoy and Faisal, (2018) explored the link between fluctuating oil prices and stock returns in the G7 economies by using the vector auto regression method (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States). They came to the conclusion that a derogatory connotation exists between the fluctuating crude oil costs throughout the globe and the returns on equities. Tursoy and Faisal (2018) focused their investigation only on the Turkish economy throughout the course of their study on the correlation between the crude oil price and equity markets. Their findings, which were based on a generalized autoregressive conditional lag (ARDL) methodology, indicated the existence of a beneficial connection between the price of crude oil and stock prices. This was shown to be the case by demonstrating that there was a positive correlation between the two variables. These findings are completely different from those

obtained by Diaz and colleagues (2016). In addition, An et al. (2018) concentrated their study on the petroleum sector in the Chinese economy, while Hamdi et al. (2019) paid attention to the Gulf Cooperation Council in their research. Gourène and Mendy (2018) conducted their research on the oil-stock nexus by using wavelet analysis. They focused their attention mostly on six different countries in Africa. The wavelet coherence analysis suffers from a number of shortcomings, including false assertions about the trend line, the lack of a functional process, an uncertain choice of wavelet, and an inability to cope with asymmetry and orthogonal considerations.

In addition, the technologies of co-integration and vector auto regression are the ones that are employed in the application of data analysis itself when it is carried out. Although the first technique investigated long-term co-movement without taking into account its effect, the second way investigated long-term dynamics without taking into consideration short-term analysis. Hence, the policy implications that are based on these procedures are seldom crucial in the decisions that are made concerning investments in Africa. This is because these techniques have been around for a long time. The majority of investors in African stock markets are more interested in the short-run than the long-run examination of companies because of the high volatility generated by political turbulence, social upheavals, policy reversals, and industry segmentation. This is because the stock prices in Africa are so decentralized, which is why this is the case (Panda, et al. 2019).

1.2 Problem statement

The vast majority of developing countries have a deficit when it comes to their investment earnings. It seems reasonable given that these countries probably have limited access to finance and would need investment in order to support their commercial endeavors. The following statistics present this scenario in graphical form. In many cases, the current account shortfall may be traced back to an excessive amount of net income. During periods of poor economic activity, many emerging economies, like Southern Africa, are placed in a perilous position because of the risk of capital flight, which is compounded by destabilizing withdrawals from their current accounts. In addition, information provided by the South African Reserve Bank (SARB) indicates that the country's current account shortfall in the latest years has been significantly influenced by the country's net investment income. In analyses of the current account deficit, this point is often overlooked, which raises concerns

about the potential for negative long-term effects of foreign direct investment on the payment account. The choice that a company makes on how it will reinvest its profits is likewise an important one. According to the 2013 World Investment Report published by the United Nations Conference on Trade and Development (UNCTAD), brownfield investments (defined as the purchase of an already constructed factory or other facility in order to use it for a new activity) are a significant source of foreign direct investment (FDI), accounting for thirty percent of all direct investment that comes into the world.

. In recent years, the gap between the trade balance and the current account deficit has remained rather stable. Since the majority of southern African countries get all of their energy from petroleum products, their economies are very vulnerable to swings in the price of oil due to this dependence. The rise in the cost of petroleum has a significant impact on the real economic output (GDP) of the economy as well as the economic growth of the nation overall.

. Increases in oil prices diminish national output, alter the structure of expenditure and production, and move the economy to a lower growth path.

1.3 Purpose of the study

The creation of new employment is one of the most evident outcomes of foreign direct investment (FDI) and one of the prime reasons why a country, particularly an emerging market, may want to draw in international investment. The growth of fresh opportunities and a reduced average jobless rate in the nation are a direct result of increased direct investment from overseas in the nation's sectors of manufacturing and service. When there are more people working, they earn more money and have more purchasing power, both of which are helpful for the economic well-being of a nation. The arrival of overseas investment (FDI) in a nation causes a steady flow of foreign money into that country. This enables the banking system of that nation to keep a sufficient stock of currency, which in turn leads to constant currency values. Energy price swings because an overall rise in the cost of imports, which is mostly attributable to significant price spikes in oil and other petroleum-based items. According to the most recent analysis released by the International Department of Energy (2004), In countries that are still in the process of emerging, there is a strong connection between rising energy use and economic development. It is anticipated that the increase in energy consumption will mirror the pace of

industrial growth. According to Bacon and Mattar's research (2005), the effects of rising oil prices are felt most acutely in nations with low incomes and in the poorest families of emerging nations. The purpose of this thesis is to investigate the effect that investment and fuel prices have had on the expansion of the South African stock market using the data that has been given above (1980–2020).

1.4 Research Questions

What is the relationship between FDI and stock market development in South Africa?

What effect does FDI have on stock market development in South Africa?

What is the effect and relationship between the oil price and stock market development in South Africa?

1.5 Research Hypothesis

H1: There is no relationship between foreign direct investment and stock market development in South Africa.

H2: There is relationship between foreign direct and stock market development in South Africa.

H1: There is no relationship between GDP and stock market development in South Africa

H2: There is a relationship between GDP and stock market development in South Africa

H1: There is no relationship between trade and stock market development in South Africa

H2: There is a relationship between trade stock market developments in South Africa

1.6 Significant of the study

There has been a recent sharp and large increase in the price of oil, which has led to widespread alarm about the potential impacts on economic growth and levels of poverty in many countries that are still developing. It is anticipated that this rapid rise would have a negative effect not just on the economic output (GDP) of countries that import oil but also on the GDP of the whole world. The negative impact that rising oil prices have on economies that are net importers of oil is highly variable from one oil-importing nation to the next. This is because the proportion of a

country's income that goes toward oil costs, as well as the energy efficiency and replacement capabilities of the economy, all play a role. Foreign direct investment (FDI), like any other kind of investment, comes with both benefits and drawbacks, the bulk of which are global in nature. For instance, foreign direct investment (FDI) may inhibit local investment by shifting control of native firms to foreign ones. Moreover, FDI can expose states to the political influence of other countries and affect exchange rates. The interest rate may be affected by several factors. In the event that they are unable to compete, they will pass up the domestic market. A nation's security might be put at risk if foreign direct investment (FDI) is allowed to continue unabated (e.g., Huawei). The research is very important because it will give more knowledge on the price of oil and how that price affects the development of the South African stock market as well as the impact of FDI on the South African Stock Market.

1.7 Limitation of the study

The focus of this thesis is on how foreign direct investment and oil prices affected the expansion of the South African stock market between 1980 and 2020. The FDI Assumption Based on Financial Vitality, the Eclectic FDI Concept, and the Proof of the Rate of Return are only a few of the foreign direct investment theories that are used in this thesis. The ARDL approach, which contains an aggregate of six variables—trade, growth in the economy, price of oil, total reserve, and market capitalization—is the only one that is relevant to this argument.

1.8 Definition of Terms

Stock market developments Growth strategy is a practical action adopted by a firm that strengthen its actual economy instead of seek out a new one. This is in contrast to market expansion, which is the process of expanding into a new market. The company is looking for new clients to advertise the product to so that it may appeal to a wider range of market segments so that it can increase its sales. The process of joining a market that has not yet been developed involves two stages referred to as market development. The first step is doing market research, during which a company will carry out a segmentation analysis and create a shortlist of industry sectors that are worthwhile to pursue. It is an endeavor to attract new customers by making use of a product or service that is already in existence. The goal is to increase

the scope of operations or break into a previously unexplored market segment. A smaller subset of a larger population is referred to as a segment. For instance, the employees in charge of marketing for the firm could divide the market into several segments according to factors such as area, demography, income levels, and so on. The next step in the process of developing a market is for the company to build an advertising tool for its entry. This comes after the company has chosen which market segment it will target.

FDI stands for "foreign direct investment," which is a kind of capital inflow that denotes a lengthy commitment on the part of an investor in a business headquartered in a totally different country. When we talk about a shareholder having a "lasting interest" in a company, we imply that they have a link to that company that will continue for a long time and that they have a significant amount of say in how that company is managed. This kind of interest is formally regarded as existing when a direct shareholder holds 10% or more of the voting power on the board of directors (for an incorporated corporation) or the equivalent (for an unincorporated enterprise). Companies that invest in the establishment of a new plant or office, as well as companies that purchase the existing assets of a foreign company are examples of businesses that engage in foreign direct investment (FDI). These companies seek to augment or replace global trade by producing (and often selling) goods and services in countries other than the one in which the business was first established. Expansion in the economy is calculated as the yearly proportional increase in GDP measured at market prices at a steady exchange rate. The sums are computed using US dollars that remained unchanged from 2010 through 2017. The gross domestic product (GDP) seems to be the sum total of the total investment added to the economy by all of the economy's residing producers, inclusive of any product taxes but exclusive of any incentives that are not included in the quality of the product is therefore determined without taking into account the depreciation of manufactured assets or the exhaustion and decline of environmental resources. Similarly, it does not take into account the impact of natural resource depletion.

The rate of growth in a firm's value added is one metric that may be used to evaluate how much each market sector has contributed to the development of production. Throughout theory, the amount of economic output in factor cost can be determined by calculating the amount of products and services produced in a particular time frame, pricing those goods and services using a predetermined

standard set of costs for the base year, and then deducting the cost of the intermediate inputs using the same pricing standard. This strategy, known as dual deflationary, calls for an in-depth understanding of the price structure of inputs and outputs. Nonetheless, value added is determined in many industries by extrapolating from the foundation year using single collection indices of outputs or, less often, inputs. This is done by utilizing single-volume indexes. It is common practice to attribute value added at constant prices to labor inputs such as actual pay or the number of employees. This is especially prevalent in the service industries, which account for the bulk of the government's workforce. In the absence of well-defined output metrics, determining the rate of expansion of services is difficult to quantify. Moreover, technical innovation may produce enhancements to manufacturing procedures and goods reliability. These improvements, when they aren't properly compensated for, may result in erroneous measures of economic output and, as a corollary, expansion. When inputs are utilized to estimate products, as is the case with nonfinancial services, unquantified scientific advancement may lead to an underestimate of the amount of output produced.

Trade is the act of deliberately trading goods or services amongst various stakeholders in an economic system. Since neither entity is required to engage in business with the other, a transaction won't take place until both partners consider it to be to their greatest advantage to do so. There are a number of contexts in which the term "commerce" might take on a variety of additional meanings. The sale and purchase of monetary instruments, such as stocks, commodities, or derivatives, is referred to as commerce in the money markets. When we talk about "free commerce," we're referring to international trades of items and goods that aren't hindered by tariffs or any other forms of trade restrictions.

Global Deposit" refers to monetary metals, special pulling privileges, IMF member reserves retained by the IMF, and foreign currency stored under the control of monetary authorities. All of these components make up the "total reserve." The metal holdings that make up these reserves are valued using the London closing prices throughout the previous year (December 31). Reserves are liquid assets that have been set aside for future use by an individual, a central bank, or a company. These often come in the form of cash or a commodity, like gold, and may also take other forms. While dealing with traders, reserves are often kept in the form of cash that may be obtained in a hurry. The use of energy Energies are consumed, which is an

element of the metabolic homeostasis that occurs inside the body. It was produced by using the energy from meals. The quantity of power utilized by the system is dependent on the individual's body's resting metabolic rate as well as their level of activity. Total energy expenditure (TEE) in a 24-hour period divided by basal metabolic rate is the formula used to determine the frequency of exercise for an adult who is not pregnant or nursing. This formula is used to characterize an adult's level of physical activity (BMR).

Energy Consumption refers to the amount of electric power as well as the desire for fossil fuels, petroleum, gasoline, or any other fuel that is consumed at a business within any given contract term. Moreover, it refers to the provision of essential services like drinking water and sewage to the facility, both of which require the use of power in order to be carried out.

Economic Expansion refers to an increase not only in the total quantity of wealth creation but also in the number of goods and services that are made available. It is a time of economic expansion, as shown by a rise in real GDP, which may be quantified. According to Arthur and Sheffrin (2003), explaining fluctuations in overall economic activity, such as those seen between economic booms and recessions, is one of the primary objectives of macroeconomics. In general, economic development may be identified by a rise in both production and consumption of various resources.

Wage Growth" and "Prosperity" refer to two consecutive phases of development in the economy, while the term "recession" describes two consecutive periods in which GDP decreased. It is possible for environmental factors such as weather or technological advancement to cause expansion, as well as internal factors such as monetary and fiscal regulations, liquidity, and rates of interest, related reforms, or other influences on producer rewards. Expansion can also be caused by a combination of external and internal factors. It is possible that the conditions on a global scale will have an effect on the levels of financial activity in various countries

CHAPTER II

2.0 Literature review

2.1 Introduction

Throughout the last 20 years, notably in the equities, the rising countries' capital systems demonstrated a trend toward expansion. This is especially true of the share prices. A stock market that is efficiently managed is more likely to attract investment from outside the home country. The "economics literature" implies that there is a positive association between foreign direct investment and the growth of share prices. Claessens, et al. (2001) investigate whether or not investment from abroad is seen as something more appealing only to overcome investment barriers through capital markets or whether or not FDI is seen as an alternative to the development of share prices in much more unsafe and monetarily poor nations. They used eight factor analyses from 1975 to 1999 and used the regression method to arrive at their findings. Using these methods, they established a significant positive correlation between foreign direct investment and the growth of the financial sector. To explain how foreign direct investment (FDI) influences the growth of the equity market in Ghana, Adam and Tweneboah (2009) employ the co-integration technique that was presented by Engle and Granger in (1987). According to the results, there is a beneficial relationship that exists over the long run between the amount of foreign

direct investment (FDI), the nominal exchange rate, and the growth of the stock market. The researchers Nazir, et al. (2010) analyzes the relationship between stock market development and investment from abroad (FDI) through economic growth from 1985 to 2008 and find that there is a significant positive correlation between FDI and economic growth. According to research conducted by Torre, et al. (2007), the stock markets of a nation see an increase in value when the government implements reforms such as privatization and supervisory improvements. According to Kalim and Shahbaz (2009), Baker, et al. (2004), and Halalmeh and Sayah (2010), investment from abroad (FDI) has a positive impact on the growth of share prices.

2.2 Theoretical review

Essentially, stock market and portfolio investment theories served as the foundation for understanding the rise of foreign direct investment, given that direct investment was previously seen only as an international capital transfer. Foreign direct investment was previously seen as a subset of portfolio investment, with interest rate differentials supposed to be the primary source of capital inflows. It was assumed that money would flow to any economy with a better-projected return due to the effect of interest rates. Yet, according to Hymer (1976), this viewpoint fails to explain the role of control in organizational administration. Various theorists have provided various explanations for the motivations for foreign direct investment, including market flaws, oligopolistic and monopolistic concerns, absolute and comparative trade advantages, and religious and political issues. This research will look at the FDI theory based on currency strength, the FDI dependence theory, the stock market theory of contemporary portfolios, and the marginal efficiency hypothesis.

2.3 FDI Hypothesis Based on Currency Strength

According to Aliber (1970), the relative strength or weakness of a country's currency is the primary factor that determines its investment from abroad. [Citation needed] Aliber believed that nations with weaker currencies had a higher opportunity to entice foreign direct investment than those with stronger currencies. This would enable weaker currencies to reap the benefits of fluctuations in market capitalization rates. Even if this theory is correct for foreign direct investment from developed to developing economies, the majority of economists believe that it fails to establish

relevance when dealing with investment between two developed economies with currencies of equal strength. Furthermore, they believe that it does not explain why an investor from a developing country with a weaker currency would invest in an economy that has a stronger currency. On the other hand the significance of this concept to a developing economy such as Nigeria cannot be exaggerated or overemphasized.

2.3.1 The Eclectic FDI Theory

It is common practice to refer to Dunning's (1977) pluralist paradigm as OLI. This theory would be a synthesis comprising three distinct notions. The theory proposes that businesses will participate in investment from abroad (FDI) when the advantages of leadership, location, or internalization are all present to make FDI appealing. An "ownership advantage" refers to the benefit that accrues to a company as a consequence of the ownership of a certain asset, such as a powerful brand, intellectual property, technical skill, or managerial ability. The term "strategic position" refers to the benefits that may be realized by putting a business in a certain place owing to the natural or acquired characteristics of that area. The benefit of doing a firm's function inside rather than exporting it to a market that is less productive, known as internalization, is known as the internalization advantage. As per Nayyar (2014), the theory proposes that investment from overseas (FDI) is the result of businesses having certain strengths (O) that may generate profits and that they want to exploit in other countries (L) something individuals are unable to perform properly until such time as they internalize (I). The concept notably presents the notion of a "seeker" Dunning & Lundan, (2008), which may apply to either a company or a person. A seeker is someone or a company that is seeking to invest and is generally driven by four distinct variables. Some individuals call themselves "natural resource seekers," and their goal is to acquire a large amount of renewable energy at a price that is lower than that of their own country. Furthermore, some people call themselves "market seekers," who are interested in gaining a greater market share. Last but not least, there seem to be "efficiency seekers," or those who want to engage across several countries so that they may take advantage of economies of scale. Last but not least, "strategic asset searchers" are those who are looking for assets that will help them become more competitive in the international market.

2.3.2 Theorem of the Rate of Return

One of the initial prototypes that attempted to account for investment was based on the conservative concept of an investment return rate. According to the assumption, the most important justification for investing directly in a foreign country is the existence of large differences in the rates of investment income offered by other nations. As per the idea, in order to achieve the greatest possible level of profitability, money will often flow from countries offering low returns to those offering high returns. This phenomenon of arbitrage will persist until all countries have the same level of capital return. The difference among financial assets and investment from abroad (FDI) is not addressed in this argument. Foreign direct investment (FDI) necessitates control, while investing does not always need control. If the rates of interest in another nation were greater, an investor might think about making an investment there.

2.3.3 Empirical literature review

2.3.4 The relationship between FDI and Stock Market Development

(2018) Masipa and Tshepo This article's objective was to investigate the connection between FDI inflows and economic growth throughout the period of 1980 to 2019. The vector model for error correction is used in order to determine and predict the long-run relationship between the modfrom's variables. Real effective exchange rates and economic growth have favourable long-term relationships, whereas government expenditure has a negative long-term relationship. The relevance of attracting FDIs to South Africa as well as the extent to which they influence growth in the economy and employment are highlighted by the study's conclusions. From a policy perspective, efforts to draw in foreign capital should concentrate on opportunities that may boost employment and the South African economy. The government must strengthen its anti-corruption systems in order to create an environment that is welcoming to foreign investment. This article argues that South Africa's capacity to develop and create jobs is thus also reliant on its capacity to increase GDP growth and draw in more FDI. To help other goals, such as removing poverty and inequality in South Africa, the attractiveness of FDIs should

be considered. Wyk and Nxazonke (2019) This research looked at the effects of both international tourists and foreign direct investment on entrepreneurial activity in South Africa. Stock data and the Global Competitiveness Monitor, which is used to assess the findings, as well as stock data, were heavily used in the study since it was largely focused on incoming financial resources. Having examined an upper-threshold vector autoregressive classifier using data from a collection that includes It was discovered that there was an irregular connection between local entrepreneurship and foreign direct investment in South Africa throughout the period 2000–2018. This was found by looking at a data collection that included data from 2000 to 2018. The research's most significant findings were that foreign direct investment helped local startup enterprises both in the short and long term. The policy recommendations urge the government to enact strict localization legislation for major corporations that is industry-specific and to create an environment that promotes entrepreneurship by lightening the regulatory burden on recently founded domestic businesses. Additionally, Odhiambo (2021) There is a correlation between growing oil prices and increased agricultural productivity, as shown by several studies, but there are no established price thresholds at which such price rises are detrimental to agricultural production. In order to ascertain the threshold at which the cost of oil would negatively affect the growth of farming in South Africa, this study is being conducted. The actual prices of WTI, or West Texas Intermediate, and Brent crude oils were included at the upper limit of the regression model of growth in agriculture as threshold variables. Dollars and rands were both used to represent these values. The results show that the prices of real crude oil priced at WTI in dollars, real Brent crude oil in dollars, and real WTI petroleum oil in rands, accordingly, will have significant negative effects on the growth of agricultural production in South Africa once the minimum levels of 12.99%, 15.68%, 15.69%, and 15.70% are exceeded. There is a correlation between growing oil prices and increased agricultural productivity, as shown by several studies, but there are no established price thresholds at which such price rises are detrimental to agricultural production. The goal of this study is to ascertain when the growth of farming in South Africa would be negatively impacted by a rise in the cost of oil. The actual prices of West Texas Intermediate (WTI) and Brent crude oils were included in the threshold model of the regression of agricultural growth as threshold variables. Dollars and rands were both used to represent these values. The results show that the cost of real WTI crude oil in

dollars, real Brent crude oil in dollars, as well as real WTI crude oil in rands, will have significant negative effects on the expansion of agricultural production in South Africa once the minimum levels of 12.99%, 15.68%, 15.69%, and 15.70% are exceeded.

Khan and others (2021) Global economies, both developed and developing, are significantly impacted by oil prices. More importantly, investors are curious to know the potential impact of oil prices that fluctuate normally on the financial markets worldwide, with particular emphasis on stock market returns, in light of the numerous instances of economic situations in various parts of the world at various times, such as the global crisis in 2008, the European debt crisis in 2011, as well as the COVID-19 pandemic. This is due to the frequent occurrences of economic crises, like the global crisis of 2008, in various regions of the globe at various times. In order to carry out an empirical analysis of the impact that the price of oil and other macroeconomic factors have had on the development of the stock market in Pakistan, this study uses a novel changing autoregressive distributed lag gaming model for annual time series data starting in 1985 and moving forward through 2017. The results of a dynamic numerical simulation of the ARDL model show that the exchange rate has a negative impact on the expansion of the stock market, while oil prices, remittance inflows, and investment from abroad have favourable effects on the expansion of the Pakistan stock market. This study suggests that in order to more easily forecast the performance of the Pakistani stock market, the government, legislators, and investors should assess anticipated shifts in oil prices, the exchange rate, and the predicted influx of personal transfers and FDI. (2018) Samman and Jamil This research examines the impact of foreign direct investment on the development of stock markets in nations that are participants in the Gulf Cooperation Council (GCC). Since Saudi Arabia was requested to become part of the G-20, these countries have grown to be a substantial economic trading bloc, which has resulted in a sharp increase in the value of shares as well as FDI over the past few years. Bahrain, Qatar, Kuwait, Saudi Arabia, the United Arab Emirates, and Oman are the six GCC nations for which data were gathered between 2002 and 2015 and used universally in this analysis. According to the report, foreign direct investment significantly contributed to the long-term growth of stock markets in GCC nations. Growth in the economy, the size of the economy, transparency, and local lending to the private sector were employed as the four control variables. In addition, the panel

co-integration analysis, panel error-correction model, and panel unit-root test were used. Additionally, the results of the study's short-term impact analysis convinced the researchers that FDI positively affects the development of the stock exchange, although in a small way. In terms of government policy, the study's results provide strong support for the GCC governments' ongoing efforts to encourage the flow of FDI into non-oil-based businesses in order to broaden their economies and create stock exchanges.

One goal of the study conducted by Ali Raza and colleagues (2012) is to explore the role that investment from abroad plays in the development of share prices in surrounding countries that are experiencing economic growth and to establish whether or not these two phenomena are related. The laudable contribution of FDI to the expansion of Pakistan's stock market is the primary topic of discussion here. Our study will also investigate the effect that direct foreign investment, local savings, currency rates, and inflation have on expanding stock markets in Pakistan within the context of a political environment that is always altering. This study used the ordinary least square (OLS) regression method to analyze annual time series data for Pakistan beginning in 1988 and continuing through 2009 in order to examine empirical correlations across variables. The time period under consideration was from 1988 to 2009. According to the results, a beneficial impact on Pakistan's developing stock markets is exerted by foreign direct investment (FDI), in conjunction with other variables that explain this phenomenon.

The findings of the study might be put to use to advise government officials on how best to encourage investment from abroad (FDI) and take various steps to provide benefits and maintain the interest of wealthy foreigners in spite of the unpredictable political environment in the nation. It's possible that capacity building will promote investment. A sensible policy should be implemented to limit the instability of the currency value as well as the price rise, and the cash reserve rate should be increased in the country via the implementation of conservation initiatives that are both acceptable and appealing. This investigation is limited to the expansion of Pakistan's equity market, with a specific emphasis on investment from abroad, along with additional variables that determine market development. According to the findings of our study, a closer connection exists between investment and the growth of share prices. Anokye and George (2008) look at how the effect of overseas investment (FDI) has played a role in the expansion of Ghana's stock exchange. Our research

indicates that there may be a connection in the long term between foreign direct investment, the development of Ghana's stock exchange, and the nominal exchange rate. We have shown that a change in the amount of foreign investment (FDI) may have a significant effect on the expansion of Ghana's stock market.

In this research, Nazir et al. (2010) analyze the link that exists between the development of Pakistan's financial sector and the general economic progress of the nation from 1986 to 2008. The time period that they look at is from 1986 to 2008. We looked into the correlation between the growth of both the stock market and the economic expansion rate by employing the two primary measures of the evolution of the stock market, namely the market's overall population and the level of cash flow that is currently present in it as determined by market capitalization. The size of the market and the level of liquidity that is prevalent in the market were both utilized in this investigation. Based on the results increasing the size of a country's stock market as well as its market capitalization in a developing market like Pakistan is one way to bring about wealth creation. This is something that can be done by increasing the size of a country's stock market. It was discovered that this is really the situation. To explore the long-term and short-term relationship between macroeconomic determinants and return on investment and development in Ghana, Asravor and Donne Fonu (2020) utilize the multivariate cointegration approach. This method was created by Asravor and Donne Fonu. In particular, the writers center their attention on Ghana's stock market. They arrived at the conclusion that there is a cointegration between the variables affecting the macro economy and the return on the stock exchange, in addition to the trajectory of the market itself. According to the findings of the study, the growth of the share price is negatively impacted by factors such as the level of the money supply, the rise in inflation, and human capital. On the other hand, the growth of the stock exchange is positively impacted by factors such as the level of bond yields and investment from abroad.

According to Samman and Jamil (2018), there hasn't been much research done on the subject of how the expansion of equity markets in GCC nations is related to the influx of investment from abroad. This research explores the impact that investment from abroad has on the expansion of equities in nations that are members of the Gulf Cooperation Council (GCC). These countries include Saudi Arabia, Kuwait, Qatar, and the United Arab Emirates. Because of Saudi Arabia's inclusion in the United Nations Security Council, the economies of those nations have joined together to

form a strong economic trade agreement. This has resulted in a considerable increase in both equity markets and investment over the last several years. For the intent of this research, data were collected from 2002 to 2015 for each of the six GCC countries (Bahrain, Kuwait, Qatar, Saudi Arabia, the United Arab Emirates, and Oman) and were used widely. These countries include Bahrain, Kuwait, Qatar, Saudi Arabia, the United Arab Emirates, and Oman. The findings of this study lead to the conclusion that direct investment from outside has been an important factor throughout the course of time in the growth of equities in GCC nations. The rates of economic growth, the value of output, macroeconomic accessibility, and local private sector credit were the four determinant factors that were used in this study. In addition, the panel co-integration analysis, the panel fault method, and the group functionality testing were utilized.

The outcomes of the research, which focused mostly on short-term impact, led the researchers to the conclusion that investment from abroad (FDI) has a positive but not substantial influence on the market as a whole. This was another factor that contributed to the researchers' conclusion. The findings of the study provide compelling evidence in favor of the ever-increasing push that GCC governments are making to encourage the influx of foreign investment into quasi-industries in order to broaden their markets and establish equities. This push is supported from the standpoint of public policy, and the findings of the study provide this evidence. Issouf and Fulbert (2015) study the causal connection among investment from abroad (FDI) and banking system growth by using panel data from emerging economies (FMD). In particular in developing nations, which are still in the process of building their financial markets, there is a lack of in-depth knowledge of the direct correlation between investment and macroeconomic fundamentals. This is especially the case in emerging markets. The vast bulk of the research that has been done on the topic of the connection between investment and FMD has concentrated its attention on the role that FMD plays in the connection between FDI and economic growth. We provide evidence that there is a two-way chain of correlation among various equity market growth indicators and investment from abroad in a country's economy. Regarding the leading indications of expansion in the banking sector, the connection is not evident and cannot be definitively established. Caution is needed when conducting an investigation into the relationship among FMD and investment since the findings might be significantly different depending on whether the FMD

variables used to establish causality are indicators of the expansion of the stock exchange or the finance industry.

2.3.5 The relationship between GDP growth and stock market

Sajid Nazir et al. (2010) analyze in this research the link that exists between development in Pakistan's financial sector and the general prosperity of the country from 1986 to 2008. The time period under investigation is from 1986 to 2008. We examined the connection seen between growth of both the stock market and the economic expansion rate through the application of two fundamental measures of the growth of the stock market, which are the market's overall population and the level of cash flow that is common in it as measured through market capitalization. The size of the market and the level of liquidity that is prevalent in the market were both utilized in this investigation. According to the results, increasing the size of a country's equity as well as its market cap in a new economy such as Pakistan's is one way to bring about productivity expansion. This is something that can be done by growing the size of a country's stock markets. It was discovered that this is really the situation. Oskooe (2010) the study consisted of a systematic examination of the relationship between the equity market's performance and wealth creation in Iran. This assessment was carried out within the context of the vector error-corrected model (VECM), which provided the framework for the research. The examination of causation was conducted while the investigation was still in progress. In order to achieve this objective co-integration tests are performed on all of the data from the time series at both their stages and their initial variations. Both of these analyses are done simultaneously. Using Johansen co-integration analysis, the maximum principal components or trail data analyses are utilized in order to establish whether or not the co-integrated variables occur in an identical sequence. In order to study the potential link between the prosperity of the stock market and the growth of the economy over the course of a longer period of time, an application of a vector error correction framework is carried out. During summation, Granger causality assessment is generally carried out in order to find the causal connection seen between variables that were mostly explored in the estimated model. This is done by determining which variable comes first in the chain of causality. According to the results, researchers have identified a long-term link that may be characterized as causal either between shifts in macroeconomic expansion or modifications in equity prices. In addition, the

data suggest that there is a causal relationship flowing in both directions between equity costs and economic growth in the near term. This link is likely to be bidirectional. As a result, one may reach the conclusion that the level of real financial activity is the key element that plays a role in influencing the movement of stock values over the long run. On the other hand, in the short term, the function of the financial markets as a key financial indication of future industrial prosperity in Iran is crucial. This is due to the fact that the equity market is a leading economic indicator. Kumar Guru and Sekhar Yadav (2018) examine the connection with both financial growth and economic expansion for five major nations that are emerging: Brazil, Russia, India, China, and South Africa (BRICS) during the period of 1993 to 2014. They do this by using banking sector and equity market growth indicators.

The years 1993 to 2014 are the primary focus of their attention. The first step in the study was to examine several of the most significant economic growth and macroeconomic determinants in the nations that were selected for further inquiry. After this step, a technique called the standardized protocol of momentary scheme estimating, also known as SYS-GMM, is used to perform studies on the link between growth and development in the economy. Some of the variables of banking sector growth that were included in the research were the scale of the money markets, the lending margin (CDR), and household private sector borrowing (CPS). On the other side, the development indicators for the financial sector consist of things such as the number of shares exchanged and the cash conversion cycle. This study also included a number of other economic control factors, such as rising prices, trade, and attendance in high schools. The critical elements of capital accumulation and economic variables were compared across all of the different countries that were included for this research, and the results of that comparison indicated considerable differences across the nations. According to the results of the dynamic one-step SYS-GMM estimates, every one of the financial advances that were considered, including the amount of banking institutions, CDR, and CPS, has a significant and positive effect on economic expansion. In a similar vein, it has been shown that the value of shares traded has a significant and positive relationship to economic growth when all of the necessary financial system development indicators are present. This discovery was made in the same spirit as the previous one. On the other hand, the same does not hold true when the inventory turnover is regressed in the presence of characteristics that are specific to the financial sector. The results of the research

indicate that, in general, the development of both the financial systems as well as the growth of the equity market have contributed to the rise in economic activity.

When it comes to fostering economic growth, several indicators work hand in hand and complement one another. Because there is a strong correlation between economic growth and financial development, policymakers need to make certain that they take the necessary steps for the simultaneous advancement of banking and the financial sector in order to boost the economy. This is because there is a strong correlation among economic growth and financial growth. This article's goal aims to accomplish something that has not been done before for the BRICS countries, and that is to investigate the connection between financial development and economic growth employing indicators taken from the financial system and the financial markets. This is something that has not been done before for the BRICS countries. Also, the bulk of the study that is now accessible concentrates its attention on economies that are already well established. In an attempt to close this gap, the focus of this study will be on five prominent emerging economies that are now making significant economic gain. Kolapo and Adaramola (2012) look at the role that the Nigerian stock exchange played in the overall economic growth of the nation over the years 1990–2010. Their focus is on the period between 1990 and 2010. This suggests that the development and growth of the economy are being controlled, at least in part, by the success of the financial sector. The rate of economic growth was approximated using the nation's gross domestic product (GDP), and the following characteristics of the financial system were taken into consideration throughout the analysis:

All listed equities and government stocks, as well as trading volume (MCAP), full new offerings (TNI), and quantity of trades (VLT) (LEGS) Both the results of the Johansen co-integration analysis and the Granger test for causality reveal that the expansion of the Nigerian economy and the stock exchange are intertwined with one another. The association between the two was analyzed, and that's how we came to this conclusion. This provides evidence that there is a connection between the financial system of the nation and the general economic growth of the country over the course of a lengthy period of time. The findings of the co-integration indicate that there is a causal link between the value of transactions (VLT) and the economic output in both directions; however, there is only a causal relationship in one direction, from market capitalization to the GDP, and not the other way around. The

findings of the causality test indicate that there is a statistical correlation in both directions between economic output and the value of transactions (GDP). At the level of 5 percent, the F statistic approaches the degree of statistical significance required for a test with two tails. On the contrary, there isn't any "reverse causation" from growth to enterprise value. This means that the two do not go hand in hand. This demonstrates that the two are not complementary to one another in any way. In addition, there is "no causation" here between gross domestic product (GDP) and all outstanding problems (TNI), in addition to the GDP and forearms; the two are not reliant on one another in any way. The TNI and GDP are both independent of one another. There is indisputable evidence that the nation's stock exchange has a comparatively good impact on the development of the country's economic growth. This effect has been shown to be relatively beneficial. According to the results of this study, the activities that take place in the financial sector have a propensity to have a positive influence on the economy. Because of this, it is suggested that the governing agency develop measures that would attract additional businesses to enter the marketplace. In addition, it is suggested that the state framework should be more conscientious throughout their continuous monitoring role in hopes of identifying procedures that subvert the stability of the financial system and erode the confidence of investors. This recommendation was made as a result of a recommendation that the regulatory authority should be more proactive. Brasoveanu et al. (2008), investing in a link between both the advancement of capital markets and wealth creation has drawn considerable interest. This is due to the fact that both are necessary for economic growth. BRASOVEANU et al. (2008), investment While there is much research relevant to this subject, there are not too many approaches for studying the economics of rising ex-communist states like Romania in particular. This is particularly relevant when contrasted with more general circumstances. In this study, we analyze the relationship between the development of Romania's financial system and the overall expansion of the country's economy by using a correction factor and VAR models. According to the data, the growth of the financial system has been shown to have a favorable connection with the expansion of the economy has a feedback effect; nonetheless, the most significant relationship is between the expansion of the economy and the equity markets. This indicates that business development follows wealth creation, with productivity recovery functioning as a deciding element in the transformation and development of financial

institutions. Financial development seems to follow wealth creation as a direct result of this.

In the study that Vazakidis and Adamopoulos (2009) carried out, they made use of a vector error correction technique to examine a causal relationship that existed between the growth of the financial sector and the growth of the economy in France during the stretch of time spanning from 1965 to 2007. Taking into account the adverse impact of interest rates, it has been questioned whether or not the expansion of the financial sector is the driving force behind the expansion of the economy, or if it is the other way around. It is common practice to make use of the total index of stock prices as a means of determining how the financial sector is progressing. This study aimed to analyze the ties of causation that exist between the variables that were taken into account by using Granger causality analyses and a vector error correction framework (VECM). In order to achieve this objective, co-integration examinations were conducted on every set of data from the time series, both within its stages and in its respective initial variations. These tests were carried out at both levels and with initial differences. In order to determine whether or not the co-integrated variables appear within a single order, an application of the Johansen co-integration analysis was carried out, taking into consideration the highest principal components as well as official data assessments. This was carried out to figure out whether or not the variables are co-integrated. A linear fault model was employed in order to investigate the possible connection that exists over the course of time between the rise of the stock market and the expansion of the economy in general. In conclusion, a simple regression test was carried out so that we could establish the chain of events that led to the observed results link several factors that were looked at when the model was being estimated. A boost in short-run economic growth of 1% in France resulted in a gain in the equity index of 0.24%, while a rise in interest rates of 1% resulted in a fall in the stock market index of 0.64% in France. The finding that the calculated correlation of error checking was clinically meaningful with an opposite value indicated that it did not indicate a problem with the lengthy balance seen between parameters that were investigated and that there was not a problem with the long-run balance between variables that were investigated. The growth of the economy seems to be the primary factor behind the ascent of the financial sector in France, as shown by the results of the COI study. Because of this, one may get the following conclusion: income activity has a positive

impact on the growth of share prices in France, but the cost of borrowing has a detrimental impact on the development of the financial sector in France. In their study, Paramati et al. (2011) examine not only the long- and short-term complexities of such a financial sector, but also the question of whether or not the achievement of an equity market is a direct contributing factor to economic expansion, as well as if economic growth is a direct cause of the success of financial markets. During the period starting in April 1996 and concluding in March 2009, data from the Indicator of Manufactured Exports (IIP) and the nation's Gross Domestic Product (GDP) are used on a monthly as well as quarterly basis, respectively. This coverage spans the whole period. The empirical study will have a plethora of data to work with as a result of this. The Granger Causality Test, as well as the Cointegration Test, a correction model for errors, and the tests for the regression model (ADF, PP, and KPSS), are carried out. Moreover, an error correction model is used. The findings of the Granger causality assessment that is performed on a monthly basis indicate that there may be a connection among IIP as well as equity markets (both on the BSE and the NSE). It has been determined from the findings of the Granger causality evaluation, which is carried out on a quarterly basis, that there is no connection between the GDP and the BSE. Notwithstanding this, there is a link between GDP and NSE, but it only goes one way, and that direction is from GDP to NSE. This is the only direction in which the relationship runs. A fully modified residual-based cointegration test's results suggest that there may be a link, at least over the long term, between the prosperity of the financial sector and the economic recovery. [Case in point:] In a similar vein, the findings of the error-correction framework demonstrate that when the long-run balance deviates from its state, wage growth adapts to restore balance by correcting the unbalance in order to bring the system back into balance. This is demonstrated by the fact that when the long-run equation deviates from its state, the lengthy balance deviates from its state. The conclusions gathered from this study provide credence to the "demand following" theory, at least in the relatively short term. The relevance of economic expansion to the rise of the stock market is the most significant insight that can be taken away from this study. This is the most essential takeaway that can be drawn from this research.

This study, "Its Function of Share Prices throughout the Economic Growth for Bangladeshi, Indian, Chinese, as well as Singaporean," by Muhammad Azam et al. (2016), explores the role that stock markets played in the growth of Bangladesh's,

India's, China's, and Singapore's respective economies. This research makes use of both yearly cross-country time series measurements from 1991 to 2012 and vector autoregressive latency constraint forms of assessment as an analytical tool. Both of these aspects are included in the study as separate components. According to the results of our research, there seems to be a lengthy correlation involving productivity expansion, overseas portfolio intervention (FDI), overall growth of the equity market, and inflation. This cointegration also seems to exist over a longer period. Calculations of the long-term elasticity of the development of each country's stock market show the expected sign, but these estimates are only statistically significant in China and Singapore. Estimates in other countries show the expected sign but are not statistically significant. It has been shown that investment from abroad (FDI) has a favorable association with the expansion of the economy in every country with the exception of India.

Notwithstanding this, the study found that the correlation between the two variables was not clinically meaningful for any country but China. Within the immediate term, there is a significant connection between the growth of the financial sector and the development of the economy in every country; however, the strength of this association is only significant in India and China. Direct investment from abroad (FDI) is the only kind of investment that has a significant and positive impact on the economic growth of any nation, and Singapore is such a country.

According to the data, it indicates a link that can be considered clinically meaningful between the variable representing inflation and the economies of both Bangladesh and Singapore. Its empirical findings point to the fact that the process of economic growth and development in the nations that were selected for the study is significantly influenced by the expansion of equities and the inflow of investment from abroad. Both of these factors were found to play important roles.

2.4 The relationship between oil price and stock market

In the research carried out by Delgado et al. (2018), the variables of price of crude oil, currency price, and index of stock markets are investigated in order to provide an explanation of the ways in which these aspects of the Mexican economy interact with one another. January of 1992 is the first month in the range of months that are considered for this research, and it ends with June of 2017. The vector autoregressive model (VAR) that has been constructed incorporates a number of

different variables, including the benchmark of the Mexican stock market, the index of oil prices, the nominal exchange rate, as well as the price index for consumers. According to the findings, which demonstrate that the value of the exchange rate has a statistically significant impact on the equity macroeconomic variables, a rise in the market index is connected to a rise in the value of the exchange rate. This shows that the exchange rate has an adverse influence on the stock market index. It has also been found that the consumer price index has a positive influence on the value of the currency exchange rate but a negative impact on the index of share prices. This is something that was uncovered. According to the data, there is an additional link that can be considered clinically meaningful between the petroleum price and the currency exchange rate. Because of this, one may draw the conclusion that an increase in the price of petroleum leads to an increase in the value of the currency exchange rate. In addition to this, the impulse-response functions show that the observed effects have a propensity to disappear with increasing periods of time that have passed since the stimulus was applied.

Throughout the course of the COVID-19 period, the research conducted by Prabheesh and colleagues (2021) investigated the degree to which there was a link between returns on equity markets and the returns on oil prices. This relationship is researched for key Asian countries that have a net importation of oil. Researchers construct the cointegration theory using time series. Researchers uncover proof that there is a favorable co-movement between the returns on petroleum prices and the yields on equity markets during the time period covered by the COVID-19 research. This movement was found to be positive. According to this, it seems that a drop in the price of petroleum sends a signal to the financial sector that is unfavorable.

Alamgir and Amin (2021) investigate the dynamic relationship that exists between the price of oil and the stock market in the four South Asian countries that were chosen over the period of time from 1997 to 2018 by employing a model that is known as a Variation Generalized Autoregressive conditional Lag (NARDL). This model was used to analyze the data. We find that there is a positive association here between petroleum price mostly on global market and the indicator of stock markets, and that the reaction of the equity market index including both positive as well as negative fluctuations in petroleum prices is ambiguous. This association is supported by the observation that there is also a positive association between the petroleum price on the worldwide industry and the index of stock markets. In addition, the

results of our research show that a rise in the price of oil in the global market leads to an increase in stock prices. This leads us to the conclusion that the economies of Southeast Asia do not comply to the optimal market hypothesis, as the EMH predicts they should (EMH). In order to enhance the performance of the South Asian financial sector, we strongly suggest that the policymakers responsible for making decisions do something to improve it. It could be done by eliminating the hurdles that stand in the way of future growth of such financial markets, upgrading the infrastructure of the nation, boosting the capacity of the share market, and recovering the trust of market players in the area. In the context of a vector autoregressive (VAR) model, Sharma et al. (2018) estimate a sequential interrelation seen between prices of global petroleum products as well as the variables of the stock markets in India. They do this by making use of data over the period that spans from 2010 all the way up until 2017 and starts on January 1. Three different time series were used for the research project: the nifty index, the BSE energy index, and the prices of crude oil futures. According to the findings of the cointegration and Philips-Perron unit root examinations, none of the response variables remain fixed at the initial difference but are non-stationary at level. This conclusion was reached after analyzing the data from both tests. The stationarity test revealed that there is no cointegrating component, which suggests that there is no relationship that exists over the long run. The VAR theory considers all-time series to be endogenous variables and analyzes them all simultaneously while also delaying the analysis of independent variables by two distinct amounts of time. According to the findings, lagging indicators of the futures market for crude oil prices, the nifty index, and the BSE vitality indicator are demonstrated to give a very excellent explanation for the vitality indicator. This conclusion was reached after analyzing the data. The stimulus calculated result reveals that the cost of petroleum crude decreases once a shock is applied to share prices; this is an unfavorable finding.

The authors of the research that was conducted by Degiannakis et al. (2000) examine the momentary connection between the value of stocks on the market and the prices of oil for countries that are both consumers and producers of petroleum. The aforementioned assumption was evaluated using information obtained from six countries using a method called cointegration. The exporting countries are Canada, Mexico, and Brazil, while the producing countries also include the Americas, Germany, and the Netherlands. This same finding of the actual historical causal link

reveals that, despite the fact that the moment link is the same for petroleum and hydrocarbon markets, ii) a link rises favorably (as well as adversely) throughout response to significant real economy (precautionary demand) crude prices. These price vibrations are brought about by changes in the overall worldwide economy or by worldwide unrest. iii (i.e., warfare) (i.e., wars). The connection that connects the two markets is unaffected by changes in the price of oil that are brought on by the supply side of the market. The results of the lagged correlation show that the price of petroleum has a detrimental effect on all equities. This conclusion can be drawn from the outcomes of the study. This is true despite the fact that there are a variety of possible explanations for the increase in petroleum prices. During the global financial crisis of 2008, the one substantial exception from this trend occurred when trailing energy prices exhibited a positive connection with share prices. This was the single significant deviation from this pattern. We have arrived at the conclusion that the oil market is not a safe haven that may provide protection against losses in the financial markets during times of significant economic volatility. This was not the least of our findings; nonetheless, it was among the most important.

Youssef and Mokni (2019) investigate the role that the price of crude oil plays in determining the level of vibrant connectivity that exists between the equities of petroleum countries and oil-importing countries. Specifically, they focus on how the oil market affects the stock markets of petroleum-producing countries. In order to investigate the dynamic interaction that takes place between these markets across the period of time spanning from 2000 to 2018, they were using a cointegration model. The following are some trends that we found after doing our research: First, the connection between share prices and the energy market, as well as the correlation between share prices of nations that import oil and nations that export oil, shifts over time. This is also true of the relationship between the stock markets of hydrocarbon and petroleum nations. In addition, they note that the reaction of investor returns to shifts in the price of oil in nations that are net importers of oil is more significant than the response in nations that are net exporters of oil during times of political unrest. This is because net importers of oil are more vulnerable to the effects of price fluctuations in oil. Second, the dynamic correlations between commodity prices and stock prices have a tendency to shift as a consequence of the origin of oil price shocks, which can be traced back to periods of worldwide unrest or shifts in the global economic cycle. This is because oil price shocks are a consequence of their

origin, which can be traced back to periods of worldwide unrest or shifts in the global economic cycle. Last but not least, the relationship between the stock markets of hydrocarbon countries and petroleum nations remains strong under both high and low petroleum correlation regimes exporting countries is strongly driven by the price of oil.

Mondal (2014) investigates the dynamic connections that exist between changes in the cost of oil and the movement of the Indian stock market. And for purposes of the study, daily information was obtained starting in January 2001 and continuing all the way through March 2013, inclusive. In this investigation, the reliability analysis that was developed by Johansen, the multiple regression test, the vector error correction model (VECM), the impulse response parameters (IRFs), as well as the multiple regression (VDCs) test have all been utilized to demonstrate the long-term as well as short-term connections that exist among the variables in question. These tests were carried out in order to demonstrate the long-run and short-run connections that connect the variables in question. The observation of cointegration provides evidence for the existence of a connection that is persistent throughout the course of time. In addition, the error correction term of the VECM illustrates that, in the big scheme of things, causation transfers from the Indian stock market to the price of oil but not the other way around. This shows that the error correction term of the VECM is accurate. The results of the Granger causality analysis that was conducted within the scope of the VECM approach indisputably show that there is no short-run causal connection between the variables. The study conducted by the VDCs came to the conclusion that the Indian stock markets and the pricing of petroleum are both heavily influenced by external factors. In conclusion, the IRFs made it possible for studies to be conducted that indicated a favorable shock in the price of oil had a minimal but sustained and increasing favorable effect on the Indian stock markets in the short term.

After looking at the statistics, it was clear that this was in fact the case. The findings of the study would result in a stronger comprehension of the connection between the erratic nature of oil and gas prices and the satisfactory performance shown by the markets in developing nations. In addition, the study will make it possible for foreign shareholders with an interest in the Indian stock market to comprehend the contextual connection among the parts. This will assist them in making more informed judgments about their investments.

2.5 The relationship between trade and stock market

From July 1998 through October 2008, Mubarik as well as Javid (2009) investigated the relationship between stock prices, returns, and the instability of the Pakistani market. Their research focuses on the years 1998 through 2008 specifically. The Dickey-Fuller test is carried out in order to establish whether or not the trend analysis in question is stationary. Both ARCH and GARCH-M models are put through their paces so that we may investigate the relationship that exists between return, instability, and turnover. The results indicate that there is strong evidence of a first-order autocorrelation between the return of the entire market and the return of individual equities. The results of the Granger causality experiment indicate that there may be a connection between the quantity of the market and its return, and this connection may represent a feedback loop. When looking at individual stocks, the data reveals that returns on individual stocks are more likely to cause volume than volume to cause returns. On the other hand, returns on individual stocks are more likely to create volume. The empirical data support the hypothesis that there is a meaningful correlation between shares traded and return variance. This hypothesis is supported by the incorporation of volume into the variance equation of the GARCH-M model. The fact that return volatility is impacted by trading volume is evidence that this interaction does in fact take place. Because the findings show that there is a significant influence of the trading they claim that the previous day's returns and volume have the potential to explain current market returns because they focus on the impact of the previous day's return on the volume from the previous day. This is due to the research demonstrating that the previous day's trading volume has a major effect on the current return, which is why yesterday's volume matters. The fact that the GARCH-M model has a sizable autoregressive process of the first order suggests that there is a consistent connection between volume and the path that returns will pursue in the foreseeable future. Researchers led by Ki-Hong Choi et al. (2012) looked into the connection among market returns as well as turnover ratio as a substitute for the entry of data into the economy using data from the Korean stock market (KSM) from the beginning of 2000 through the end of 2010. The data covered the period from January 2000 to December 2010. They investigated the relationship that exists among market returns and turnover ratio by using the GJR-GARCH and exponential GARCH (EGARCH) models. These models were utilized

to study the relationship. We found a strong connection between trading volume and volatility, which has led us to postulate that trading volume, has an impact on the movement of data in the economy. This is because we found a strong association between shares traded and price fluctuations. The findings offer support for the hypothesis that there is a mixture of many distinct distributions. [Citation needed] Because trading volume may also provide an explanation for liquidity asymmetry, we are led to the conclusion that transaction volume is an effective instrument for forecasting the events that make up the KSM. This leads us to the conclusion that trading volume is an effective instrument for forecasting the case of the KSM

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CHAPTER III

3.0 Methodology

3.1 Data

Several data sets from both the Federal Reserve and the organization provide vital instruments that assist with critical strategic choices and offer key statistical information for operational functions of the organization. These databases are also an important source of information for the general public. The use of norms and guidelines that are acknowledged on a global scale leads to the production of a data source that's also trustworthy and accurate in its presentation. A substantial percentage of the data is provided by the statistical systems of the member states, and the quality of the data gathered internationally is directly related to the effectiveness with which national statistical systems function. The World Bank is dedicated to supporting developing countries in improving the capacity, efficiency, and effectiveness of their government statistical systems. To this end, they are trying to strengthen the capacity of these systems. If more accurate and comprehensive national data are not readily accessible, it is difficult to formulate appropriate processes, evaluate the efficacy of initiatives designed to alleviate hunger, or monitor the level of progress made on achieving international goals. We are making use of the database that was recently set up to conduct research on the impact that changes in the price of oil and investment from abroad would have on the expansion of the equity market in the nation of South Africa between the years 1980 and 2020.

3.3 Variables

3.4 Foreign direct investment (net inflow)- The term "foreign direct investment" describes the total remittances of a portfolio that are made only with the aim of obtaining a lengthy management involvement (defined as 10 percent or more of the enterprise's outstanding shares) in a business that is active inside an industry that is unique when compared to the investor. This type of investment is considered a "foreign direct investment." Investment, repatriation of earnings, additional lengthy investment, and relatively brief equity are the components that make up this component of the payment equilibrium. Restoration of profits and several other kinds of long-term assets are some of the other types of capital. This series is a breakdown of the net inflows by GDP (new investment inflows minus disinvestment inflows) that foreign investors have made into the country that is reporting them. New

investment inflows are defined as the aggregate of all new investment inflows less any disinvestment inflows. The global financial institution (IMF) is responsible for publishing information on the payment balance; these statistics serve as the foundation for the data on stock flows. Statistics on investment from abroad (FDI) have been supplemented by employee assessments given by the World Bank. These estimates are generated from information gathered from the United Nations Conference on Trade and Development (UNCTAD) as well as actual government resources.

In accordance with the sixth season of a Payments System Booklet that was authored mostly by the World Bank in 2009, the components that make up a globally agreed meaning of foreign direct investment (FDI) were just as shown in: investment funds, such as those in industries engaged with assets that offer ascent to influence or oversight; investment in indirectly impacted or chosen entities; capital in compatriots entities; borrowing (but apart from chosen loans); as well as amended ownership stakes. The Guidelines for Foreign Equity Links outline parameters that may be used to establish whether or not a bridge shareholding arrangement leads to a foreign direct link. These criteria are based on the management and impact of the asset in question. Direct investment from abroad, sometimes known as FDI, is a kind of international investment that differs from other types of international assets in that its purpose is to establish an ongoing interest in or achieve effective managerial control over a corporation that is based in another country. In order to maintain a lengthy interest in a specific investment initiative, it is sometimes necessary to set up storage facilities, production plants, and other organizations in a foreign nation that are permanent or intended to last for a significant amount of time. An investor has the option of making a straightforward contribution in the form of a multinational enterprise, in which the investor establishes a startup in a different nation by building additional infrastructure; a partnership, in which the investor enters into a partnership agreement with a company overseas to create an entirely new venture; or an acquisition or merger, whereby the shareholder obtains a microfinance institution in a foreign country.

The Worldwide Monetary Fund advises that investments must make up at least 10 percent of the voting stock in order to be classified as direct foreign investment (FDI). This requirement is in place so that FDI can be tracked. In fact, several countries have chosen to set a higher standard for themselves. Several

countries choose not to make public the percentage of their income that was put back into the economy, and the concept of what constitutes a lengthy loan is understood differently in each nation.

The data on investment from abroad, often known as FDI, may not give a comprehensive view of capital flow inside an industry. The numbers on investment from abroad that comprise the currency exchange rate do not take into account the money that was generated locally. Money that was raised domestically is a substantial means of investment financing in a number of emerging economies. Furthermore, quasi-bridge operations within a unit, which include the shipment of products and services, are not accounted for in the numbers for foreign direct investment. The quantity of worldwide personal banking movements that was published mostly by the Reserve Bank is different from the amount that was stated through other institutions because of discrepancies in the classification of countries as well as the method employed in order to alter and separate the data that was supplied. In particular, changes may also be generated by the way in which certain portions of both the deals and certain overseas filings were regarded, which is particularly relevant when it comes to the subject of debt financing. The data for each nation's equity flows are shown here and those numbers include every country for which there are statistics.

3.6 Market capitalization a mentioned national company's market capitalization may also be referred to as its selling price. Market capitalization is calculated by multiplying the present value of the stock by the total number of shares in circulation (of all classes). It is not possible to invest in asset managers, mutual funds, or other organizations whose only objective is to make investments in all other publicly listed companies. These are the figures at the conclusion of the year. The market capitalization figures include not only common and preferred securities of local firms but also shares that do not have political representation as well as shares of listed domestic and international businesses that are only listed on one return (meaning the private corporation is not listed on any other return). Excluded from current valuation statistics are things like collaborative institutional investors, privileges, merited exchange-traded funds (the "Index fund), adjustable tools, alternatives, as well as commodity derivatives; international mentioned stocks that aren't solely listed; industries for whom the sole corporate strategy is to buy stock of other companies

listed, like corporate entities and investment firms; and industries that have been conceded to buying and selling (i.e., companies whose shares are traded at the exchange but not listed at the exchange).

The size of a nation's share price may well be evaluated in a variety of manners, and all of these evaluations might lead to a different ranking of countries. An expansion of a nation's economic money system is intimately linked to the expansion of the economy as a whole. Reduced management fees, enhanced distribution of resources, and enhanced productivity expansion are all outcomes of a monetary system that is operating effectively. This system also delivers data that is precise and easily accessible. Financial institutions and equity markets both contribute to economic development, which is the most important factor in reducing the number of impoverished people. Financial institutions have a tendency to monopolize any banking markets when economic growth is relatively low; but, when economic growth is relatively strong, local equity markets have a tendency to grow more active and effective in comparison to financial institutions. Money is drawn to countries that are open to investment and have successful monetary stability and robust judicial frameworks, including investor security, which leads to the growth of banking institutions. According to a new analysis of the evolution of the financial sector, the proliferation of foreign investment, an increase in the global presence of banking corporate entities, and the relocation of securities trading processes to global communication have all resulted from the increased use of advanced wireless technology as well as a higher degree of economic assimilation. Some businesses in emerging regions have indeed passed on markets in other countries, which enables them to have financing available at a reduced cost and shares that can be exchanged with greater ease.

On the other hand, this suggests that growing market platforms didn't generate appropriate cash movement to survive themselves, which places emphasis upon them to reevaluate their business practices. The data includes both size indicators (such as enterprise value and the amount of locally mentioned enterprises) and mobility measurements (such as the amount of stock exchanged as a percentage of GDP and the value of shares traded as a proportion of market valuation). The ability to compare such statistics across countries might well be hampered by philosophical as well as quantitative errors, such as incorrect documentation and variances in financial statements. This may be one of the reasons why international

assessments of such statistics are difficult. Standard & Poor's used to be a provider of stock market information until April 2013, when they discontinued their "Global Stock Markets Fact book" and archive. The sequence was updated in December 2015 to include data from the International Union of Conversations, which might also differ from previous S&P classifications or techniques.

3.6 Oil price- When people speak about the price of oil, they are often referring to the current cost for one barrel (159 liters) of standard petroleum. This is the most common reference point. This cost acts as a point of reference for those who trade in and out of petroleum products. Some of the benchmarks that are included in this price are the Texas Industrial (WTI) price, the distillate fuel price, the Qatar petroleum price, an entity's bowl premium, the Tapes petroleum value, the Jolly Illumination price, the Urals oil price, the Isthmus price, and the West Canadian Select (WCS) price. The oil price is mostly dictated by demand and supply dynamics on a global scale, not by the level of local production in any one country's oil industry. The price of crude oil maintained a reasonable level of consistency throughout the world during the entirety of the nineteenth century as well as the first decades of the twentieth century. According to the research of Ritchie et al. (2017), the first signs of a shift in the status quo can be traced back to the 1970s, when energy costs all over the world started to steadily climb. Over the course of human history, there have been many complex characteristic forces contributing to the worldwide price of crude oil. These factors include shocks to the supply of oil, consumption, and memory bandwidth, as well as disruptions to the economies around the world that have had an impact on petroleum prices.

3.7 Total reserves- Holdings of commercial metals, special borrowing privileges, and deposits of IMF countries kept mostly by the IMF, including deposits of different currencies under the supervision of the central bank, are all included in the total reserves. The gold's market price in Britain on the 31st of December, the final day of the year, was used to determine the worth of the gold that was stored in these vaults. The figures are shown in modern-day United States dollars. The currency exchange rate (balance of payments) constitutes a double-entry costing method that displays the entire movement of commodities and services within and outside of an industry. It is also known as the international trade balance (ITB). It also displays all

of the transfers that are the equivalent of actual assets and expenses incurred that have been delivered to or by the global community without any expectation of receiving anything in return, such as contributions and subsidies.

Lastly, it demonstrates all the shifts that have taken place as a result of financial activities in the residents' rights towards or obligations towards foreign buyers. The phrase "international investment position" describes this particular aspect of the business. Every single transaction is logged not just once but twice: the first time as a borrowing and then again as a deduction, just in case you were wondering. Throughout practice, however, the accounts do not always match, despite the fact that in principle the closing worth should be equal to zero. As a consequence of this, it is essential to include a balancing item, which is also referred to as net errors and omissions. A document known as the currency exchange rate provides information on how one market interacts with other economies located all around the world. The accounts that make up the total amount of transactions are divided into two distinct groups: the deposit assets, which further include detailed information on services and products, main revenue, as well as the calculated amount; and the investment and financial accounts, which register equity exchanges, the procurement and storage of non-produced intangible resources, and money transfers in financial holdings and obligations. The current account records transactions in items and services, main revenue, and secondary income, while the financial and capital accounts record transactions in financial liabilities and assets.

Both the credit lines as well as the monetary and capital accounts are referred to in separate contexts by their respective names: the deposit assets as well as the monetary and capital accounts. One of the most important and analytically meaningful markers of an external imbalance is a country's overall equity account. The primary purpose of the accounts that make up the balance of payments is to provide the function of showing whether or not an outside deficit needs adjustment. To establish where to define the boundary for analysis purposes, one must make a decision based on the imbalance that most effectively conveys the need for adjustment. This decision must be based on their best judgment. There are a number of different definitions that are often employed for the purpose of analyses such as this one and others like it. The gap seen between the quantity of products that are exported and the amount of products that is brought in is the difference that is referred to as the balance of payments. When seen from an analytical vantage point,

the difference between goods and services is considered to be arbitrary. For example, the same amount of improvement in the payment equilibrium can be achieved with one foreign currency denomination gained by something like a freight company as can be achieved with foreign currency acquired by a product exporter. This is because foreign currency can be acquired in both situations through the sale of goods or through the purchase of currency.

Notwithstanding this, the trade balance is a useful indicator of developments in the current account position since it frequently represents the most recent of both available indicators. This is because the trade balance reflects changes in the value of goods and services that are traded internationally. In most instances, the importers are capable of offering information on commodity transactions far in advance of the period when data on trade in services may be collected. This is because the customs authorities focus on physical goods rather than services. As a consequence of the lack of a single source for the statistics that are used to construct the payment equilibrium, there isn't any means of verifying that its statistics are completely in line with one another. As a direct consequence of this, the balance of payments may include irregularities. One of the sources is customs data. Other sources include monetary accounts of the banking system, documents of liabilities, evidence provided by enterprises, assessments to estimate industry operations, including accounts of overseas funds. Differences in the methods that were utilized to obtain the information, such as changes in scheduling, classifications of residence as well as possession, and the currency value that was used to evaluate operations, all contributed to overall mistakes as well as exclusions in the information gathered. Furthermore, there is a possibility that records of trafficking and other sorts of illegal and gray-area lawful commercial transactions might not even exist or be erroneous.

3.8 GDP growth- The annual percentage growth in GDP is calculated at present market rates as well as primarily on levels of the domestic currency that remain constant. The computation of composites was done with prices from 2015 kept unchanged, and the results are presented in US dollars. When calculating the nation's economic output (GDP), one must first sum up each of the commodity prices and then deduct all of the incentives that are just not included in the price of the products. The overall economic output (GDP) is the overall value of the product that was generated by all of the domestic firms in a country. It is estimated by removing

anything for items like the degradation of produced goods and the depletion and loss of biodiversity. In other words, it does not take into account any of these factors. The entire quantity of value added by all of the nation's manufacturers is known as the "economic output" (GDP), which is an abbreviation for "gross domestic product." The difference in worth that results when the total production of producers is compared to the worth of the intermediate goods and services that are utilized in production is referred to as value added. This difference is calculated before taking into account the value of the capital equipment that is used in the production process. The United Nations System of National Incident-Based Reporting requires that the calculation of value added make use of either basic prices or current costs (which do not take into account any additional taxes that have been imposed on the goods) as well as supplier costs (including net taxes on products paid by producers but excluding sales or value-added taxes). The above estimations would not take into account the expenses of shipping, which are itemized by manufacturers and invoiced to customers separately. When calculating total GDP, purchaser prices are commonly utilized as a variable. When determining the value added, it is common practice to compute the value supplied by industry in proportion to the cost of the basic items. This occurs when calculating the value added using the prices produced by manufacturers. In order to calculate rates of growth across GDP overall and for its separate components, the method of minimum corners is paired with data on prices that have remained constant inside the nation's currency. This allows for the computation of growth rates. The use of constant price series that are labeled in US dollars is common practice when it comes to computing expansion rates in different locations and socioeconomic categories. The next step is to convert the data, which was previously denominated in local currencies, to constant US dollars using an exchange rate from the common reference year. The pace of expansion of an industry may be estimated by watching how the amount of its output or the wage growths of its residents change over the course of a certain period of time. A quantity of the nation's economic output (GDP), actual household income, and actual economic output are the three potential indicators that can be used to calculate growth, as stated by the 2008 National Accounts System (2008 SNA) that was published by the United Nations. These are the figures that were used to compile the 2008 SNA. The gross domestic product (GDP) accounts for the sum total of all the value that is produced

by households, the government, and enterprises that are active participants in the economy. This number is derived by using prices that have remained constant.

The gross domestic product is calculated by factoring in all of the production that takes place inside a nation's borders, regardless of whether the money was obtained by domestic or foreign businesses. The rate of growth in an industry's economic output is one statistic that can be used to analyze a company's commitment to the rise in the output of the economy. This is one of the metrics that may be utilized. In theory, it is possible to estimate the value added at constant prices by first evaluating the amount of merchandise and services manufactured during a time frame, then assigning a value to those products based on an agreed-upon set of prices for the base year, and finally deducting from that value the expenses of inputs, also at constant prices. This would be done in order to arrive at an estimate of the value added at purchasing power parity (PPP). This strategy for dealing with double deflation calls for an in-depth familiarity with the price structures of both inputs and products. Nevertheless, in many different industries, the service provided is projected first from the baseline year by using the collected edition ratios of products as well as, less often, supplies. This is done in order to calculate the value added. The term for this kind of reasoning is "backwards causation." It is common practice, when computing value added at constant prices, to infer it from labor inputs such as real compensation or the number of employees. This is especially prevalent in the skilled trades and a substantial chunk of the public sector. Because there aren't any established benchmarks by which production can be measured, it is still impossible to evaluate the growth in the supply of services. In addition, developments in technology may lead to improvements in production processes as well as enhancements in the overall standard of products and services. In the event that these changes are not adequately controlled, they have the potential to distort assessments of value added and, as a consequence, expansion. When results are estimated using inputs, as is the case with nonmarket services, the quantity of output is likely to be underestimated owing to unmeasured technical advancement. This is the case even when nonmarket services use this estimation method.

In a similar vein, changes in quality that are not observed may lead to an underestimation of both the value of the product and the value supplied. This may occur when there is a lack of attention paid to monitoring quality. Because of this, it is likely that growth and increases in productivity will be underestimated, while

inflation will be overstated as a result. In emerging regions, in which a considerable amount of business growth is not recorded, informal economic activities provide a particularly difficult challenge for the task of measuring. This is particularly the case in nations whose GDP growth rates are decelerating. The construction of a complete picture of the economy requires the estimation of domestic outputs created for domestic usage, purchases in local markets, barter exchanges, and activities that are either illegal or purposefully unreported. The skill of the people responsible for the generation of the statistics and the methods that were used in the process influence the degree to which such predictions are reliable and complete. The wage levels of financial statements may lead to pauses in the series, which may make it more difficult to compare data collected at different points in time. The expansion rate that is estimated for an economy may also be impacted as a consequence of this factor.

As nations refactor their financial statements, the scales that are allocated to the various components are revised so that they more accurately represent the manufacturing trends as well as the utilization of yield throughout today's economy. This is done in order to comply with generally accepted accounting principles (GAAP). The newly installed year ought to be one in which the economy functions normally; that is, the new base year ought to be one in which there are no major shocks or distortions. There are still a few developing countries on the rise that have not brought their national accounting systems up to speed in a considerable amount of time. Using an earlier foundation period for the calculation of implicit pricing and volume weights may lead to misleading findings due to the fact that these weights gradually lose their relevance and utility over time. In order to get comparable series of constant pricing data for the purpose of computing statistics, the Reserve Bank rescales gross domestic product as well as economic benefit by industrial origin to a common reference year. This allows for more accurate calculations of aggregates. This enables analyses here between two separate data sets to be carried out with a higher degree of precision. Since rescaling changes the explicit percentages that are used in the production of geographical and revenue-level statistics, it is not possible to compare composite economic performance with those from earlier installments that had different basis years. This is because previous editions had different base years. There is a chance that rescaling will result in a disparity between the sum of the components that have been designed and the GDP after the latter has been subjected to the process. The disparity is not taken into consideration in order to

avoid inadvertently skewing the growth rates in an unnatural direction. Because of this, the growth rate of the economy does not match the rolling sum of the productivity growth of the parts that contribute to the GDP. This is a direct result of the situation.

Trade - Trade is the total of goods and services exported and imported as a percentage of GDP.

Variables description

#	Variables	Abbreviation	Measurement	Source
1	Foreign direct investment, net inflows	FDI	(% of GDP)	World Bank
2	Gross domestic product growth	GDP	(annual %)	World Bank
3	Oil price	OP	(U.S. dollars)	World Bank
4	Market capitalization	MC	(% of GDP)	World Bank
5	Total reserve	TRRIG	(includes gold, current US\$)	World Bank
6	Trade	T	(% of GDP)	World bank

3.9 Model specification

The process of deciding which variables will be in a model and why they should be there is called "model specification" MacCallum, (1995). During the whole process of developing a model, there is a tension between the need to include all important variables and the need to keep the statistical power of the model. Both of these goals are necessary, but they are in direct opposition to one another. For the purpose of the regression analysis, we make use of the ARDL model to assess the relationship between the expansion of the South African stock market and the level of foreign direct investment (FDI) plus energy prices. The distributive autoregressive lag (ARDL) structure is a framework built on ordinary least squares (OLS), and it may be used for both quasi-response variables and longitudinal data that have mixed orders of integration. ARDL models are referred to as "models added to the mixture

of integration autoregressive models." The term "mixed-order integration autoregressive models" (or simply "ARDL models") is used to refer to these types of models. The following is the formula for the connection seen between the quantities that is being controlled (the criterion variable) and the variable that is being controlled (the independent variable):

$$MC_t + \beta_0 + \beta_1 FDI_t + \beta_2 OP_t + \beta_3 TR_t + \beta_4 T_t + \beta_5 GDP_t + \varepsilon_t$$

Whereas:

MC = market capitalization (proxy for stock market)

FDI = foreign direct investment

OP = oil price

TR = total reserve

T = trade

GDP = gross domestic product

ε = is the error term

$\beta_1 \dots 5$ = Constant of the perimeter

t = the time interval from 1980-2020

3.10 Descriptive statistics

Descriptive measurements are short equations that give a lot of information about a set of information. This information could be a sample of the whole group or a representation of the whole sample. Qualitative data may also be used to characterize an individual. There are a few other names for statistical analysis, including "descriptive data" and "descriptive indices." Measures of central tendency and measurements of variation are two subcategories that fall within the statistical category that is referred to as "descriptive statistics" (spread). The sample mean may be measured in many different ways, some of which include the average, the middle, and the normal. On the other side, the standard deviation, variance, minimum and maximum variables, kurtosis, and skewness are all examples of measures of variability. In a nutshell, qualitative data are used to help define and comprehend the characteristics of a specific data set by providing succinct summaries of the data set's samples as well as its measurements. These summaries are provided in order to aid in the process of defining and comprehending the attributes of the data set. The most well-known types of statistical analysis are those that evaluate the center of a distribution. These measures, which include the average, the midpoint, as well as the

normal, are utilized almost widely across all school levels of statistical knowledge. You can determine the mean, which is also referred to as the average, by first adding all of the figures that are contained within the data collection and then dividing that total by the total amount of information that is contained within the set. This will give you the median. The mean is also referred to by the term estimate.

3.11 ADF and PP unit root tests

The Dickey-Fuller test was first devised in 1979 by David Dickey and Wayne Fuller, both of whom were mathematicians working in the United States. Its objective is to find out whether an estimation technique has a normality test, which is a trait that might make it hard to draw conclusive results. This approach is useful for analyzing time series that exhibit a trend, such as the values of assets. Yet, the vast majority of economic and financial time series have a more complex and dynamic structure than can be captured by a standard auto-regressive model. This is because it is the easiest way to establish whether or not there is a unit root. An expanded Dickey-Fuller test is the approach that is used in its place; it is the test that comes into play at this point. It is not tough to arrive at the conclusion that an enlarged Dickey-Fuller test (ADF) is just that: an amplified version of the original Dickey-Fuller exam provided that one has a better understanding of the basic notion that lies at the heart of the Dickey-Fuller test. If one does not have a better understanding of the fundamental notion that lies at the heart of the Dickey-Fuller test, it is difficult to arrive at the conclusion that an ADF The same group of researchers refined their basic vector autoregression unit root test, which at the time was known as the Dickey-Fuller test, in 1984 so that it could handle more complicated structures with unknown orders (the augmented Dickey-Fuller test).

The enhanced Dickey-Fuller test is a method that looks for a unit root in a time series sample, much as the original Dickey-Fuller test did. The test is used in the field of statistical research as well as econometrics, which may be defined as the application of mathematics, statistics, and computer science to data pertaining to economics. The key distinction between the two tests is Also, ADF is used for a wider range and more complicated set of time-series calculations. It is the fundamental distinction that can be made between the two examinations. Its improved Dickey-Fuller statistic is used in the ADF test, and a result that really is zero correlates to this characteristic. When the value of the variable in question gets increasingly negative, the evidence

that argues against the proposition that there is a regression model is more persuasive. Obviously, this can only be said with a predetermined level of certainty at most. In other words, if the ADF sample mean is positive, one does not always have to reject the null hypothesis that there is a unit root in the data. Because of this, we may deduce the existence of a cointegration relationship from the fact that the result was positive. In the year 1988, researchers Peter C.B. Phillips and Pierre Perron came up with the idea for the Phillips-Perron (PP) test for unit roots. In spite of the fact that the unit roots of the PP test and the ADF test are quite similar in many ways, the main difference between them is in the approach that is taken by each test toward the analysis of serial correlation. In comparison to the normality test, which ignores the likelihood of any time series, the fixed effect model makes use of a geometrical auto-regressive in sequence to get a similar version of the framework of the mistakes. This is carried out to determine if there's a significant relationship between the two variables being analyzed. In spite of the fact that the two tests are dissimilar from one another in a number of ways, the findings of both of them nearly never indicate a sudden end.

3.12 ARDL bound test

The regression analysis, in particular the multiple linear (also known as the limits test), is predicated on the hypothesis that its parameters are required to be merged in sequence $I(0)$ as well as $I(1)$. If indeed the factors are incorporated at an order higher than $I(0)$ or $I(1)$, then the findings of this test are meaningless and cannot be relied upon in any way Pesaran et al.,(2001). Before we can establish the extent to which the main parameters are integrated, we need to explore all parameters using a number of tests, such as the Test statistics and the Thompson test. Both of these tests may be found online. These tests, which are based on the assessment, can also help with the nonstationarity assumption and the alternative hypothesis H_0 . They use this assumption as their basis. The statistical technique and the PP analysis are both founded on the same underlying concept, which is that in order to identify whether or not a series remains stationary, it must first be determined whether or not it has stationarity. This fundamental premise is shared by both of these tests. In the event that this is shown to be the case, the series in question will be considered irregular. The fact that all of the variables are deemed constant at the mixed layer provides sufficient justification for the use of autoregressive lag.

Whereas some are regarded as stationary when they reach level, while others are considered stationary when they reach the first difference. As a consequence of this fact, we have made use of the ADRL limits analysis founder approach, which reveals the co-integration relationship that links the variables together. Whereas if the data transfer component in the cointegration equation has a zero coefficient, this implies that there is a lengthy cointegration link between the parameters that are being studied. [Case in point:] In addition, we have performed a variety of tests, such as the serial correlation LM test to investigate the correlation coefficients, the Breusch-Pagan Godfrey test to investigate the constant variance, and the Jarque-Berra test to investigate the normality of the variables. All of these tests have been carried out in order to investigate the relationships between the variables. The simple regression examination was carried out so that we could discover which variable was leading to which other variable and the direction of the causal relationship. To get things started, we will first provide a clear and basic description of the ARDL methodology. When this method is used, every variable in the model is considered to be an influential factor. On the other hand, the equation that exemplifies the model for error correction in the best possible way is as follows:

$$\begin{aligned}
\Delta \ln MC_t &= \alpha_0 + \beta_1 \ln MC_{t-1} + \beta_2 \ln FDI_{t-1} + \beta_3 \ln OP_{t-1} + \beta_4 \ln TR_{t-1} + \beta_5 \ln T_{t-1} \\
&\quad + \beta_6 \ln GDP_{t-1} + \sum_{i=0}^q \Delta \alpha_1 \ln MC_{t-k} + \sum_{i=0}^p \Delta \alpha_2 \ln FDI_{t-k} \\
&\quad + \sum_{i=0}^p \Delta \alpha_3 \ln OP_{t-k} + \sum_{i=0}^p \Delta \alpha_4 \ln TR_{t-k} + \sum_{i=0}^p \Delta \alpha_5 \ln T_{t-k} \\
&\quad + \sum_{i=0}^p \Delta \alpha_6 \ln GDP_{t-k} \\
&\quad + \varepsilon_t \\
\Delta MC_t &= \alpha_0 + \sum_{i=0}^q \Delta \beta_1 \ln MC_{t-k} + \sum_{i=0}^p \Delta \beta_2 \ln FDI_{t-k} + \sum_{i=0}^p \Delta \beta_3 \ln OP_{t-k} \\
&\quad + \sum_{i=0}^p \Delta \beta_4 \ln TR_{t-k} + \sum_{i=0}^p \Delta \beta_5 \ln T_{t-k} + \sum_{i=0}^p \Delta \beta_6 \ln GDP_{t-k} + \lambda ECM_{t-1} \\
&\quad + \varepsilon_t
\end{aligned}$$

3.13 ARDL model

Because of the potency and significance of the lengthy connection, the primary advantage of the ARDL framework is that it can be utilized regardless of the order of integration⁶, whereas other cointegration strategies require the very same sequence of incorporation, including all parameters. This contrasts with the fact that the long-run connection is the driving force behind the long-run connection. In addition, the autoregressive distributed lag technique may be used even with a small number of participants, but the durability of the values given by other competing techniques is reliant on the size of the sample that is employed in those methods. Because of this, when using the ARDL technique, both unit root examinations and aggregation value experiments that are often used to determine the overall development sequence are skipped over. According to Hendry et al. (1984) the autoregressive distributed lag method of regression analysis is an attempt to connect an uncertain statistical mechanism with a properly specified econometric model. This endeavor was undertaken by Hendry and his associates. As a result of this, it is essential for the theory of economics to impose boundaries on the analysis. The test for the suitability of the regression analysis has been determined by means of its parameter estimates, in accordance with the Hendry-type approach. These model parameters are referred to as the screening procedures for the residual variance and include the absence of time series, homogeneity of variance, and linear regression. This is done in this manner due to the fact that the Hendry-type technique is predicated on the assumption that the statistical qualities of a model may be utilized to deduce the model's underlying characteristics.

3.14 Residual diagnostic tests

3.14.1 Serial correlation

When fault components in a response variable are carried over from one interval to the next, a phenomenon known as regression analysis (sometimes referred to as synchronization) occurs. To be more precise, there is a connection between an error that was made previously and an error that will be committed in the future. Favorable time series is the name given to the occurrence that occurs when favorable errors caused during one period carry over into additional favorable errors committed during the subsequent period. If there is a bad mistake at one time, it rolls over into a bad fault for the subsequent period, which is what is meant by the phrase "zero sequential correlations."

3.14.2 Normality test

A hypothesis test is a formal way to figure out if the group of people that the survey is meant to represent has a linear function. According to the alternative theory, the population does not exhibit a typical distribution. In contrast to the previous assumption, which asserts that the demographic does not follow a normal distribution, this one states that the opposite is true. If the p-value of the assessment is relatively low than the product will make you set up in advance, you are permitted to conclude that the data did not come from an inhabitant that had a normality test. This allows you to reject the null hypothesis and come to the conclusion that the population did not have an assumption of normality. It is not possible to reject the null hypothesis as long as the p-value is lower than the significance level that has previously been established in the research. It is essential to bear in mind that when the representative sample is large, even minute deviations from normality might culminate in a p-value that is statistically important. This is something that must be kept in constant consideration. On the other hand, if the sample size is too small, it may be challenging to identify any deviations from the normal distribution. You shouldn't put all of your reliance on the statistical tests by themselves; instead, you should always take the time to look at the standard plot and use your time wisely. If you do this, you will have a much better chance of correctly identifying the correct answer. Because of the limit analysis hypothesis, a broad range of analytical techniques and parameter estimations can withstand very minor variations in normality. This is because the theory was created to address this issue.

3.14.3 Heteroskedacity test

A statistical technique is a way to figure out if the population that the collection is a good representation of has a normal distribution or not. The anthropic principle assumes that the population follows the normal distribution it describes. In contrast to the alternative hypothesis, which says that the demographic does not have a normal distribution, this one says that the population does follow a normal distribution. Unless the p-value of the test is below the level of significance you set up in advance, you have reason to reject the null hypothesis and decide that the results did not come from a population that had a normality test. In the event that the p-value is lower than the elements that have previously been established, the

alternate hypothesis is unable to be rejected. When the population size is large, it is essential to keep in mind that even minute deviations from normality might result in a p-value that is statistically significant. This is something that must not be forgotten. On the other hand, if the sample size is too small, it could be difficult to determine whether or not the distribution deviates from normal. You shouldn't put all of your confidence in the test statistic by itself; rather, you should be sure to glance at the standard plot and use your best judgment whenever possible. The central limit theorem enables a broad selection of statistical tests and models to remain accurate even in the face of very minor departures from the normal distribution of the data.

3.14.4 Granger causality test

The variance decomposition test is a mathematical statistical technique that was first presented in 1969. Its inception may be traced back to that year. The objective of this step is to establish the possibility that one statistic may be used effectively in the prediction based on another. Granger, C. W. J (1969). Normal multivariate regression indicates "mere" connections; notwithstanding, Clive Granger asserted that connections in finance might be examined by assessing one's capacity for predicting the prospective values for a particular time sequence using the prior values of another time series. As a regular occurrence, normal correlation coefficients reflect "mere" commonalities; however, Clive Granger argued that connections in economic analysis could be tested by measuring one's capacity for predicting the future values of a time series. Granger came up with this strategy as a solution to the problem that regression analysis generally only represents "mere" correlations. Because the question of "true causal relations" is thought-provoking, and because of the post hoc ergo propter hoc fallacy, which is the expectation that one thing preceding another can be used as a proof of culpability, economic theories claim that the regression analysis only finds "model-based causal links," This is due to the fact that the question of "true causality" is thought-provoking. This fallacy makes the incorrect assumption that the occurrence of one event before the occurrence of another may be used to infer causality. Francis X. (2007) The use of the term "causality" on its own, per Edward E. Granger, is a misnomer since the idea of Granger-causality is better correctly defined as "seniority" (1985). Alternately, "temporarily joined," as Granger himself explained in 1977, many years after the fact. The moniker Paul Newbold (1977) The question that is investigated by the

regression analysis is not whether X is to blame for Y, but instead if X is able to properly anticipate Y. James D. (1994) If it can be shown, generally through a series of t-tests and F-tests on delayed values of X (and with lagged values of Y also included), that such X values provide clinically important information about future values of Y, then one can say that a time series X is a contributing cause of another time series Y. In other words, if a time series X can be shown to be the cause of another time series Y, then one can say that the association between these two factors is called the variance decomposition relationship.

3.14.5 Stability tests

In the fields of econometrics and statistics, CUSUM tests are often used to find out if a certain regression equation of interest has undergone any structural changes, also called "structural breaks." The conclusion is based on a series of sums of royalty payments that are calculated in a nonlinear way using subsamples of the data that are taken one after the other in order. Despite the fact that the difference of the statistical mistake is included in the set of varying situations, the sum-of-squares test should be chosen as it is exceptionally capable of detecting modifications in the provisional design variables, particularly toward the end of the sample. This is true regardless of the fact that the difference of the statistical inaccuracy is included in the set. The sum-of-squares test is able to determine the degree to which the variability of the extrapolation mistake belongs to the collection of moving variables. This is the reason why this is significant.

CHAPTER IV

4.0 Results and interpretation

4.1 Descriptive statistics

Descriptive analytics are concise and helpful variables that characterize a dataset, which could be a sample or perhaps a description of an entire demographic. Descriptive statistics may be found in most statistical packages. Descriptive data, or indices, are qualitative data. The measures of central tendency and variance are included under the heading of "descriptive statistics" (spread). The average, the middle, and the value are all different ways to quantify the mean value. Variability may be measured using terms such as confidence interval, volatility, maximal and minimum variables, skewedness, and measures of variability. In order to better characterize and comprehend a data collection, descriptive statistics summarize the samples and measurements taken from it. The average, the middle, and the normal are the three qualitative data that are used in both statistics and mathematics teaching the majority of the time. The presume, also known as the average, is determined by first totaling all of the individual numbers included in the data collection and then dividing that sum by the total number of individual values.

Table 2.1 Descriptive statistic test

<i>Variables</i>	<i>MC</i>	<i>GDP</i>	<i>FDI</i>	<i>TR</i>	<i>OP</i>	<i>T</i>
<i>Mean</i>	4.40	2.03	0.84	23.05	44.36	48.21
<i>Median</i>	2.60	2.40	0.50	22.76	29.81	47.42
<i>Maximum</i>	1.23	6.62	5.36	24.73	112.01	69.97
<i>Minimum</i>	5.34	-6.34	-0.70	21.36	13.12	34.32
<i>Std. Dev</i>	3.66	2.58	1.10	1.23	30.04	7.46
<i>Skewness</i>	0.61	-0.77	1.99	0.18	0.95	0.03
<i>Kurtosis</i>	1.82	4.03	8.29	1.40	2.74	2.41
<i>Jarque-Bera</i>	4.97	5.99	75.06	4.59	6.36	0.58
<i>Probability</i>	0.08	0.04	0.00	0.10	0.04	0.74
<i>Sum</i>	1.18	83.34	34.64	945.32	1819.05	1976.82
<i>Sum Sq. Dev</i>	5.35	268.26	48.46	60.73	36116.57	2228.43
<i>Observation</i>	41	41	41	41	41	41

Source: This study

A descriptive statistic is meant to summarize data. The only conclusions that can be drawn from descriptive statistics are those that are pertinent to the data pool from which they were derived; they never extend beyond the scope of the information at hand. Even though a sample is always taken from a population, and even though our long-term goal is usually to make a statement about the population (and not just the sample), descriptive statistics only make statements about the sample. In other words, even though a sample is always taken from a population, descriptive statistics only make statements about the sample. The factors considered in this study are summarized in the table that was just shown to you.

4.3 Unit root tests

Two American statisticians by the names of David Dickey and Wayne Fuller devised the Dickey-Fuller test in 1979. It tries to find out if an autoregressive model has a unit root, which could make it hard to draw statistical conclusions. This approach works well with time series that are trending, such as asset values. It is the most basic way for detecting whether or not a unit root exists, but most economic and financial time series have a more sophisticated and dynamic structure than a simple autoregressive model can convey. The enhanced Dickey-Fuller test comes into play here; it is the approach utilized in its place. It is not difficult to conclude that an enhanced Dickey-Fuller test (ADF) is just that: an augmented version of the original Dickey-Fuller exam, given that one has a basic understanding of the fundamental concept at the core of the Dickey-Fuller test. The same statisticians refined their basic autoregressive unit root test, known as the Dickey-Fuller test, in 1984 to accommodate more complex models with unknown orders (the augmented Dickey-Fuller test). The improved Dickey-Fuller test, like the original Dickey-Fuller test, seeks a unit root in a time series sample. The test is used in statistical research as well as econometrics, which is described as the application of mathematics, statistics, and computer technology to economic data. The main difference between the two tests is that the ADF is utilized for a broader and more complicated set of time series models. This is the fundamental distinction between the two exams. A negative result corresponds to the ADF test's augmented Dickey-Fuller statistic. The argument against the existence of a unit root gets stronger as its sign gets more negative. Of course, this can only be claimed with a certain amount of certainty. That is, if the ADF test statistic is positive, one may immediately choose not to reject the null

hypothesis of a unit root. This is due to the fact that a positive result implies the presence of a unit root. In 1988, statisticians Peter C.B. Phillips and Pierre Perron developed the Phillips-Perron (PP) unit root test. Although the PP unit root test and the ADF test are quite similar, the essential difference between the two is in how each test handles serial correlation. In contrast to the PP test, which ignores the possibility of any serial correlation, the ADF employs a parametric autoregression to provide a close approximation of the error structure. Notwithstanding the differences between the two tests, the findings nearly always led to the same conclusion.

Table 3.1 Unit root tests

Variables	ADF unit root test			PP unit root test		
MC	0.9701	0.0000	$\dot{I}(1)$	0.9210	0.0000	$\dot{I}(1)$
GDP	0.0155	-0-	$\dot{I}(0)$	0.0142	-0-	$\dot{I}(0)$
FDI	0.0005	-0-	$\dot{I}(0)$	0.0005	-0-	$I(0)$
OP	0.5748	0.0030	$I(1)$	0.5748	0.0024	$I(1)$
TR	0.9052	0.0000	$I(1)$	0.9866	0.0000	$I(1)$
T	0.2654	0.0000	$I(1)$	0.2575	0.0000	$I(1)$

The unit root tests for the ADF and the PP may be found in Table 4.2 along with their respective findings. According to the findings of the ADF and PP unit root tests, the stock market (MC), oil price (OP), total reserve (TR), and trade (T) are stationary at the first difference, whereas FDI and GDP are stationary at level.

4.4 ARDL BOUND TEST

This same regression analysis, in particular the multiple linear (also known as the limits analysis), operates on the presumption that the parameters have to be assimilated in either $I(0)$ or $I(1)$. According to Pesaran et al.'s (2001) findings, the outcomes of this analysis lose their significance when the variables in question are integrated at an order that is greater than $I(0)$ or $I(1)$. It is necessary to determine the degree to which the model variables are steady before we can evaluate the extent to which the variables have been integrated. This may be accomplished with the use of a variety of tests, including the ADF unit root test and the Phillips-Perron test, among others. The nonstationarity hypothesis is the foundation upon which various analyses, which are predicated on the null hypothesis H_0 , are constructed. The ADF test and the PP test are founded on the same fundamental notion, which is that in

order to determine whether or not a series has a stationary status, one must first determine whether or not the series has a unit root. The series is considered non-stationary if it can be shown that this is in fact the case. The use of autoregressive distributed lag is supported by the fact that all of the elements are motionless at the blended degree, while some of the variables are fixed at the first difference and others are fixed at the level. As a direct result of this, we used the ADRL bounds analysis founder methodology, which illustrates the co-integration connection that exists among the factors. Unless the error-checking component of the cointegration equation has a lower return, this indicates that the parameters under consideration are connected in the long term. In addition, we carried out a number of tests, such as the serial correlation LM test to investigate variability, the Breusch-Pagan Godfrey test to investigate constant variance, and the Jarque-Berra test to investigate changeable normality. All of these assessments were carried out in order to investigate the relationships between the variables. In order to determine the direction in which the parameters were connected by a cause, we carried out a Granger causality analysis.

Table 4.1 ARDL Bound test

<i>Model</i>		<i>Lag.</i>		<i>F-Statistics</i>		<i>Decision</i>	
<i>MC,GDP, FDI, OP, TR,T</i>		<i>(4,4,4,4,2,4)</i>		<i>5.629190***</i>		<i>Co-Integration Exist</i>	
<i>Bond Critical Value</i>							
				<i>I(0)</i>		<i>I(1)</i>	
<i>Sign.</i>			<i>10%</i>	<i>2.08</i>		<i>3</i>	
			<i>5%</i>	<i>2.39</i>		<i>3.38</i>	
			<i>2.5%</i>	<i>2.7</i>		<i>3.73</i>	
			<i>1%</i>	<i>3.06</i>		<i>4.15</i>	

Using the work of Pesaran et al. (2001), we were able to figure out the parameter level of our long-term estimates by using the work of Pesaran et al. The AIC criteria were employed to choose the ARDL model that was used (1,4,2,1,0). The fact that the Fisher statistic, which was calculated as 5.62, is greater than the upper bound for the various significance thresholds (1%, 5%, and 10%), suggests that the null hypothesis of there not being a long-term relationship can be rejected. The results of the long-term estimates are displayed in the table. These results show that the Fisher

statistic is greater than the upper bound. We have reached the conclusion that there is, in the long term, a link between the many variables that comprise our model.

5.1 ARDL long run test

Table 4.4 ARDL long run

<i>Variables</i>	<i>Coefficient</i>	<i>Std.error</i>	<i>t.statistic</i>	<i>Prob</i>
<i>GDP</i>	3.06	4.81	6.34	0.000
<i>FDI</i>	-2.32	8.50	-2.72	0.000
<i>OP</i>	-1.21	4.98	-2.42	0.000
<i>TR</i>	-4.92	1.52	0.00	0.041
<i>T</i>	1.43	6.98	0.00	0.000

Table 4.4 presents the results of the ARDL long-run test, which indicate a negative and substantial effect between foreign direct investment and the growth of the stock market in South Africa. This conclusion is consistent with the findings of Tweneboah and Adam (2008) This research investigates the influence of foreign direct investment (FDI) on the growth of Ghana's stock market using multivariate cointegration and an error correction model. Our findings suggest that there is a long-run link between FDI, the nominal exchange rate, and the growth of Ghana's stock market. We discover that a shock to FDI has a considerable impact on the growth of Ghana's stock market.

In other words, foreign direct investment is a supplement to the growth of the local stock market rather than a replacement for it. In addition, foreign direct investment has been shown to have a favorable correlation with the extent to which activities such as capital raising, listing, and trading have migrated to international financial hubs. Migration will most certainly expand even more, and the activity on domestic stock markets may become insufficient to maintain many local markets as fundamentals continue to improve, technology continues to progress, and nations connect with the worldwide financial system. In many developing countries, the optimal course of action will require maintaining the development of solid foundations and attracting foreign direct investment (FDI), but it will not necessarily involve the trading or even the listing of local stocks.

In addition to this, the price of oil has a constructive and considerable influence on the expansion of the South African economy. Olufisayo (2014) evaluated the association between shifts in oil prices and growth in the stock market over the course of the period 1981–2011 using a vector error correction modeling technique. This conclusion is consistent with the findings of their study. The findings point to a connection, at least in the long term, between the price of oil, the exchange rate, and the expansion of the stock market. The fluctuation in the price of oil is only causally connected to the growth of the stock market in one way. According to the impulse response function, a rise in the price of oil has a momentarily beneficial effect on the stock market. The VDC demonstrates that the growth of the stock market is highly sensitive to shocks in the fluctuating price of oil.

4.6 ARDL short run

Table 4.5 ARDL short run

<i>Variables</i>	<i>Coefficient</i>	<i>Std.error</i>	<i>t.statistic</i>	<i>Prob</i>
<i>GDP</i>	9.79	9.01	1.08	0.2890
<i>D(FDI(-1))</i>	8.18	1.90	0.00	0.0000
<i>D(OP(-2))</i>	-2.23	1.56	-1.43	0.1658
<i>TR</i>	1.91	6.58	2.90	0.0083
<i>T</i>	-4.41	4.51	-0.97	0.3382
<i>ECM</i>	-0.72	0.08	-8.07	0.0000

Table 4.5 displays the results of the ARDL short-run test. These results suggest that there is a positive and substantial association between foreign direct investment and the growth of the stock market in South Africa. The findings of this study are consistent with those of Adam and Tweneboah (2008), who investigated the influence of foreign direct investment (FDI) on the growth of the stock market in Ghana. Their findings suggest that there is a long-term connection between foreign direct investment, the nominal exchange rate, and the growth of the stock market in Ghana. They come to the conclusion that a change in FDI has a major effect on the growth of the stock market in Ghana.

The results of this study also show that the price of oil has a big and bad effect on the growth of the stock market in South Africa. Gupta and Modise (2019), who studied the dynamic relationship between different oil price shocks and the South African stock market from 1973 to 2011, came to the same conclusion. They did this by

using a technique called sign restriction structural vector auto regression (VAR). According to the findings, the only time that oil prices and stock returns go up together for an oil-importing nation like South Africa is when there is an uptick in economic activity throughout the world. Oil supply shocks and speculative demand shocks cause stock prices and the real price of oil to move in different ways. According to the results of the variance decomposition study, the oil supply shock is the factor that affects real stock prices the most. The most important takeaway from this study is that various oil price shocks have varying effects on stock returns and those policymakers and investors have to constantly take into account the nature of the shock in question before putting policy into action or making investment choices.

4.7 Residual diagnostic tests

When faulty factors in a response variable are carried over from one interval to the next, a phenomenon known as collinearity (also known as hysteresis) may take place. To phrase it another way, there is a link between a mistake that was made in the past and a mistake that will be made in the future. The phenomenon known as positive cointegration occurs when a favorable mistake committed during one time period results in a positive error being committed during the subsequent time period. When a bad fault appears in one period, it carries over into the subsequent period and causes that period to also have a bad mistake. This phenomenon is referred to as "null cointegration." A formal method of determining whether or not the demographic that the sample is a good representative of has a normality assumption may be found by using something called a hypothesis test. The alternative hypothesis states that the distribution of the population's data does not match a normal curve. This hypothesis says that the opposite of the assumption, which states that the demographic does not have a distribution that is typical, is correct. The alternative hypothesis states that the population does not have a distribution that is normal. It is permissible for you to draw the conclusion that the data did not originate from a population with a standard deviation if indeed the p-value of the test has a lower probability of being true than the elements that made that conclusion possible that you established in advance.

This allows you to reject the null hypothesis and come to the conclusion that the population did not have a normal distribution. If the p-value is smaller than the significance threshold that has already been set for the study, then the null hypothesis

cannot be thrown out. This is because the null hypothesis cannot be rejected. When the sample size is large, it is vital to keep in mind that even minute deviations from normality could result in a p-value that is statistically significant. This is something that must be kept in mind at all times. This is something that must always be kept in mind, so make sure you don't forget it. On the flip side of the extreme, if indeed the sample size is insufficient, it may be difficult to tell whether or not there was any departure from the standard deviation. This is because the normal distribution assumes that there will be no deviations. You shouldn't place all of your trust in the research study by itself; rather, you also should take the time to look at the typical graph and apply your best judgment. In other words, you shouldn't put all of your reliance on the statistical tests by themselves. If you do this, you will significantly improve your chances of accurately determining which option is the right response. Due to the assumption of computed values, a wide range of mathematical tests and estimators are able to tolerate only very small deviations from the normal distribution of data. This is due to the fact that the hypothesis was established specifically to solve this problem. In order to establish whether or not the econometric equation in the inquiry displays collinearity, the Breusch-Pagan test is applied to the dataset in question. This test's purpose is to find out whether or not the system does. If the p-value of the analysis is smaller than a specific element that was made, we will conclude that the statistical test incorporates variances. In other words, the null hypothesis will be rejected, and we will draw the conclusion that multi-collinearity is present. For instance, if the p-value is lower than .05, we will deduce that the null hypothesis is not true and go on to the alternative hypothesis. If the p-value that relates to this Chi-Square statistical test with p (its quantity of indicators) freedom parameters is less than some elements that were made, such as $=.05$, then the null hypothesis should be rejected and the conclusion that variance is present should be drawn. If the p-value that corresponds to this Chi-Square test statistic with p (the number of predictors) degrees of freedom is greater than some significance threshold, such as $=.05$, Should this not be the case, it would be inappropriate for you to dismiss the invalid theory as an alternative explanation. It is acceptable to presume that there is a normality test in light of the facts that were described earlier in this article. You should bear in mind that the great majority of data analysis can simply be done without the Breusch-Pagan examination. As a result, it is very possible that you will never need to perform these operations personally again. It is vital to

remember this fact. Despite this, it might be to one's advantage to be aware of what is occurring behind the scenes. This can be quite helpful.

Table 4.6 residual diagnostic tests

<i>Tests</i>	<i>Statistic</i>	<i>P value</i>	<i>Results interpretation</i>
<i>Serial correlation</i>	<i>0.75</i>	<i>0.3045</i>	<i>No serial correlation</i>
<i>Normality</i>	<i>3.37</i>	<i>0.1852</i>	<i>Normal distribution</i>
<i>Heteroskedasticity</i>	<i>0.73</i>	<i>0.6201</i>	<i>No serial correlation</i>

This thesis does not have any degree of serial correlation at up to 2 lags with a 5% level of significance, as seen in the findings that are shown in Table 4.6, which is the result of the result of the residual diagnostic tests. The findings further support the conclusion that the null hypothesis that there is no heteroskedasticity may be rejected at the 5% significance level. In addition, this finding demonstrates that our residuals have a normal distribution, which is what caused us to adopt the alternative hypothesis, which said that our residuals do not have a normal distribution.

4.8 Granger causality Tests

Granger's causality analysis was the first published test of a statistical hypothesis, and it was named after the man who came up with it. The purpose of this task is to determine the possibility that one time series can be employed to forecast another time series. C. W. J. Granger (1969) However, Clive Granger proposed that one could test a causal link in finance by evaluating one's ability to forecast future values of a time series using the heritage importance of another time series. Estimated coefficients naturally disclose "simple" connections, but Granger proposed that this could be done to test Granger's theory. Granger devised this method as a reaction to the observation that multivariate regression often only shows "simple" relationships. It is said that the article factum ergo propter hoc falsehood, which maintains that one thing coming before another can be used as a proof of cause and effect, is the reason why the Granger test only unearths "inferential cause and effect" and why it is a deeply philosophical issue. This falsehood holds that one thing coming before another can be used as a proof of cause and effect. According to this common misunderstanding, evidence of causation may be gathered by demonstrating

that one event occurred before the other. X, the Father (2007) According to Edward E. Granger, the term "primacy" more accurately describes the co-integration model, and hence, the use of the word "cause and effect" by itself is inaccurate (1985). Instead, Granger described their relationship as one that was "momentarily bonded" in 1977, many years after the fact. The said title Newbold, Paul (1977) Instead of focusing on the possibility that X is to blame for Y, the regression analysis examines whether or not X is capable of accurately predicting Y if it is capable of being demonstrated, generally through a sequence of t-tests and F-tests on lagged values of X (and with lagged values of Y also included), that those X values provide clinically important data on potential Y values as well, then the time series X is considered to be a contributing cause of the time series Y. This type of connection is known as the Granger-cause connection.

Table 4.7 granger causality test

Null Hypothesis:	Obs	F-Statistic	Prob.
<i>GDP does not Granger Cause MC</i>	39	0.24	0.78
<i>MC does not Granger Cause GDP</i>		0.13	0.87
<i>FDI does not Granger Cause MC</i>	39	0.81	0.45
<i>MC does not Granger Cause FDI</i>		1.33	0.27
<i>TR does not Granger Cause MC</i>	39	3.52	0.04*
<i>MC does not Granger Cause TR</i>		0.18	0.83
<i>OP does not Granger Cause MC</i>	39	0.04	0.95
<i>MC does not Granger Cause OP</i>		1.62	0.21
<i>T does not Granger Cause MC</i>	39	0.90	0.41
<i>MC does not Granger Cause T</i>		7.37	0.00*
<i>FDI does not Granger Cause GDP</i>	39	0.56	0.57
<i>GDP does not Granger Cause FDI</i>		1.03	0.36
<i>TR does not Granger Cause GDP</i>	39	0.29	0.74
<i>GDP does not Granger Cause TR</i>		1.76	0.18
<i>OP does not Granger Cause GDP</i>	39	2.23	0.12
<i>GDP does not Granger Cause OP</i>		0.65	0.52
<i>T does not Granger Cause GDP</i>	39	6.38	0.00*
<i>GDP does not Granger Cause T</i>		0.39	0.67
<i>TR does not Granger Cause FDI</i>	39	1.73	0.19
<i>FDI does not Granger Cause TR</i>		0.23	0.79
<i>OP does not Granger Cause FDI</i>	39	1.63	0.21
<i>FDI does not Granger Cause OP</i>		4.64	0.01*
<i>T does not Granger Cause FDI</i>	39	2.48	0.09
<i>FDI does not Granger Cause T</i>		1.38	0.27
<i>OP does not Granger Cause TR</i>	39	0.65	0.52

<i>TR does not Granger Cause OP</i>		3.58	0.03*
<i>T does not Granger Cause TR</i>	39	0.03	0.96
<i>TR does not Granger Cause T</i>		6.65	0.00*
<i>T does not Granger Cause OP</i>	39	1.87	0.16
<i>OP does not Granger Cause T</i>		11.93	0.00*

The outcome of the Granger causality test is shown in Table 4.7, and it demonstrates a unidirectional causal relationship between total reserve and stock market. The stock market does not cause total reserves, but total reserves do cause the stock market. There is unidirectional causation between trade and stock market development in South Africa at the 5% level of significance; commerce does not directly influence stock market development. Trade causes GDP to grow at a 5% level of significance, but GDP does not grow because of trade. The results also demonstrate that although oil prices do not directly cause FDI, they do cause FDI to increase. At a 5% level, total reserves cause the oil price rather than the oil price causing total reserves.

4.9 Stability test

Figure 4.1 CUSUM test

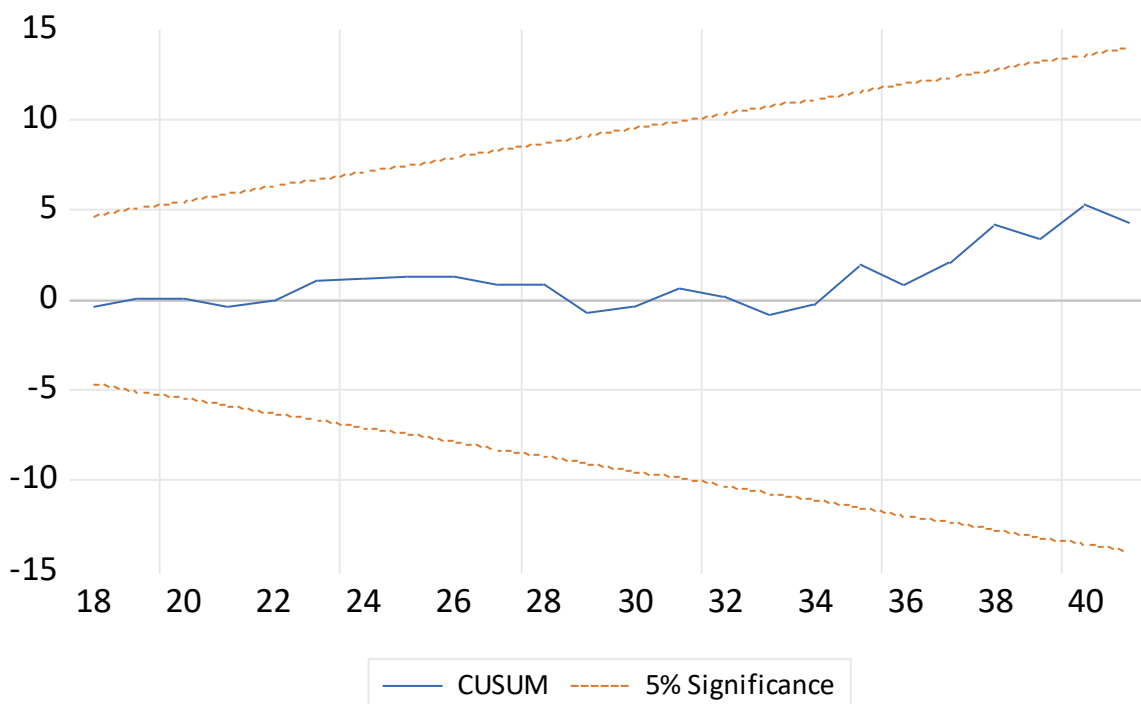
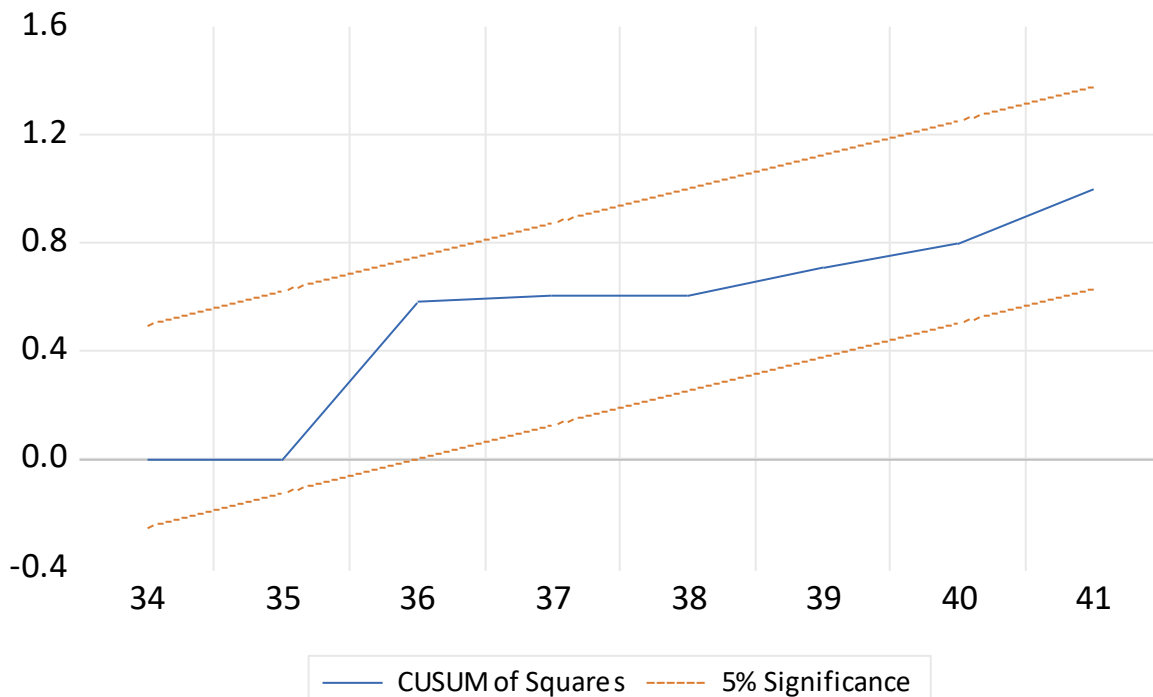


Figure 4.2 CUSUM of square



As a consequence of the fact that the empirical model needs to pass the prerequisite diagnostic tests, the outcomes of the stability test of the model, which are displayed in Figures 4.1 and 4.2, confirmed this fact. As a consequence of this, the results of the cumulative sum CUSUM test showed that the line remained within the bounds of significance by a percentage of 5%. After that, the findings of the cumulative sum CUSUM square test that was also applied as shown in Figures 4.1 and 4.2 revealed that there is stability at all points in the model for the period 1980–2020 and revealed that the model has become stable again, which makes the overall model reliable due to the stability of the estimated model parameters. Figure 4.1: The findings of the cumulative sum CUSUM square test.

CHAPTER V

5.0 Summary, Conclusion and Recommendations

5.1 Summary

The trading floor seems to be a very important and necessary part of the financial sector of a country. The greatest method to ensure that economic growth will continue to thrive and expand over time is to establish and maintain a robust money policy. A stock price that is well managed and structured fosters development by locating and encouraging firms that are successful and will contribute to the growth of the industry over the long term. The health of a nation's stock markets is a great predictor of the robustness of that nation's economy, and the equities are the greatest forecasts of potential financial activity. A nation's stock market has to expand if it expects to see expansion in its industry. Countries whose economies are still in the process of development have a significant financial need for direct investments from other countries. The term "international investment" (FDI) refers to the process through which one nation might get access to the resources of another nation, as well as to new technologies and management practices. Despite this, there seems to be a vast network of activity, according to studies on the relationship between foreign investment and financial progress. The results of a scientific framework Rahman and Salahuddin, (2009); Mohtadi and Agarwal, (2001); suggest that the efficiency of the equity market has a beneficial effect on the expansion of the economy. Nieuwerburgh, Buelens, as well as Cuyvers (2005) conducted research that provides very compelling evidence that the establishment of an equity market contributes to the expansion of a nation's economy. This study was published in 2005. The expansion of the stock market is directly proportional to economic growth, and the expansion of the money system will ultimately result in a rise in economic activity Brasoveanu, et al., (2008).

Alfaro (2003) says that investments made by foreign investors (FDI) in the manufacturing industry of the most important economy may hurt productivity. On the other hand, it has been shown that investments made in the manufacturing industry help the economy grow financially. But foreign direct investment (FDI) has a positive effect on economic growth. However, FDI's total effect on productivity growth may be small, and the importance of FDI's parts cannot be overstated. FDI's elements include: Ayanwale, (2007). Nations that already have a well-developed capital sector have a better chance of seeing positive results from their participation

in international capital inflows (FDI) Alfaro, Chanda, et al. (2004). Inflows of investment from abroad (FDI) may be beneficial to economic development in emerging countries, with the exception of wealthy nations Johnson, (2006). In light of Nigeria's past, we know that both foreign direct investment (FDI) and economic deepening may be negative for the economy; on the other hand, flexibility in the banking system can serve as a driver of economic expansion Saibu, et al. (2011). Nonetheless, a number of studies have shown that capital inflows from outside have very little impact on the expansion of the economy Carkovic and Levine, (2002). As a result of this, the theories provide forecasts that are equivocal about the effect that FDI has on the expansion of the economy. Per Adam as well as Tweneboah et al. (2009), there is a three-way causal connection among economic expansion, the rise of the stock market, and investment from abroad (overseas investment). First, financial integration boosts the economy, which in turn stimulates the expansion of the stock market. Second, income activity encourages the formation of stock markets. Finally, the development of stock markets encourages FDI.

(III) Because of this, we might come to the conclusion that FDI helps stock markets grow. Databases are important tools that help companies make good decisions and give the Reserve Bank important statistical information for running its business. The Reserve Bank has managed and maintained these databases. A reliable and consistent data collection may be produced via the use of rules and regulations that are recognized on a worldwide scale. The statistics institutions of member nations provide a significant part of the information, and the accuracy of the information acquired on an international scale is closely tied to the efficacy with which central statistics systems operate. The Reserve Bank is committed to assisting developing nations in improving the quality of their national statistical systems by enhancing the capacity, speed, and usefulness of such institutions. Establishing effective policies, evaluating the implementation of poverty-reduction projects, and tracking performance against global targets may be challenging if better and more complete national statistics are not readily accessible. We are analyzing the influence, from 1980 to 2020, of overseas investment and petroleum production on the growth of the South African stock market by utilizing the information that was just given.

Below are the tests that were conducted for the study. Model specification is the process of deciding which variables will be included in a model. This procedure

takes place before the model is constructed MacCallum, (1995). During the process of developing the model, it is essential to maintain predictive value, but it is also desirable to include all important factors. This creates a conflict that must be resolved. The multivariate study makes use of the ARDL framework to examine how the growth of the South African stock market is affected by factors such as foreign direct investment (FDI) and oil prices. A framework that is applicable to non-stationary and mixed-order integration time series is referred to as a generalized autoregressive conditional lag (autoregressive distributed lag) theory. This kind of framework relies on the technique of ordinary least squares (OLS), which is another name for the ordinary least-squares estimation method. Panel data systems are referred to by the phrase "blended integrated vector auto regression methods," which is just another name for autoregressive distributed lag designs. When the symbol of the variable in question becomes extremely negative, the validity of the reasoning, even against the possibility of a regression analysis, is called into question. This can, of course, only be said with a certain degree of assurance at this point. To put it another way, if the ADF sample mean is good, one has the option of not instantly dismissing the null hypothesis that there is a regression model.

This is because a successful result shows that a regression model exists, which is why we got this result. Peter C.B. Phillips as well as Pierre Perron, both economists, came up with the idea for the Phillips-Perron (PP) unit root analysis in 1988. In spite of the fact that the unit root of the PP analysis and the ADF test are relatively comparable to one another, the primary distinction between the two is in the manner in which each test deals with cointegration. In contrast to the Normality Test, which disregards the prospect of any cointegration, the ADF makes use of a normative autoregressive model in order to offer a similar version of the fault pattern. This also contributes to the accuracy of test results. In spite of the fact that the two methods provide different results, the conclusions that may be drawn from them are almost always identical. The ARDL method, especially the regression analysis (also known as the limits test), is based on the idea that the variables have to be incorporated in the sequence $I(0)$ or $I(1)$. If the factors are incorporated once at a greater magnitude than $I(0)$ or $I(1)$, then the outcomes of this analysis are no longer statistically significant Pesaran et al., (2001). In order to figure out the extent to which the model variables are integrated, we must first do a comprehensive analysis of normality utilizing a variety of tests, such as the test results and the Phillips-Perron

test. The nonstationarity assumption is the foundation upon which these tests, which are predicated on the alternate hypothesis H_0 , are constructed. Both ADF as well as PP examinations are predicated on the same fundamental concept, which is that before determining whether or not a series has a stationary position, the question regarding whether or not it has a regression model needs to be answered. The series is considered non-stationary if it can be shown that this is in fact the case.

Even with a small sample, the ARDL methodological approach may be employed, but the robustness of the estimates given by competing methodologies is reliant on the size of the sample used in those methods. As a consequence, while employing the ARDL technique, the unit root tests and autocorrelation function tests for identifying the order of integration are not utilized. The ARDL method of econometric modeling, according to Hendry et al. (1984), is an attempt to match an uncertain data-producing process with a properly defined econometric model. As a result, it is essential for economic theory to provide boundaries for analysis. The Hendry-type method defines the ARDL model's adequacy test in terms of its statistical features, i.e., diagnostic tests for the error term such as the lack of serial correlation, homoscedasticity, and the normality test. This is because the Hendry-type The ARDL empirical technique is suitable for use regardless of a limited sample, but the robustness of the predictions supplied by alternative techniques is dependent on the size of the survey that is used in those approaches. As a direct result of this, the unit root analyses as well as the regression coefficient tests for determining the integration hierarchy are not employed while the ARDL approach is being applied. As per Hendry as well as associates (1984), the ARDL approach to regression analysis is an effort to connect an ambiguous statistical system with well-described empirical models. This attempt was made by Hendry as well as associates. As a consequence of this, the provision of analytical limits is an important part of the financial concept. The sufficiency check for the ARDL model is defined by the Hendry-type technique in terms of its parameters. These weighting factors are diagnostic for the residual variance and include things like the absence of cointegration, homogeneity of variance, and the normalcy test. This is due to the fact that the Hendry-type technique is based on the premise that the quantitative attributes of a system may be applied in order to establish the model's actual features. Collinearity is the term used to describe what happens once fault factors in a time series continue to be present from one period to the next (also known as

autocorrelation). To clarify, there is a correlation between an inaccuracy that occurred in the past and a mistake that occurs in the present.

The method is built on the idea that the statistical properties of a model may be applied to establish the model's actual characteristics. This is the fundamental premise of method. Multi-collinearity is the term used to describe what happens when fault elements inside a response variable continue to be present from one interval to the next (also known as autocorrelation). Let's be more precise: there is a correlation between a fault that occurred in the past and an error that occurs in the future. When a positive error in one period carries over to a favorable fault in the subsequent period, a phenomenon referred to as positive cointegration takes place. "Zero cointegration" is the phenomenon in which a fault that occurs during one time period leads to an inaccuracy that occurs during the subsequent time period. A statistical technique is a technical method of establishing the likelihood that the group that the selection is representative of has an assumption of normality. This may be done by comparing the results of the sample to those of the overall population. The group is assumed to have a normality test when the scientific process is considered. In contrast to this, the alternative hypothesis maintains that the group does not have a normality test. This is an important distinction to make. You have the option of dismissing the null hypothesis and drawing the conclusion that the results did not come from a group that was perfectly correlated. In the event that the p-value of the analysis is lower than the significance threshold that you choose. In the case where the p-value is lower than the elements that established that in advance, it is not possible to disprove the null hypothesis.

It is essential to keep in mind that whenever the response rate is high, most little departures from the normal distribution might lead to a p-value that is clinically meaningful. It is possible to detect the degree to which a regression model has variances by using the Breusch-Pagan test. We will reject the null hypothesis and come to the conclusion that the statistical test has covariance if the p-value of the test is lower than a predetermined significance threshold. For example, if the p-value is less than .05. We will reach this conclusion. You should reject the null hypothesis and come to the conclusion that variances occur if the p-value that corresponds to this Chi-Square statistical test with p (the quantity of variables) with respect to freedom is less than a significant threshold, such as =.05. If this is not the case, then it would not be appropriate to deny the null hypothesis. In light of the aforementioned

circumstances, it is safe to infer that normality exists. You should keep in mind that the majority of data analysis can execute the Breusch-Pagan test automatically; therefore, it is quite unlikely that you will ever need to carry out these procedures manually. Notwithstanding this, it is to one's advantage to be aware of what is occurring behind the scenes. The Granger causality examination is an example of a statistical test that was first described in 1969. The purpose of this research is to investigate whether or not one sequence may be utilized to predict another. The author is C. W. J. Granger (1969). However, Clive Granger proposed that in finance, causality could be demonstrated by testing one's capacity for predicting the future values of one time series using the correction factor of another time series. Multiple regressions, of course, indicate "mere" associations, but Granger believed that in order to demonstrate causality in finance, one could test one's ability to predict the possible trends of one time series using the posterior probability of another time series. Granger came up with this method as a consequence of the discovery that the majority of multiple regressions reflect "mere" associations.

As per analysis methods, the Granger test can only detect "forecasting linkage." This is due to the fact that the concept of "genuine correlation" is highly conceptual, in addition to the share hoc ergo propter hoc falsehood, which maintains that the occurrence of one event can be used to prove the existence of a causal relationship between two other events. The idea behind this fallacious argument is that we may conclude that one event caused another simply by placing them in chronological order. In the fields of multiple regression and analytics, cumulative sum analyses are often used to determine whether or not a particular regression coefficient of interest has undergone any massive reforms (also known as structural breaks). The conclusion is arrived at by using a series of residual sums, each of which is calculated in a recursive manner using data subsamples that are obtained sequentially. No matter if the variance of the regression inaccuracy is included in the set of varying parameters; the sum-of-squares test should be utilized because it is amazingly effective at detecting changes in contingent parameter estimation, especially near the conclusion of the sample. This is true regardless of whether the difference between both statistical errors is included in the set.

This is because the sum-of-squares test can figure out how much the regressive fault's changes belonging to the set of variables that are changing. This ability is responsible for this result. In accordance with the results, the stationarity

analyses for the ADF as well as the PP, in addition to the results of those tests, may be found in Table 4.2. The findings of the ADF as well as PP regression analysis tests indicate that the equity market (MC), commodity prices (OP), net resource (TR), and commerce (T) were static during the initial variance. On the other hand, FDI and GDP are level at the first difference. We were able to determine the parameter level for the lengthy estimations with the aid of the work that Pesaran et al. (2001) did. The AIC criteria were used in making the decision to go with the research model as the one to use (1,4,2,1,0). Given that the value of the Fisher statistic, 5.62, is more than the upper limit for the various relevance thresholds (1%, 5%, and 10%), it is possible to conclude that the null hypothesis stating that there is no long-term correlation should be rejected. The results of the lengthy predictions are shown in the table below. These data suggest that the Fisher statistic is much higher than the maximum allowed value. We have come to the conclusion that there's an emotional connection that exists over the long run between the several variables that comprise our model. Table 4.4 presents the results of the autoregressive distributed long-run test, which indicate a positive and statistically significant connection between investment from abroad and the growth of the South African stock market. This conclusion is comparable to the results that were discovered by Claessens and colleagues (2001), who investigated the factors that play a role in the increasing movement of stock trading to world banking hubs. They begin by demonstrating, using a survey of 77 different share prices, that having good fundamentals is helpful for the growth of stock markets. In addition, they demonstrate that foreign direct investment has a beneficial relationship with both the size of the financial markets and the value exchanged for it. This is something that has been shown in other studies as well.

To put it another way, the growth of foreign investment complements rather than replaces the development of the local stock exchange. In addition, research has indicated that the amount to which activities such as stock offering, registration, and buying have transferred to international financial hubs is positively correlated with the amount of foreign capital inflows that have occurred in the country. As a result of fundamentals becoming better, technological progress getting better, and nations being connected to the worldwide economy, movement can almost certainly rise further, and the activity on the local stock market may become insufficient to maintain many local markets. While this may not necessarily entail the sale or even

the registration of local shares, the most effective strategy in many emerging countries will be to maintain a good basis and draw in overseas investment (FDI). This may be the most effective strategy in many developing nations. In addition to this, the price of oil has a constructive and substantial influence on the expansion of the South African economy. Olufisayo (2014) examined the connection between shifts in oil prices and increases in the equity industry's value from 1981 to 2011 by using a methodology known as vector error correction modeling. The findings of the research provide credence to the aforementioned conclusion. The findings point to a connection, particularly in the medium to long term, between the petroleum price, the currency value, and the expansion of the stock exchange. Changes in the price of oil have just one direction of causality that they may have on the development of the stock market. Based on the impulse response function, a rise in the price of oil has a transiently beneficial effect on the stock market. [Citation needed] [Citation needed] According to the VDC, the expansion of the stock exchange is very susceptible to fluctuations in the cost of oil. Table 4.5 demonstrates the outcomes of the ARDL simple test for your perusal. Based on these data, there seems to be a correlation that is both positive and substantial between the growth of South Africa's financial markets and the inflow of investment from abroad.

The findings of this research are in line with those of Adam as well as Tweneboah (2008), who investigated the influence that international investment (FDI) has on the growth of Ghana's equity market. Their findings point to a connection, over the course of a longer period of time, between the growths of Ghana's stock market, the nominal value of the currency, and investments from abroad. They come to the conclusion that changes in Ghana's foreign direct investment have a major effect on the growth of the country's stock market. The results of this study indicate that the petroleum price has a major influence, both positively and negatively, on the growth of the stock market in South Africa. [Citation needed] After doing research on the dynamic relationship that existed between multiple shocks to the oil price as well as the South African stock market from 1973 to 2011, Gupta et al. (2019) came to the same conclusion. They were successful in doing so by using a strategy that is referred to as "sign limitation" regression analysis (VAR). As shown by the statistics, the first and only time that energy prices and share prices grow concurrently for an oil-importing nation like South Africa is when there is an increase in the overall level of economic activity

throughout the world. The impact of oil price fluctuations and anticipated demand shocks on equity markets and the actual petroleum price are not the same. The study on variance decomposition came to the conclusion that the oil supply shock is the factor that has the most significant influence on real stock prices. These results were presented in the following sentence: The most important takeaway from this study is that various levels of volatility in oil prices have varying effects on stock returns and that politicians and entrepreneurs must always take into account the unique characteristics of the disruption at hand when formulating new policies or making investment choices.

As shown by the results of the remaining screening procedures, which are shown in Table 4.6, this thesis does not include any level of regression analysis for a maximum of two limbs at a probability value of 5%. These findings are based on the analysis of the data presented in Table 4.6. The findings lend credence to the assumption that the alternative hypothesis—that there is heteroskedasticity—should be favored above the normality test, which states that there is none. Moreover, this finding demonstrates that our revenues have a normality test, leading us to dismiss the alternate explanation that our investment returns do not have an assumption of normality. This was done as a result of the fact that our investment returns do have a standard deviation. The findings of the simple regression test are shown in Table 4.7. These results demonstrate that overall resources and the stock exchange are connected by a single-way causal chain. The stock market is what drives total reserves, not the other way around; total reserves were driven by the stock market. There is unidirectional causation between the development of the stock market in South Africa and the development of trade at a significance level of 5%; however, the development of trade does not directly affect the development of the stock market. While international commerce is a significant contributor to an increase in GDP growth of 5%, trade itself is not the main factor in GDP growth. The data also indicate that while the price of oil does not directly stimulate foreign direct investment (FDI), it does impact the growth of FDI.

If total reserves are 5% of the total, then the price of oil does not determine total reserves; rather, the price of oil is 5% of total reserves. The results of the empirical model's test procedure, as displayed in Figures 4.1 and 4.2, support this claim. The empirical model needs to pass certain diagnostic tests in order to be validated. As a consequence of this, the results of the standardized residuals CUSUM

test revealed that the line remained within the limits of relevance by a proportion equal to 5% during the whole analysis. After that, the findings of the standardized residuals CUSUM square test, which are depicted in Numbers 4.1 and 4.2, showed that there was consistency in the model at all points for the time period 1980–2020 and that the framework had once again become stable. This indicates that the model as a whole is dependable due to the consistency of the approximate parameter estimation. Figure 4.1 shows the results of this test. Figure 4.2 shows the results of this test. The findings of the arithmetic mean CUSUM rectangular shape test are shown in figure 4.1 below.

5.2 Conclusion

This thesis looks at how foreign direct investment (FDI) and the price of oil have affected the stock market in South Africa. The stock exchange is a component of a nation's financial system that is both highly significant and very necessary. The greatest method to ensure that a state's economy will keep running smoothly and expand throughout time is to establish and maintain a robust financial system. A stock market that is well managed and structured fosters investment by locating and promoting firms that are successful and will contribute to the growth of the economy over the long term. We were able to identify the component quality of our lengthy estimates by adhering to the work that was done by Pesaran et al., as the conclusion of this thesis illustrates (2001). The AIC criteria were used in making the decision to select the ARDL model as the one to use (1,4,2,1,0). Given that the value of the Ficher statistic, 5.62, is more than the upper limit for the various significance thresholds (1%, 5%, and 10%), it is possible to conclude that the null hypothesis stating that there is no long-term correlation should be rejected. The results of the lengthy predictions are shown in the table below. These data suggest that perhaps the Ficher statistic is much higher than the maximum allowed value. We have reached the conclusion that there's an intrinsic connection that exists over the long run between the several parameters that comprise the model.

The impact of foreign direct investment (FDI) and the price of oil on the South African stock market is the topic of this thesis. The stock market is a very important and necessary part of every country's financial system. A robust monetary system is the best way to ensure that a state's economy will continue to thrive and expand over the long term. A stock market that is well managed and organized

fosters development by locating and boosting enterprises that are lucrative and will contribute to the long-term expansion of the economy. By adhering to the study of Pesaran et al., which is shown in the conclusion of this thesis, we were able to figure out the variable level of our lengthy estimates (2001). The AIC criteria were applied in order to settle on the regression analysis that was implemented (1,4,2,1,0). Since the value of the Fisher parameter, 5.62, is more than the maximum bound for the various probability values (1%, 5%, and 10%), it is possible to conclude that the scientific theory stating that there is no long-term link should not be accepted. The results of the lengthy estimates are shown in the table below. These data suggest that the Fisher statistic is higher than the permitted top limit. Our investigation has led us to the conclusion that there's a connection, at least on some level, between the many different elements that go into making up our model.

Olufisayo (2014) examined the connection between shifts in oil prices and increases in the stock market's value from 1981 to 2011 by using a methodology known as vector error correction modeling. The findings of the research provide credence to the aforementioned conclusion. The findings point to a connection, particularly in the medium- to long-term, between the petroleum price, the currency value, and the expansion of the stock market. Changes in the price of oil have just one direction of causality that they may have on the development of the stock market. According to the function of impulse response, a price increase in oil has a transiently beneficial effect on the equity market. [Citation needed] [Citation needed] According to the VDC, the expansion of the stock market is very susceptible to fluctuations in the cost of oil. Table 4.5 demonstrates the outcomes of the autoregressive, distributed, proctored exam for your perusal. Based on these data, there seems to be a correlation that is both positive and substantial between the growth of South Africa's equity market and the inflow of foreign direct investment. The findings of this research are in line with those presented by Adam and Tweneboah (2008), who investigated the influence that investment from abroad (FDI) has on the growth of Ghana's stock market. Their findings point to a connection, over the course of a longer period of time, between the growth of Ghana's stock market, the nominal currency exchange rate, and foreign direct investment.

Researchers come to the conclusion significant changes in Ghana's foreign direct investment have a major effect on the growth of the country's stock market.

The results of this study indicate that the petroleum price has a major influence, both positively and negatively, on the growth of the stock market in South Africa. [Citation needed] After doing research on the dynamic relationship that existed between multiple volatility in oil prices as well as the South African stock exchange from 1973 to 2011, Gupta et al. (2019) came to the same conclusion. They were successful in doing so by using a strategy that is referred to as sign limitation architectural vector autoregression (VAR). The only time that energy prices and investment growth grow concurrently for an oil-importing nation like South Africa, as shown by the statistics, is when there is an increase in the overall level of economic activity throughout the world. The impact of oil economic shocks and theoretical demand shocks on share price and the actual price of oil are not the same. The study on variance decomposition came to the conclusion that the oil supply shock is the factor that has the most significant influence on real stock prices. These results were presented in the following sentence: The most important takeaway from this study is that various fluctuations in oil prices have varying effects on stock returns, and those policymakers and investors must always take into account the type of the shock at hand when deciding how to enact policy or make financial investments. As shown by the results of the leftover diagnostic tests, which are shown in Table 4.6, this thesis does not include any degree of regression analysis for as many as two legged at a significance level of 5%. These findings are based on the analysis of the data presented in Table 4.6. The findings lend credence to the assumption that the null hypotheses there is heteroskedasticity—should be favored above the null hypothesis, which states that there is none. Moreover, this finding demonstrates that our particles have a normality test, leading us to refute the alternate theory that our particles do not have an assumption of normality. This was done as a result of the fact that our particles do have a normality test. The findings of the simple regression test are shown in Table 4.7. These results demonstrate that net capitals as well as the financial sector are connected by a single-way causal chain. The stock market is what drives total reserves, not the other way around; total reserves are driven by the stock market. There is unidirectional causation between the growth of the stock market in South Africa and the development of trade at a significance level of 5%; however, the development of trade does not directly affect the development of the stock market. While international commerce is the primary contributor to an increase in GDP growth of 5%, trade itself is not the primary driver

of GDP growth. The data also indicate that while the price of oil does not directly drive investment from abroad (FDI), it does impact the growth of FDI. If total reserves are 5% of the total, then the price of oil does not determine total reserves; rather, the price of oil is 5% of total reserves. This assertion is supported by the findings of the empirical model's test procedure, which can be seen in Exhibits 4.1 and 4.2. The empirical model needs to pass certain diagnostic tests in order to be validated. As a consequence of this, the results of the standardized residuals CUSUM test revealed that the line remained within the margins of relevance by a percentage equal to 5% during the whole analysis. After that, the findings of the standardized residuals CUSUM square test, which are depicted in Numbers 4.1 and 4.2, showed that there was consistency in the model at all points for the time period 1980–2020 and that the framework had once again become stable. This indicates that the model as a whole is credible due to the consistency of the approximate model parameters. Figure 4.1 shows the results of this test. Figure 4.2 shows the results of this test. The findings of the arithmetic mean CUSUM square test are shown in figure 4.1 below.

5.3 Recommendations

Because of the detrimental effects that increasing oil prices have on economic growth and, as a result, on agricultural production, there is a pressing necessity to diversify energy consumption in this region. Both alimentary stability and environmental stability may see significant improvements if policy efforts were implemented to reduce fossil fuel consumption and increase the use of a balanced combination of alternate and renewable sources of energy, such as solar power. In addition, the development of a plan for energy consumption and the implementation of new technologies for alternative energy sources would draw both domestic and foreign direct investment into South Africa's agricultural sector. Since increasing production in this industry has been demonstrated to be an all-encompassing treatment for reducing poverty and alleviating hunger, this will help agricultural growth and welfare. It is possible that strengthening South Africa's legislative and institutional structure may help the country attract more foreign direct investment in the sector. When it comes to South Africa's efforts to entice foreign resources that may assist in the country's necessary economic growth, the country has no alternative but to maintain an open economic policy. The government has to make industrialization initiatives a top priority, including the development of fresh

infrastructure and the creation of expansive industrial zones that are fully operational. The data also indicate that urbanization is the sole factor that can be used to forecast FDI inflows, which lends credibility to the research conducted by Guimares et al. (2000) and Nielsen et al. (2017). Because of this, the government has to place a greater priority on the development of urban regions by expanding the number of infrastructure facilities available in order to boost the absorptive capacity of the nation. If this is successful, it will boost the trust of overseas investors in South Africa as a place to do business. Nevertheless, it is necessary for administrators of the South African government to protect the industry from external costs that may impede foreign direct investment (FDI). These externalities include disease outbreak threats like COVID-19, which recently limited the free flow of individuals, products, and services, impacting growth from the standpoint of remittances like Greenfield investment. In addition, there is a need for administrators of the South African government to insulate the industry from external costs that may impede FDI (Ahmad et al., 2021). The current study controlled for factors such as urbanization and industrialization as it investigated the link between foreign direct investment and rising oil prices. The study focused on South Africa because it is a rapidly developing nation that has little documentation in the previous research literature. As a consequence of this, the findings of our study recommend more investigation into this pertinent topic, research that takes into consideration other census information such as demographics, the age gap, and other aspects of the FDI-economic development relationship. To investigate the polluting Haven hypothesis or the contamination Halo theory via the FDI inflow channel, a potential future investigation may take into account the role of pollutants like CO₂ emissions. In addition, it is possible that the next study will explore the problem by making use of disaggregated data while also controlling for structural fractures. The scope of this study might be broadened to include additional emerging groups, including BRICS, MENA, or even SSA.

References

- Alamgir, F., & Amin, S. B. (2021). The nexus between oil price and stock market: Evidence from South Asia. *Energy Reports*, 7, 693-703.
- Al-Halalmeh, M. I., & Sayah, A. M. (2010). Impact of foreign direct investment on shares market value in Amman exchange market. *American Journal of Economics and Business Administration*, 2(1), 35.
- Al Samman, H., & Jamil, S. A. (2018). The Impact of Foreign Direct Investment (FDI) on Stock Market Development in GCC countries. *Pertanika Journal of Social Sciences & Humanities*, 26(3).
- Alqahtani, A., Klein, T., & Khalid, A. (2019). The impact of oil price uncertainty on GCC stock markets. *Resources Policy*, 64, 101526.
- An, Y., Sun, M., Gao, C., Han, D., & Li, X. (2018). Analysis of the impact of crude oil price fluctuations on China's stock market in different periods—Based on time series network model. *Physica A: Statistical Mechanics and its Applications*, 492, 1016-1031.
- Arouri, M. E. H., Jouini, J., & Nguyen, D. K. (2012). On the impacts of oil price fluctuations on European equity markets: Volatility spillover and hedging effectiveness. *Energy Economics*, 34(2), 611-617.
- Asravor, R. K., & Fonu, P. D. D. (2021). Dynamic relation between macroeconomic variable, stock market returns and stock market development in Ghana. *International Journal of Finance & Economics*, 26(2), 2637-2646
- Aye, G. C., & Odhiambo, N. M. (2021). Oil prices and agricultural growth in South Africa: A threshold analysis. *Resources Policy*, 73, 102196.
- Badeeb, R. A., & Lean, H. H. (2018). Asymmetric impact of oil price on Islamic sectoral stocks. *Energy Economics*, 71, 128-139

- Balcilar, M., Gupta, R., Kim, W. J., & Kyei, C. (2019). The role of economic policy uncertainties in predicting stock returns and their volatility for Hong Kong, Malaysia and South Korea. *International Review of Economics & Finance*, *59*, 150-163.
- Delgado, N. A. B., Delgado, E. B., & Saucedo, E. (2018). The relationship between oil prices, the stock market and the exchange rate: Evidence from Mexico. *The North American Journal of Economics and Finance*, *45*, 266-275
- Desbordes, R., & Wei, S. J. (2017). Foreign direct investment and external financing conditions: evidence from normal and crisis times. *The Scandinavian Journal of Economics*, *119*(4), 1129-1166.
- Diaz, E. M., & de Gracia, F. P. (2017). Oil price shocks and stock returns of oil and gas corporations. *Finance Research Letters*, *20*, 75-80
- Dutta, P., Noor, M. H., & Dutta, A. (2017). Impact of oil volatility shocks on global emerging market stock returns. *International Journal of Managerial Finance*, *13*(5), 578-591.
- Ewing, B. T., & Thompson, M. A. (2018). Modeling the response of gasoline-crude oil price crack spread macroeconomic shocks. *Atlantic Economic Journal*, *46*, 203-213
- Ftiti, Z., Guesmi, K., Teulon, F., & Chouachi, S. (2016). Relationship between crude oil prices and economic growth in selected OPEC countries. *Journal of Applied Business Research (JABR)*, *32*(1), 11-22.
- Gourène, G. A. Z., & Mendy, P. (2018). Oil prices and African stock markets co-movement: A time and frequency analysis. *Journal of African Trade*, *5*(1-2), 55-67.
- Hamdi, B., Aloui, M., Alqahtani, F., & Tiwari, A. (2019). Relationship between the oil price volatility and sectoral stock markets in oil-exporting economies: Evidence from wavelet nonlinear denoised based quantile and Granger-causality analysis. *Energy Economics*, *80*, 536-552.
- Herwartz, H., & Plödt, M. (2016). The macroeconomic effects of oil price shocks: Evidence from a statistical identification approach. *Journal of International Money and Finance*, *61*, 30-44.
- Jain, A., & Biswal, P. C. (2016). Dynamic linkages among oil price, gold price, exchange rate, and stock market in India. *Resources Policy*, *49*, 179-185

- Ju, K., Su, B., Zhou, D., Wu, J., & Liu, L. (2016). Macroeconomic performance of oil price shocks: Outlier evidence from nineteen major oil-related countries/regions. *Energy Economics*, *60*, 325-332.
- Masipa, T. S. (2018). The relationship between foreign direct investment and economic growth in South Africa: Vector error correction analysis. *Acta Commerci*, *18*(1), 1-8.
- Mohamued, E. A., Ahmed, M., Pyłacz, P., Liczmańska-Kopcewicz, K., & Khan, M. A. (2021). Global oil price and innovation for sustainability: The impact of R&D spending, oil price and oil price volatility on GHG emissions. *Energies*, *14*(6), 1757.
- Muhammad, A. Z. A. M., Haseeb, M., Samsi, A. B., & Raji, J. O. (2016). Stock market development and economic growth: Evidences from Asia-4 countries. *International Journal of Economics and Financial Issues*, *6*(3), 1200-1208
- Naser, H., & Alaali, F. (2018). Can oil prices help predict US stock market returns? Evidence using a dynamic model averaging (DMA) approach. *Empirical Economics*, *55*, 1757-1777
- Nxazonke, B., & van Wyk, R. B. (2020). The role of foreign direct investment (FDI) on domestic entrepreneurship in South Africa. *Development Southern Africa*, *37*(4), 587-600.
- Padhan, R., & Prabheesh, K. P. (2021). The economics of COVID-19 pandemic: A survey. *Economic analysis and policy*, *70*, 220-237.
- Panda, A. K., Nanda, S., & Paital, R. R. (2019). An empirical analysis of stock market interdependence and volatility spillover in the stock markets of Africa and Middle East region. *African Journal of Economic and Management Studies*.
- Ratti, R. A., & Vespignani, J. L. (2016). Oil prices and global factor macroeconomic variables. *Energy Economics*, *59*, 198-212....
- Ritchie, J., & Dowlatabadi, H. (2017). Why do climate change scenarios return to coal?. *Energy*, *140*, 1276-1291.
- Singh, N. P., & Sharma, S. (2018). Phase-wise analysis of dynamic relationship among gold, crude oil, US dollar and stock market. *Journal of Advances in Management Research*, *15*(4), 480-499.
- Soumaré, I., & Tchana Tchana, F. (2015). Causality between FDI and financial market development: Evidence from emerging markets. *The World Bank Economic Review*, *29*(suppl_1), S205-S216..

- Tursoy, T., & Faisal, F. (2018). The impact of gold and crude oil prices on stock market in Turkey: Empirical evidences from ARDL bounds test and combined cointegration. *Resources Policy*, 55, 49-54...
- Wakeford, J. (2006, October). The impact of oil price shocks on the South African macroeconomy: History and prospects. In *Accelerated and Shared Growth in South Africa: Determinants, Constraints and Opportunities*, (18-20 October 2006). *The Birchwood Hotel and Conference Centre, Johannesburg, South Africa.*
- Workman, D. (2021) Crude Oil Imports by Country. <https://www.worldstopexports.com/crudeoil-imports-by-country/>
- Youssef, M., & Mokni, K. (2019). Do crude oil prices drive the relationship between stock markets of oil-importing and oil-exporting countries?. *Economies*, 7(3), 70..
- Aye, G. C., & Odhiambo, N. M. (2021). Oil prices and agricultural growth in South Africa: A threshold analysis. *Resources Policy*, 73, 102196

Appendices

Descriptive statistic

	MC	GDP	FDI	DTRIG	OIL_PRICE	TRADE
Mean	4.40E+11	2.032751	0.844995	23.05666	44.36724	48.21526
Median	2.60E+11	2.400000	0.500126	22.76475	29.81000	47.42778
Maximum	1.23E+12	6.620583	5.368357	24.73161	112.0120	65.97452
Minimum	5.34E+10	-6.342471	-0.702215	21.36367	13.12600	34.32135
Std. Dev.	3.66E+11	2.589730	1.100721	1.232185	30.04853	7.463975
Skewness	0.619805	-0.779823	1.994327	0.183755	0.956416	0.039105
Kurtosis	1.826496	4.037564	8.294408	1.402008	2.744685	2.418247
Jarque-Bera	4.977649	5.994607	75.06437	4.593094	6.362025	0.588612
Probability	0.083007	0.049922	0.000000	0.100606	0.041544	0.745049
Sum	1.81E+13	83.34280	34.64481	945.3229	1819.057	1976.826
Sum Sq. Dev.	5.35E+24	268.2680	48.46343	60.73123	36116.57	2228.437
Observations	41	41	41	41	41	41

UNIT ROOT TESTS

ADF

Null Hypothesis: MC has a unit root

Exogenous: Constant

Lag Length: 2 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	0.215118	0.9701
Test critical values:		
1% level	-3.615588	
5% level	-2.941145	
10% level	-2.609066	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(MC) has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-7.472608	0.0000
Test critical values:		
1% level	-3.615588	
5% level	-2.941145	
10% level	-2.609066	

*MacKinnon (1996) one-sided p-values.

GDP

Null Hypothesis: GDP has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.432069	0.0155
Test critical values: 1% level	-3.605593	
5% level	-2.936942	
10% level	-2.606857	

*MacKinnon (1996) one-sided p-values.

FDI

Null Hypothesis: FDI has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.690287	0.0005
Test critical values: 1% level	-3.605593	
5% level	-2.936942	
10% level	-2.606857	

*MacKinnon (1996) one-sided p-values.

OIL PRICE

Null Hypothesis: OIL_PRICE has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.395771	0.5748
Test critical values: 1% level	-3.605593	
5% level	-2.936942	
10% level	-2.606857	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(OIL_PRICE) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.811072	0.0000
Test critical values: 1% level	-3.610453	
5% level	-2.938987	
10% level	-2.607932	

*MacKinnon (1996) one-sided p-values.

TRIG

Null Hypothesis: TRIG has a unit root
 Exogenous: Constant
 Lag Length: 2 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.358278	0.9062
Test critical values:		
1% level	-3.615588	
5% level	-2.941145	
10% level	-2.609066	

*MacKinnon (1996) one-sided p-values.
 Null Hypothesis: D(TRIG) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.069128	0.0030
Test critical values:		
1% level	-3.610453	
5% level	-2.938987	
10% level	-2.607932	

*MacKinnon (1996) one-sided p-values.

TRADE

Null Hypothesis: TRADE has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.049748	0.2654
Test critical values:		
1% level	-3.605593	
5% level	-2.936942	
10% level	-2.606857	

*MacKinnon (1996) one-sided p-values.
 Null Hypothesis: D(TRADE) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.257959	0.0000
Test critical values:		
1% level	-3.610453	
5% level	-2.938987	
10% level	-2.607932	

*MacKinnon (1996) one-sided p-values.

PP UNIT ROOT TEST

Null Hypothesis: MC has a unit root
 Exogenous: Constant
 Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-0.265961	0.9210
Test critical values:		
1% level	-3.605593	
5% level	-2.936942	
10% level	-2.606857	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(MC) has a unit root
 Exogenous: Constant
 Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-8.864062	0.0000
Test critical values:		
1% level	-3.610453	
5% level	-2.938987	
10% level	-2.607932	

*MacKinnon (1996) one-sided p-values.

FDI

Null Hypothesis: FDI has a unit root
 Exogenous: Constant
 Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-4.659177	0.0005
Test critical values:		
1% level	-3.605593	
5% level	-2.936942	
10% level	-2.606857	

*MacKinnon (1996) one-sided p-values.

OIL PRICE

Null Hypothesis: OIL_PRICE has a unit root
 Exogenous: Constant
 Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-1.395771	0.5748
Test critical values:		
1% level	-3.605593	
5% level	-2.936942	
10% level	-2.606857	

*MacKinnon (1996) one-sided p-values.
 Null Hypothesis: D(OIL_PRICE) has a unit root
 Exogenous: Constant
 Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-5.769389	0.0000
Test critical values:		
1% level	-3.610453	
5% level	-2.938987	
10% level	-2.607932	

*MacKinnon (1996) one-sided p-values.

GDP

Null Hypothesis: GDP has a unit root
 Exogenous: Constant
 Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-3.468522	0.0142
Test critical values:		
1% level	-3.605593	
5% level	-2.936942	
10% level	-2.606857	

*MacKinnon (1996) one-sided p-values.

TRADE

Null Hypothesis: TRADE has a unit root
 Exogenous: Constant
 Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-2.069624	0.2575
Test critical values:		
1% level	-3.605593	
5% level	-2.936942	
10% level	-2.606857	

*MacKinnon (1996) one-sided p-values.
 Null Hypothesis: D(TRADE) has a unit root
 Exogenous: Constant
 Bandwidth: 16 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-6.556334	0.0000
Test critical values:		
1% level	-3.610453	
5% level	-2.938987	
10% level	-2.607932	

TRIG

Null Hypothesis: TRIG has a unit root
 Exogenous: Constant
 Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	0.555852	0.9866
Test critical values:		
1% level	-3.605593	
5% level	-2.936942	
10% level	-2.606857	

*MacKinnon (1996) one-sided p-values.
 Null Hypothesis: D(TRIG) has a unit root
 Exogenous: Constant
 Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-4.143153	0.0024
Test critical values:		
1% level	-3.610453	
5% level	-2.938987	
10% level	-2.607932	

*MacKinnon (1996) one-sided p-values.

ARDL BOUND TEST

F-Bounds Test Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
Asymptotic: n=1000				
F-statistic	5.629190	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

			<i>L</i>		<i>F-</i>		<i>D</i>	
			<i>a</i>		<i>St</i>		<i>ec</i>	
			<i>g</i>		<i>at</i>		<i>isi</i>	
<i>Model</i>			.		<i>is</i>		<i>on</i>	
							<i>C</i>	
							<i>o-</i>	
							<i>In</i>	
							<i>te</i>	
							<i>gr</i>	
							<i>at</i>	
							<i>io</i>	
							<i>n</i>	
							<i>E</i>	
<i>MC,GDP,</i>			<i>(1,</i>		<i>5.</i>		<i>xi</i>	
<i>FDI, OP,</i>			<i>4,</i>		<i>62</i>		<i>st</i>	
<i>TR,T</i>			<i>2,</i>		<i>91</i>			
			<i>1,</i>		<i>90</i>			
			<i>0)</i>		<i>**</i>			
					<i>*</i>			
<i>Bo</i>								
<i>nd</i>								
<i>Cr</i>								
<i>iti</i>								
<i>ca</i>								
<i>l</i>								
<i>Va</i>								
<i>lu</i>								
<i>e</i>								
					<i>I</i>		<i>I</i>	
					<i>(</i>		<i>(</i>	
					<i>0</i>		<i>1</i>	
					<i>)</i>		<i>)</i>	
<i>S</i>			<i>1</i>		<i>2</i>			
<i>i</i>			<i>0</i>		.		<i>3</i>	

<i>g</i>			<i>%</i>		<i>0</i>			
<i>n</i>					<i>8</i>			
.								
			<i>5</i>		<i>2</i>		<i>3</i>	
			<i>%</i>		<i>.</i>		<i>.</i>	
					<i>3</i>		<i>3</i>	
					<i>9</i>		<i>8</i>	
			<i>2</i>				<i>3</i>	
			<i>.</i>		<i>2</i>		<i>.</i>	
			<i>5</i>		<i>.</i>		<i>7</i>	
			<i>%</i>		<i>7</i>		<i>3</i>	
					<i>3</i>		<i>4</i>	
					<i>.</i>		<i>.</i>	
			<i>1</i>		<i>0</i>		<i>1</i>	
			<i>%</i>		<i>6</i>		<i>5</i>	

ARDL LONG RUN

ARDL Long Run Form and Bounds Test
 Dependent Variable: D(MC)
 Selected Model: ARDL(4, 4, 4, 4, 2, 4)
 Case 2: Restricted Constant and No Trend
 Date: 02/13/23 Time: 15:24
 Sample: 1 42
 Included observations: 36

Conditional Error Correction Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.44E+13	2.81E+12	0.000000	0.0000
MC(-1)*	-1.850814	0.356896	-5.185867	0.0008
GDP(-1)	-9.05E+09	2.29E+10	0.000000	0.0000
FDI(-1)	-3.05E+11	6.11E+10	0.000000	0.0000
DTRIG(-1)	7.22E+11	1.42E+11	0.000000	0.0000
OIL_PRICE(-1)	1.68E+09	1.16E+09	0.000000	0.0000
TRADE(-1)	-2.42E+10	8.41E+09	0.000000	0.0000
D(MC(-1))	0.408807	0.331533	1.233079	0.2525
D(MC(-2))	0.119658	0.256892	0.465794	0.6538
D(MC(-3))	0.280937	0.269666	1.041797	0.3280
D(GDP)	-5.07E+09	1.18E+10	0.000000	0.0000
D(GDP(-1))	1.98E+10	1.60E+10	0.000000	0.0000
D(GDP(-2))	5.98E+09	1.28E+10	0.000000	0.0000
D(GDP(-3))	1.36E+10	9.90E+09	0.000000	0.0000
D(FDI)	-6.00E+10	2.02E+10	0.000000	0.0000
D(FDI(-1))	1.91E+11	4.84E+10	0.000000	0.0000
D(FDI(-2))	1.04E+11	3.75E+10	0.000000	0.0000
D(FDI(-3))	3.51E+10	2.82E+10	0.000000	0.0000
D(DTRIG)	1.63E+11	8.81E+10	0.000000	0.0000
D(DTRIG(-1))	-4.92E+11	1.52E+11	0.000000	0.0000
D(DTRIG(-2))	-2.56E+11	1.06E+11	0.000000	0.0000
D(DTRIG(-3))	-1.21E+11	7.51E+10	0.000000	0.0000
D(OIL_PRICE)	3.08E+09	1.92E+09	0.000000	0.0000
D(OIL_PRICE(-1))	3.75E+09	1.75E+09	0.000000	0.0000
D(TRADE)	-1.32E+10	7.19E+09	0.000000	0.0000
D(TRADE(-1))	1.43E+10	6.98E+09	0.000000	0.0000
D(TRADE(-2))	5.56E+09	7.11E+09	0.000000	0.0000
D(TRADE(-3))	1.46E+10	6.69E+09	0.000000	0.0000

* p-value incompatible with t-Bounds distribution.

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP	3.06E+10	4.81E+09	6.349223	0.0002
FDI	-2.32E+10	8.50E+09	-2.728833	0.0259
OIL_PRICE	-1.21E+09	4.98E+08	-2.428814	0.0413
TRADE	-1.36E+10	1.12E+09	-12.15672	0.0000
TRIG	22.62691	0.539476	41.94241	0.0000
C	6.29E+11	4.16E+10	15.13629	0.0000

ARDL SHORT RUN

ARDL Error Correction Regression
 Dependent Variable: D(MC)
 Selected Model: ARDL(4, 0, 3, 0, 0, 0)
 Case 2: Restricted Constant and No Trend
 Date: 02/13/23 Time: 15:26
 Sample: 1 42
 Included observations: 37

ECM Regression
 Case 2: Restricted Constant and No Trend

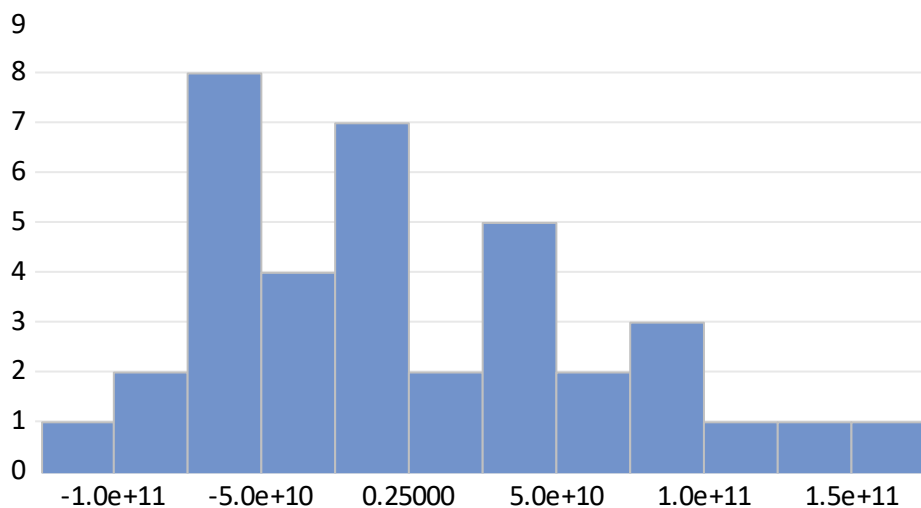
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MC(-1))	-0.474956	0.098109	-4.841126	0.0001
D(MC(-2))	-0.515908	0.112472	-4.587001	0.0001
D(MC(-3))	-0.215227	0.131744	-1.633681	0.1154
D(FDI)	-4.77E+10	1.10E+10	0.000000	0.0000
D(FDI(-1))	8.18E+10	1.90E+10	0.000000	0.0000
D(FDI(-2))	4.34E+10	1.28E+10	0.000000	0.0000
CointEq(-1)*	-0.720344	0.089244	-8.071637	0.0000

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
MC(-1)	-0.138891	0.181946	-0.763363	0.4534
MC(-2)	0.060914	0.183690	0.331611	0.7433
MC(-3)	0.377867	0.164755	2.293500	0.0317
GDP	9.79E+09	9.01E+09	1.086599	0.2890
FDI	-4.50E+10	1.61E+10	-2.792125	0.0106
FDI(-1)	-3.28E+10	1.68E+10	-1.951498	0.0638
FDI(-2)	-3.45E+10	1.65E+10	-2.091910	0.0482
FDI(-3)	-3.87E+10	1.82E+10	-2.128615	0.0447
DTRIG	1.91E+11	6.58E+10	2.900616	0.0083
DTRIG(-1)	1.09E+10	7.51E+10	0.145032	0.8860
DTRIG(-2)	6.64E+10	7.00E+10	0.947773	0.3535
OIL_PRICE	2.68E+09	1.50E+09	1.786072	0.0879
OIL_PRICE(-1)	3.82E+08	2.08E+09	0.184159	0.8556
OIL_PRICE(-2)	-2.23E+09	1.56E+09	-1.433419	0.1658
TRADE	-4.41E+09	4.51E+09	-0.979020	0.3382
C	-5.55E+12	1.67E+12	-3.314553	0.0032

RESIDUAL DIAGNOSTIC

Breusch-Godfrey Serial Correlation LM Test:
 Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.755626	Prob. F(2,22)	0.4815
Obs*R-squared	2.378279	Prob. Chi-Square(2)	0.3045



Series: Residuals	
Sample 5 41	
Observations 37	
Mean	-0.000713
Median	-1.33e+10
Maximum	1.75e+11
Minimum	-1.11e+11
Std. Dev.	6.63e+10
Skewness	0.738967
Kurtosis	3.057650
Jarque-Bera	3.372567
Probability	0.185207

Heteroskedasticity Test: Breusch-Pagan-Godfrey
 Null hypothesis: Homoskedasticity

F-statistic	0.736005	Prob. F(12,24)	0.7044
Obs*R-squared	9.953262	Prob. Chi-Square(12)	0.6201
Scaled explained SS	4.308500	Prob. Chi-Square(12)	0.9772

GRANGER CAUSALITY

Pairwise Granger Causality Tests

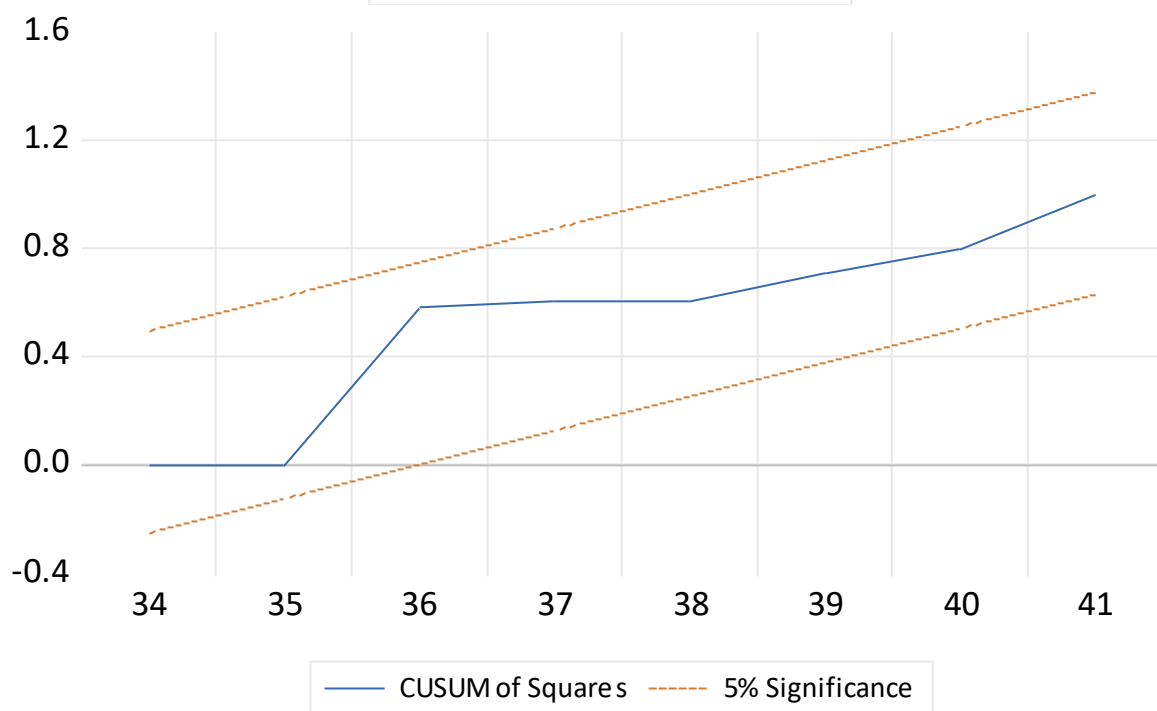
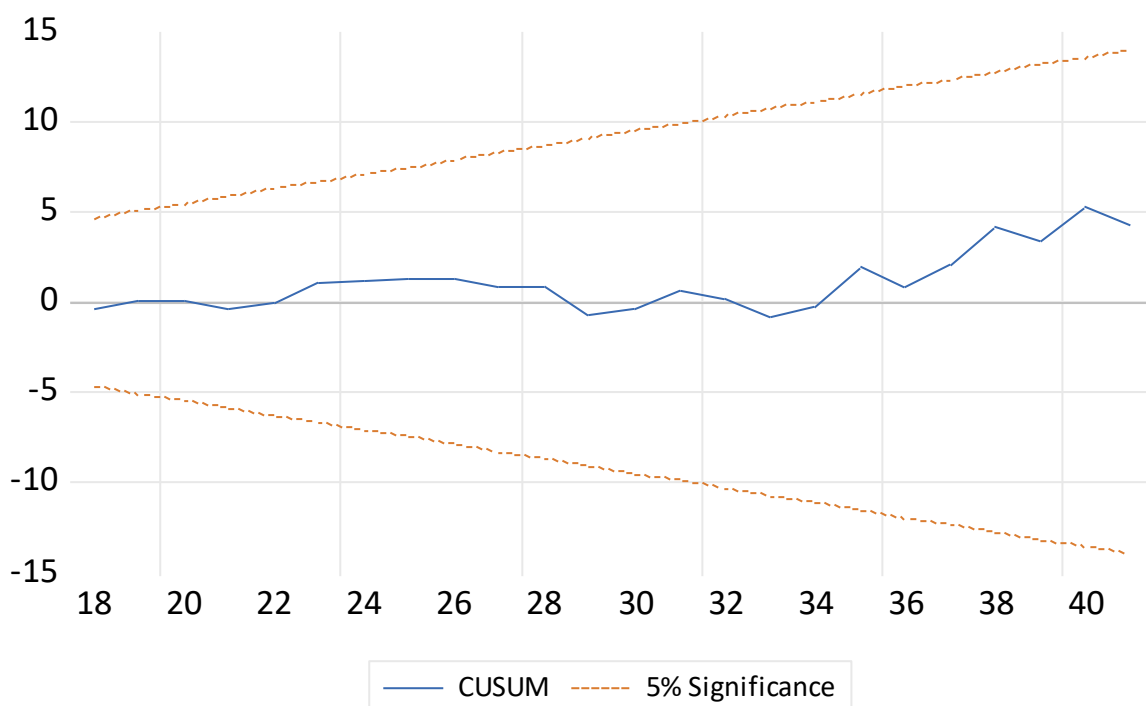
Date: 02/13/23 Time: 15:38

Sample: 1 42

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
GDP does not Granger Cause MC	38	0.24388	0.7850
MC does not Granger Cause GDP		0.13746	0.8721
FDI does not Granger Cause MC	39	0.81023	0.4532
MC does not Granger Cause FDI		1.33526	0.2765
DTRIG does not Granger Cause MC	39	3.52801	0.0405
MC does not Granger Cause DTRIG		0.18135	0.8349
OIL_PRICE does not Granger Cause MC	39	0.04889	0.9524
MC does not Granger Cause OIL_PRICE		1.62241	0.2123
TRADE does not Granger Cause MC	39	0.90979	0.4122
MC does not Granger Cause TRADE		7.37876	0.0022
FDI does not Granger Cause GDP	38	0.56765	0.5723
GDP does not Granger Cause FDI		1.03243	0.3674
DTRIG does not Granger Cause GDP	38	0.29433	0.7470
GDP does not Granger Cause DTRIG		1.76279	0.1873
OIL_PRICE does not Granger Cause GDP	38	2.23543	0.1229
GDP does not Granger Cause OIL_PRICE		0.65841	0.5243
TRADE does not Granger Cause GDP	38	6.38301	0.0045
GDP does not Granger Cause TRADE		0.39359	0.6778
DTRIG does not Granger Cause FDI	39	1.73853	0.1910
FDI does not Granger Cause DTRIG		0.23598	0.7911
OIL_PRICE does not Granger Cause FDI	39	1.63318	0.2103
FDI does not Granger Cause OIL_PRICE		4.64385	0.0165
TRADE does not Granger Cause FDI	39	2.48094	0.0987
FDI does not Granger Cause TRADE		1.34150	0.2749
OIL_PRICE does not Granger Cause DTRIG	39	0.65442	0.5262
DTRIG does not Granger Cause OIL_PRICE		3.58239	0.0387
TRADE does not Granger Cause DTRIG	39	0.03453	0.9661
DTRIG does not Granger Cause TRADE		6.65577	0.0036
TRADE does not Granger Cause OIL_PRICE	39	1.87334	0.1691
OIL_PRICE does not Granger Cause TRADE		11.9334	0.0001

STABILITY



Turnitin Report