**IMPACT OF FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH IN TANZANIA FROM 1970 TO 2013**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN ECONOMICS OF THE OPEN UNIVERSITY OF TANZANIA**

**2015**

# CERTIFICATION

This is to certify that I have read the research dissertation by Cyril Fred Kabarole titled “The Impact Of foreign Direct investment on economic growth in Tanzania from 1990 to 2013” and hereby recommend it for acceptance by the Senate of the Open University of Tanzania in partial fulfillment of the requirement for the degree of Masters Of Science in Economics.

……………………………

**(Prof. Dr. D. Ngaruko)**

(Supervisor)

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Date ………………………………………………………

# DEDICATION

This dissertation is dedicated to my children Naomi, Colin and Moses.

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# ABSTRACT

Foreign Direct Investment has been recognized as playing a facilitating role in the growth of the economy developing countries because it is an additional source of capital formation as well as having benefits such as creating employment on, transfer of technology and related spillover, development of skills, improving trade and competition as well as access to foreign markets. This study investigates empirically the relationship between FDI and economic growth in Tanzania by employing data on GDP annual growth rate, FDI inflow, gross capital formation, inflation, exports and labour force for the period 1970 – 2013. The data collected for the study was subjected to ADF unit root test to check for stationarity after which differencing was applied where appropriate. The result of the regression analysis shows the model has a significant capability to explain the relationship amongst the variables. The F statistic is statistically significant meaning the independent variables i.e. FDI inflow, gross capital formation, inflation, exports and labour are all significant to explain Growth in the economy. Then the Johansen cointegration test was performed and established that the variables have a long term association meaning they are cointegrated. The VECM test indicated that the variables have both long and short term causality. These findings were supported by the Granger causality test which establishedthat FDI and GCF jointly Granger cause GDPR, also GCF and GDP jointly Granger cause FDI suggesting there is a bi-directional causality implying that through economic growth FDI influences domestic investment. Empirical findings demonstrate FDI inflow, Gross capital formation, Exports trade, and an educated labour in conjunction influencing economic growth in Tanzania.

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# LIST OF ABBREVIATIONS

AfDB: African Development Bank

**AIC**: Aike Information Criteria

**BOT**: Bank of Tanzania

**OECD:** Organisation for Economic Cooperation and Development

**FDI:** Foreign Direct Investment

**FYDP**: National Five Year Development Plan I

**GDP**: Gross Domestic Product

**IMF:** International Monetary Fund

**IPC:** Investment Promotion Centre

**LD:** Lagged Variable

**LM:** Lagrange Multiplier

**LTPP**: The Tanzania Long-Term Perspective Plan 2011/12-2025/26

**MDGs**: MILLENIUM Development Goals

**MKUKUTA II:** Swahili Acronym for **NSGRP**

**MNC: M**ultinational Corporation

**MoF:** Ministry Of Finance

**MNE’S:** Multinational Enterprises

**NBS**: National Bureau Of Statistics

**NEPAD**: New Partnership for Africa’s Development

**NESP**: National Economic Survival Plan

**NICs**: Newly Industrialised Countries

**NSGRP**: National Strategy for Growth and Reduction of Poverty

**OECD**: Organisation for Economic Cooperation and Development

**ρ**: Probability Value

**PHDR:** Poverty and Human Development Report

**PPA**: Public Procurement Acts

**R2:** Coefficient of Determination

**SAP**: Structural Adjustment Program

**TDV**: Tanzania Development Vision

**TFP**: Total factor productivity

TIC: Tanzania Investment Centre

**TNC:** Transnational Corporation

**TTB**: Tanzania Tourist Board

**TZS**: Tanzanian Shillings

**UNCTAD:** United Nations Conference on Trade and Development

**URT:** United Republic of Tanzania

**VAR:** Vector Autoregressive Model

**VECM**: Vector Error Correction Model

# CHAPTER ONE

# INTRODUCTION

# Chapter Overview

This chapter introduces the study and then proceeds to the background information. Further, explanation of the research problem, formulation of the research objectives and research hypothesis are undertaken. Finally the relevance and significance of the study are discussed.

# Background Information

Delivering a consistent and sustainable long term economic growth is urgently needed so as to reduce the poverty level, improve productivity as well as improve income and the general welfare of the population (PHDR, 2009).Most developing countries have low savings and so the resources available locally for investment are inadequate. This leads to a huge gap between domestic resources and requisite investment (Assiedu, 2004). To bridge the mismatch between local investments capacity and the required investments in the country foreign financing is an alternative in order to stimulate viable growth and development. Compared to debt financing, foreign direct investment is a major source of finance for development the world over (Assiedu, 2004).The experience of the newly industrialized countries of East Asia who have achieved a sustained double digit growth rate of their Gross Domestic Product through increasing FDI inflow to augment their meager domestic investment resources has convinced most developing countries that FDI is an engine of growth (UNCTAD, 2005). Tanzania has therefore embarked on exploring policies that will promote economic growth through increasing FDI inflow. Since mid-1990s legislations have been put in place to govern the efficient functioning of private sector led market economy. These efforts have resulted in an increase in FDI inflow.

Also FDI is one of the means through which developing nations are integrated into the world economy thus expanding the source of investment capital for growing the economy which is necessary for reducing poverty and improving the standard of living of the population (Rutihinda, 2007; Dollar and Kraay, 2000; Dupasquier and Osakwe, 2005). According to the (IMF, 2013) GDP growth in Tanzania is propelled by financial intermediation, transport sector, communications sector, real estate, businesses, mining and manufacturing industries. These sectors require adequate investments in capital, managerial skills and marketing all of which are in short supply, thus FDI inflows will bridge the investment resource gap and through its attended benefit lead to growth of these sectors and overall economic growth.

# An Overview of The Macroeconomic Performance in Tanzania

In order to understand how Foreign Direct Investment correlates to economic growth a description of the salient features and the structure of the Tanzanian economy is undertaken. The state has rolled back its frontiers from economic activities, with the government increasingly assuming the role of creating an enabling environment for business to flourish and so promote the economy’s growth (LTPP, 2012). Government expects to achieve this through stimulating investments that will in turn create employment opportunities. Hence economic policy formulation is geared at achieving national development objectives as outlined in the national Strategy for Growth and Reduction of Poverty, LTTP-2012, 1st and 2nd five year plan (FYP); sector strategies; Tanzania Development Vision 2025. The importance of growth through private investment, infrastructure development and human development as engine for economic growth is underlined (Tanzania Development Vision 2025, 1999 and LTTP, 2012). It is through growing the economy that employment opportunities will be created, income inequality reduced and poverty reduced.

The macroeconomic performance in Tanzania can be viewed in terms of three distinct phases as follows; 1961to 1967, this was a period of good economic performance, secondly the 1967 to 1983 phase a period characterised by internal and external economic shocks resulting from the economic crisis and the 1978 war. From 1983 to the early 1990s Tanzania went through major recovery of the economy at the behest of the international financial institutions (Mjema, 2014). This is followed by the period thereafter to date known as the reform period (Mjema, 2014).

The dominance of the private sector was bequeathed to independent Tanzania and this continued in situ up to 1967; the first period. The government focused on nurturing the private sector. At the same time to accelerate industrialisation government pursued a policy of locally producing what was hitherto imported, these were basically consumer goods. To increase demand for these goods deliberate effort was made to improve the income of the rural communities through productive agriculture otherwise only the urban population would benefit. The low level of economic development also called for encouraging new industrial plants and improving infrastructure connectivity given the vast size of the nation. This is referred to as the period of stability and growth because the economic performance was good. GDP grew at 5.7% and the average rate of inflation was 4%. Gross investment as a percent of GDP was 18.5%, Agriculture value added was 53% versus the manufacturing sector which grew at 5.3%. Income per capita recorded a 2% growth per annum (BOT, 2011). However this development strategy which emphasized cash crop production for exports to raise forex manifested its limitations by 1967; food production declined, leading to shortage of food and so food had to be imported further compounding the shortage of foreign exchange (OECD, 2013).

The period from 1967 to 1983 is the second phase. In 1967 government promulgated the policy guide through which the economy, business and social life was brought under close government control and supervision. The Arusha declaration led to the socialization and public control of production and distribution (Rutashobya, 1995; 1999). The state expropriated the private enterprise and hence all local economic activities; domestic production and exports were brought under its ambit and direction. Progressively even the minor economic activities e.g. retailing were also brought under the ambit of government (Rutashobya, 1999).

At the same time Government expenditure increased because Government greatly subsidized provision of economic, social goods and services (Ngowi, 2009). This went hand in hand with growth in the number of Parastatals. Whereas in 1961 there were only three Parastatals, this number had risen to 43by 1967. According to the OECD Investment Policy Reviews on Tanzania of 2013 there was a proliferation of Parastatals, from 43 in 1967 to 425 in 1984; the era of socialism. However According to a survey of 220Parastatals conducted as of 1991 only 43 were operating profitably (IMF, 1999).The public sector was beholden to patronage and this led to mediocrity in management and overemployment causing high inefficiency such that as of 1993 despite employing 25% of employees not engaged in agriculture their contribution to GDP was only 13% (Cooksey, 2011).

Furthermore in 1967 the Leadership Code for the Party was passed, outlawing leaders in government and party from owning shares in companies, engaging in real estate and property development, becoming directors or carrying out business locally or internationally. The cooperative movement that were vibrant even before independence were abolished as democratic entities formed by members voluntarily and instead became a junior affiliate of the ruling party in 1975. The entrepreneurial culture and spirit was thus nipped in the bud by Ujamaa Villages Act of 1975 (Moshi and Kilindo, 1999). These actions drastically reduced private investments.

This phase was characterised by a slowdown in economic growth. The average rate of growth in terms of GDP between 1967 and 1979 was 4.7% per annum, per capita income grew at an average rate of 0.7% per annum and inflation rate was 10% on average. In this period the share of the agricultural sector to GDP was 41% as compared to 1.1% for the manufacturing sector and the share of gross investment to GDP was 24.3% (URT, 2000).

Economic performance was uneven in this period and became worse before reaching a crisis proportion between 1980 and 1985. The crisis period began when the East African Community collapsed in 1977. The demise of the EAC had a negative impact on the economy because the common services of the community e.g. Railways, Airways, Post and telecommunications stopped operating on a joint basis. Trade between Kenya, Tanzania and Uganda fell by about 78% between 1976 and 1977 (URT, 1978).The situation was further aggravated when Uganda declared war on Tanzania. War is expensive and increases public expenditure thus although the war was over by 1980 the strain on the public treasury lingered on to 1985 (Mbelle, 1996; Maliyamkono and Bagachwa, 1990). Furthermore the world oil crisis of 1979 to 1982 and the bad weather exacerbated macroeconomic instability in Tanzania (Wangwe, 1984; Ndulu, 1984 and Hyuha, 1986). This is referred to as the crisis period.

During 1980-85 the growth in real GDP dropped to 1.1% sometimes becoming negative, per capita income dropped to 1.5% annually and inflation rose to 36.1% per annum. The contribution of agriculture to GDP was 50% compared to 7% for manufacturing and gross investment declined to 19.9% in this period (BOT, 2011). It was at this time that the Economic Sabotage and Organized Crime Act came into force, precisely in 1983. The effect of this act and the resultant policies institutionalized and legalized a negative public attitude which was hostile to developing the private sector (Mbelle, 1994).

As a result the National Economic Survival Plan was introduced in 1981 to increase agricultural investment, however its dismal performance ushered in the structural adjustment programme (SAP) in its place in 1983 (Kent, 1996).The SAP instituted stringent control of public expenditure it aimed at increasing income from export so as to alleviate the increasing deficiency in food. However both NESP and SAP failed to give the expected results due multiple constraints, prevailing institutional bottlenecks that hampered implementation, dependence on foreign resources and inadequacies of the adapted policies (Bevan et al., 1990).

The third phase referred to as the adjustment or reform phase started from 1983. From 1986 to1989 the second structural adjustment programme was implemented starting with scaling up the deregulation of trade, then Macroeconomic reforms followed aimed at encouraging a market economy and promoting both foreign and domestic private investment. After 1986 a programme to dismantle state economic controls and a more effective private sector involvement in the economy was encouraged. The government relinquished control oversetting consumer prices as well as producer prices, export taxes were reduced, subsidies on farm inputs and crop marketing was also abolished (Moshi and Kilindo, 1999).

Furthermore government abandoned its monopoly on marketing agricultural crops for the domestic market and export markets; the crop authorities that had replaced marketing boards were repealed and marketing boards reinstated. The foreign exchange control ordinance for controlling forex management was repealed, repression of interest rates removed, tax management reformed and rationalisation of public expenditure by retrenching public servants implemented (Fan et al, 2005). Between 1989 and 1992 Tanzania opened its doorto international banks, introduced a unified foreign exchange rate regime and deregulated investment. After the economic recovery programme policies were adopted in 1986, foreign funds for recurrent and investment spending resumed but the inflow of funds declined again in the early 1990’s (Doriye, 1995).

Real GDP and income per capita grew by about 5% and 1.2% per annum per annum respectively from 1986 to 1992. Inflation rate on average declined slightly to 30% per annum. The contribution of agriculture to GDP was 54% compared to 8.1% for manufacturing and that of gross investment was 28% per year (BOT, 2011).

In 1993 to 2001, this trend was reversed and so the rate of growth for real GDP and income fell to about 3.6% and 0.5% per annum respectively. The contribution of agriculture to GDP was still dominant at 48.4% compared to 8.1% for manufacturing and that of gross investment was 21% per year (BOT, 2004).

The 2002 to 2006 period is referred to as the late reform period. From 2002 the economy recovered and has since been growing at beyond 5% per annum. This was a healthier development especially when compared to the 3% per annum in the late 1990’s (BOT, 2011).As a result of the macroeconomic reforms there has been a significant improvement in the economic fundamentals i.e. inflation rate, growth rate, unemployment decline and exchange rate stability. For instance in the last decade on average GDP grew by 6.3% causing income per capita to grow by 3.1% per annum. Inflation has fallen from 35% in 1990 to 5.3%, and falling further to 4% before rising to 7.2% in 2010 after which it rose to 12.6% in 2012 before declining to 6% in 2014 (BOT, 2015).

Although agriculture has grown from 1998 due to a doubling in the output of maize, paddy, sugar cane and meat, this growth has not exceeded 4-5% per year. From 2002-2012 average growth for agriculture was only 4.2%; 4.3% in 2012 and 3.6% in 2011. Agriculture employs over 70% of the economically active population despite its share in the GDP falling from 27% to 24.7% for the years 1998 to (THDR, 2014; NBS, 2013).The contribution of agriculture to GDP is still dominant at 24.2% compared to 9% for manufacturing and that of gross investment was 27.8% per year (BOT, 2011).

Manufacturing is next in terms of employment creation and accounted for 9.2% of GDP in 2006.The share of industry has increased from 18% in 2001 to 22.1% in 2012. The service sector has remained the largest sector in terms of output but its share declined marginally from 45.5% in 2001 to 43.9% in 2012 (URT, 2014.In the same period the relative growth of the mining sector has catapulted Tanzania to the top four gold producers in Africa. Furthermore exploitation of other minerals, oil and gas is on the rise potentially raising the contribution of the sector to GDP. The contribution of the mining sector to GDP has been growing from 8.2 % in 2000 to 16.8% in 2007 before dropping to 14% in 2010. Oil and gas has also started to contribute significantly to growth (LTPP, 2012). Tourism has not lagged behind, (TTB, 2013) reports that revenues from tourism reached USD 380 million in 2012., mining, tourism, electricity and water.

According to NBS (2013), the contribution to GDP of different sectors was; the service sector 47.6%, the agricultural sector 26.8% and industrial sector 24% respectively as of 2012. There has recently been some improvement in the manufacturing sector even the though the textiles industry deteriorated following liberalisation and deregulation of the economy (Wangwe et al., 2014). The IMF (2014) also reports that in 2013 the Tanzanian economy was fuelled by the manufacturing industry, transportation sector, warehousing, communications, real estate sector, businesses, and financial intermediation.

Nonetheless the Second National Strategy for Growth and Reduction in Poverty implemented from 2010 to 2015 and the vision 2025 underlines the important role of the private sector for Tanzania achieving a middle income country status (MoF, 2015). In juxtaposition with the National Five Year Development Plan I (FYDP 2011/12 – 2015/16) its salient feature is to empower the private sector through human capital investment and infrastructure development anchored on a friendly business environment all eventually leading to economic growth.

Below is a graph showing the rate of growth of GDP on a yearly basis from 1970 to 2013. The results show that GDP in real terms grew by 1% i.e. from 6.0 percent in 2009 to 7.0 percent in 2010. The rate of GDP growth has been 6% and above reaching a high of 7.2% per year in 2013 and 2014 respectively (GOT, 2013). Although this is one of the highest rates growth amongst the non-oil based economy in Sub-Sahara Africa, the income per capita has grown at a slower pace, growing from 650 dollars in 1995 to 1,500 dollars by 2012(BOT, 2014).



Figure 1:1Tanzania’s GDP Growth Rate from 1970to 2013

Source: Appendix 1 (Tanzania Mainland Account)

# Foreign Direct Investment Development in Tanzania

The Zanzibar Declaration replaced the Arusha declaration in 1991.This was the genesis of Tanzania actively embracing foreign investors as a tool for developing the economy. The Investment Promotion Centre (URT, 1995) was set up as a result of The National Investment Promotion Policy and Investment Code of 1990.The IPC was replaced by The Tanzania Investment Centre which was established in 1997 by the Tanzania Investment Act (URT, 2000). The new Act was in tandem with the global economic conditions and more investor friendly in terms of policy and legislations.TIC is the Agency of the Government mandated with coordinating, encouraging, promoting and facilitating investment in Tanzania and to advise the Government on all investment matters and policy. This period witnessed the dismantling of the pillars of socialism (Mjema, 2014).According to Cooksey (2011) barriers to entry in business were reduced resulting in the removal of import licenses, the removal of foreign exchange control and the elimination of price control.

Prior to 1986 public enterprises dominated the economy and the policy environment were such that political consideration influenced the government to selectively screen foreign direct investment inflows. An example of major FDI inflow of the 1970s was the Tanzania Zambia Railway project construction which was an FDI inflow from the People’s Republic of China. Consequently during the pre-reforms period when compared to Kenya, Tanzania attracted FDI inflows in worth USD 4.4 million versus USD 32 million for Kenya which was more accommodating to foreign investors. Kenya’s receptiveness to FDI meant that from the foreign capital inflows of USD757 million to the East African community countries Kenya had the lion’s share getting 90 percent while Tanzania got the remaining 10 percent (UNCTAD, 2002). Uganda received no foreign direct investment during this period. In Tanzania the low FDI inflow was also coupled with the policies towards public investment proving a failure thus the Parastatals increasingly became a liability on the government’s resources this necessitated reform (IMF, 2009).

In the mid 1990’s, the government embarked on a decisive reform of the economy by engaging in massive reforms of the public service and divested parastatal sector that had proliferated the economy. However resistance from vested interest has seen that 176 of the 336 Parastatals are still in place NAO (2012). Privatisation has faced many challenges and AFRODAD (2007) notes that most small scale producers experienced high increases in input prices particularly for fertilisers as a result of the economic liberalisation. Instead of treating the poor performance of some privatised firms like the birth pain it is the state has resorted to repossessing some of them. A case in point is the textiles sector.

The textile industry has not been performing well since they were privatised. The poor economy at the beginning of reform and government policies in the trade deregulation regime led to the sector’s collapse. According to Zuku, (2002) the main reasons for the failure of the textile sector following privatisation was insufficient availability of cotton lint, erratic power supply, exorbitant power tariffs, competition from imported textiles and devaluation of the shilling escalating the price of machinery spare parts.

As a result of a having a more favourable business environment, the above observations notwithstanding, incoming foreign direct investment increased from $10 million to $935.4 million in 1990 and 2005 respectively, then falling in 2007 after which it rose tenfold in 2008, fell again in 2009 but has since been on an upward trend. The global financial crisis of 2009 reduced the inflow of FDI because the economic downturn impacted the capacity of multinationals to undertake increased international investments. In 2011 the inflow of FDI to Tanzania decreased again but this time the scale was minor, this was in line with the worsening world economy. In 2013 FDI inflow rose to 1,800 million USD (TIR, 2012) as shown in Figure 1.2 below:-



Figure 1.2.1:1 Indicating FDI trend after 1990

Source: Appendix 1(UNCTAD)

From 2008 to 2010 portfolio investments including loans fell significantly from $172.0 million to $0.7 million. In 2011 it bounced back to $99.9 million. Investment in Portfolio initially increased from USD 0.2 million in 2008 to USD 0.4 million in 2009, then fell to USD -0.1 million in 2010, then it increased again to USD 0.7 million in 2011 (TIR, 2012). Notwithstanding this by 2011 the stock of FDI grew to $10,393.2 million (TIR, 2012). This large increase in FDI stock is a result of Tanzania having adopted appropriate policies and legislations foreigners doing businesses (Mjema, 2014). The distinction between FDI flow and FDI stock and portfolio investment is made in Figure 1.3.



Figure 1:3 Capital Flows and Stocks, 2008 – 2011 (USD Million)

Source: Appendix 2 (TIR, 2012)

# Investments and Economic Growth

According to Gorg and Greenway (2004) when firms are part of the global economic network there is marked improvement in their outputs and capital stock quality. Foreign Direct Investment stimulates growth. Foreign direct investments enhances the productivity of local firms through facilitating and attracting investment in infrastructure, human skills development, efficient technology and spurs economic development by promoting inter-business competition. Through FDI Local firms can easily access foreign markets, technology, capital which allows them create more jobs (Addison and Mavrotas, 2004).

There is a general acceptance in macroeconomic discourse that FDI plays a positive role for growth via four major conduits (Blomstrom and Kokko, 1997; Seetanah, 2006; Mutenyo, 2008). Firstly, is that foreign capital inflow resolves the limitations in mobilising savings domestically and increases capital formation. Thus, foreign direct investment supplements the low domestic savings and increases capital formation-through investment in both physical and human capital (Todaro and Smith, 2006). Next, the transfer of technology and better usage of productive resources is effectively accomplished through FDI. Third, FDI leads to increases in exports as a result of increased capacity and competitiveness in domestic production thus generating increased foreign exchange income (Pailwar, 2004). The fourth conduit is that through paying taxes it enhances the tax revenue of the government as such the government is able to spend more on development e.g. infrastructure, social services (Todaro and Smith, 2006). But for a country to reap these benefits it must have the absorptive capacity i.e. human skills and a liberalized opened economy so as to absorb the overflow.

Endogenous growth theory attributes sustainable economic growth to increase in the quantity of capital inputs, labour inputs and improvement in their quality and higher total factor productivity meaning enhanced efficiency and better resource use (Assiedu, 2004). Whereas the Solow model (Solow, 1957) attributes growth to the increases in labor and capital and in total factor productivity reflecting advances in technology and overall efficient utilisation of resources. According to the endogenous growth framework, FDI by increasing the capital stock and growing human skills can accelerate development in technology and spur economic growth. Total factor productivity grows as a result of more foreign direct investment. FDI increases capital stock and boosts human capital accumulation and speeds up technological advances in host countries.

According to Borenzstein et al, (1995), evidence suggests that developing countries that have recorded high growth rates are those that have a high investment to GDP ratio. However because developing countries have less capital domestically, FDI has been used to fill the investment shortfall.

Most importantly the parent company also provides a market for host countries in its international markets as well as offering access to finance, technology and state of the art managerial practice (Vernon, 1966). Also FDI promotes best practice by adapting its international practice to the many firms it associates with in the host country. As a result technology is dispersed to businesses it engages with, in its supply chain in terms of forward and backward linkage. In this way local suppliers, distributors and competitors benefit; the entire economy benefits from the spillover.

The Millennium Development Goal (MDG) underscores the importance of FDI when it says in order to reduce the rate of poverty by 50% in 2015 African countries have increase FDI inflows (Assiedu, 2004). NEPAD also reiterates that the annual resource gap of US$64 billion, which is 12% of GDP can only be filled with FDI given the low levels of incomes and savings (Assiedu, 2004). The underdeveloped capital markets low levels of income, low levels of saving and the continuing reduction in official development assistance means that FDI is required for filling the resource gap needed for poverty alleviation through more employment creation and other interventions. Recently remittances from the diaspora have improved the quality of life for many citizens of developing countries. Although remittances from Tanzanians in the diaspora are a reliable source of foreign capital inflow its role is still minimal because the amount is low.

Donors have also reduced funding thus alternative sources of finance is required. Although developing countries may borrow, the international capital markets require that debt be repaid, irrespective of the project’s ability to service the debt as well as the payment of interests on the borrowed sum. Inability to pay debts because the economy is underperforming increases the debt burden of a country. In the case of FDI no country has to pay when an FDI project fails because FDI is not a debt.

Furthermore it is easier for multinationals to mobilise resources to improve communications, infrastructure and so promote the efficient exploitation and distribution of resources thereby improving economic growth of the host country. The exposure that local firms have with their foreign counterparts is a learning curve that raises efficiency by enhancing technical and managerial skills and therefore the quality of human capital. This is the so-called learning by watching effect (Bandura, 1986) and the learning by doing effect (Kaldor, 1967).

The single most pressing problem for developing countries is the creation of opportunities for employment through various interventions (Asiedu, 2004). FDI while being a catalyst for speedy growth also offers three solutions to employment starting with directly employing persons in its operations locally. This is followed by expanding employment to firms who are their suppliers or distributors. Finally when the overall economy grows then more people get employment. In this way multinational companies through growing the economy can promote employment and alleviate poverty (Asiedu, 2004) because MNE employment directly and indirectly generates new employment opportunities for domestic employment.

As for the debate surrounding the relationship between FDI and economic growth, the question is whether countries should promote FDI to obtain economic growth, known as “FDI-led growth hypothesis” (De Mello,1999) or whether they should promote economic growth to attract FDI, known as “Growth-driven FDI hypothesis” (Bilgiç, ‎2007).The advocates of “Growth-driven FDI hypothesis” argue that the stage of a country’s economic growth is a factor determining FDI inflows in the host country, because high economic growth may create largelocal markets and big businesses, hence drawing in market-seeking FDI (Agiomirgianakis et al., 2006; EmrahBilgiç, 2007).

Alternatively, the advocates of “FDI-led growth hypothesis” (Zhang, 2000; Moudatsou, 2003), find justification in the neo-classical economic theories and endogenous growth theories. In neoclassical economics, FDI multiplies the volume of investment, and therefore results in long-run growth. As for endogenous models, long-run growth is a function of progress in technology, providing the structure for FDI to increase the rate of growth in the economy through transfer of technology, diffusion of technology and spillover effects over the long run horizon (Nair-Reichert and Weinhold, 2000).

# Problem Statement

All stakeholders are considering various ways in which Economic growth can be attained so as to improve the livelihood of the people and provide more opportunities. However given the inadequacy of domestic resources efforts are aimed at attracting foreign capital through FDI. The New Partnership for Africa’s Development (NEPAD) also recognised the importance of FDI as a key resource for the growth and development of Africa, because it provides the needed substantial inflow of external resources filling gaps in the saving and investment requirement as well as in foreign exchange and to help Africa to advance on the road to a long run and sustainable level of growth (Asiedu, 2004). Tanzania needs to achieve a high and sustainable (annual GDP) economic growth rate. This will increase the national income, increase per capita income, increase government revenue, reduce dependency on donors and enable government to offer adequate social services to the people. The Big Results Now and the short and long term economic growth under the planning commission is evidence of the importance attached to FDI.

There is no consensus in both theoretical and empirical analysis on the effect of FDI on economic growth (Mutenyo (2008, Temba, 2008, Frimpong et al., 2006, Rutaihwa, J. et al., 2012). Findings range from positive association, negative association, weak association and no association. Since FDI inflow and other economic characteristics are country specific, a study on the impact of FDI inflow on GDP is required for the case of Tanzania. This study attempts to provide empirical evidence on the impact of foreign direct investment inflow on economic growth in Tanzania. Focus is on the causal link between FDI, gross capital formation, exports, inflation, labour force and GDP on growth. Further the direction of the causality is important .The granger causality test is therefore employed to ascertain the direction in which the variables affect each other.

# Objective of the Study

The overall objective of this study is to empirically assess the impact of foreign direct investment inflow on economic growth in Tanzania using time series data from 1970 to 2013 and to establish the direction of causality. The Specific objectives the study are the following:

* 1. To examine the impact on economic growth of the following variables: Foreign Direct Investment, gross capital formation, export, inflation and labour force in Tanzania
  2. To examine whether there is association amongst the variables in the study.
  3. To examine the causal link between foreign direct investment inflow, domestic investment and economic growth

# Research Hypotheses

In order to achieve the research objectives, this research attempts to answer the following research questions:

* 1. There exists a link between Foreign Direct Investment, gross capital formation, export, inflation, labour and economic growth in Tanzania
  2. There is associationship between the study variables and economic growth Tanzania
  3. There exists bidirectional causality between FDI, gross capital formation and economic growth Tanzania

# Justification

The need for this study arises because FDI promotion policies have been the catalyst for the high growth rates of the Asian Newly Industrialised Countries (NICs) (Zhang, 2000). Foreign direct investment is being cited as the major channel for the transferring of technology, skills development and as an opportunity for employment creation. According to Sørensen (1993) the theory of economic development has long recognised that investment in human capital through education and training tends to promote economic growth. A World Development Report indicates that developing nations with higher average levels of schooling tends to grow faster than those having a lesser schoolinglevel (World Bank, 1990).For Tanzania with its high level of youth unemployment increasing FDI inflow, undertaken concurrently with improving the education of the youths will lead to increased employment opportunity, increased income and hence promoting economic growth. This is because FDI require high skill component of the labour force.

This study focuses on the rationale of foreign direct investment in accelerating economic growth and development in Tanzania. The study reviews the relationship between FDI and rate of growth of the economy. The findings from this study will provide important information to policy makers to adopt proper measures for FDI as a means for attaining sustainable economic growth. The knowledge of causality directions between FDI, domestic investment and Economic growth will have very crucial policy implications in Tanzania. If the FDI-led growth hypothesis is valid then this would mean that policies promoting and attracting FDI are to be encouraged to promote and to sustain economic growth. Thus, the knowledge of the interrelation between the study variables will enable policymakers to understand the expected outcome of FDI in association with exports, gross capital formation and inflation on GDP and will highlight the important factors determining growth of the Tanzanian economy. It will also add to the literature on the subject as well as contributing to the existing knowledge on the role of FDI on economic growth.

# Data Limitation

Main problem was availability of the data. Different sources offered different values for the same study years supporting Mikessell and Zinser(1973) observation that it is very difficult to obtain reliable data in most developing countries. This study therefore relied on data from the Bank of Tanzania, National Bureau of statistics, TIC, supported by inputs from World Bank, UNCTAD, ILO, OECD and UNIDO et al. These data sources are considered the most reliable.

# Organisation of the Study

The study is divided into five chapters as follows:

Chapter Two discusses conceptual definitions, critically reviews the literature, supporting theories and empirical analysis of relevant studies. Finally the conceptual framework for the study is presented. Chapter Three discusses the methodology used in the study. The discussion covered the following; model specification and estimation model, the data, tests for Stationarity, Cointegration tests, VECM, regression analysis and granger causality test and methods ofanalysis. Chapter Four presents the findings of the study thus fulfilling the objectives of the study. Chapter Five presents a summary of the study and makes the conclusion and necessary recommendations.

# CHAPTER TWO

# LITERATURE REVIEW

# Overview

This chapter critically reviews the relevant literature on the relationship between FDI and economic growth from both the theoretical and empirical perspectives. Therefore it discusses conceptual definitions, critically reviews the supporting theories and presents an empirical analysis of relevant studies. Finally it presents the conceptual framework for the study.

# Definition of Key Concepts for the Study

# Foreign direct investment (FDI)

Foreign investment falls into two categories. Firstly is foreign portfolio investment or indirect investment it is when shares in a domestic business are bought by a foreign investor. This is known as an indirect investment or foreign portfolio investment. According to the International Monetary Fund in order for the foreign investor to qualify in this category they have to acquire 10 percent or more of the share capital inclusive of loans by the foreigner to the local firm (IFC, 1997). This includes eventual loans from the foreign owner to the local company (IFC and FIAS, 1997).The other one termed Foreign Direct Investment is when in addition to financing the entity the foreign investor also manages the business.

According to UNCTAD (2006), a long-term investment relationship constituting a lasting interest and control by an entity resident in one economy in an enterprise resident in an economy other than that of the foreign direct investor’s firm, affiliate enterprise or foreign affiliate.

The International Monetary Fund and the Organization for Economic Cooperation and Development (OECD) recognises an entity as an FDI if a foreign owner having more than 10 percent equity has a decisive say in the affairs of the company. On the other hand, even if the owner’s share is below 10 percent as long as the owner retains control over management the definition of FDI above will hold. This brings to the forefront, salient differences in the calculation of FDI flows and as a result the OECD calculation must necessarily contain four elements, namely retained earnings, share ownership, capital, intra-company loans and intra-company borrowing (Jones and Wren, 2006).

# Growth Theories

Economic growth for any given economy comes out of creating the right conditions for growth. An assessment of the determinants of the sources of economic growth is of great importance given the ever widening gap between advanced countries and developing countries and so the need for less prosperous economies to catch up with the developed ones; accordingly various theories have evolved explaining the different sources of economic growth. Various growth models or theories have attempted to explain Economic growth amongst and within countries. These growth theories can be classified into three broad categories; The Harrod-Domar model and the neoclassical growth theory which are exogenous theories of growth and the endogenous theory of growth.

In the Harrod-Domar model which uses the natural and the warranted growth rates, economic growth is caused by raising savings and lowering the capital output ratio. In this model the key to successful growth rests in suppressing consumption and then increasing the rate of savings to be greater than the effect of population. A major drawback is that the variables in the model are said to be given facts of nature. The Harrod-Domar model has two equations; the savings rate and the capital-output ratio. From this the Harrod-Domar growth equation expressed as: s/δ = g + δ, the equation links the growth rate of the economy to savings and output ratio.

In discussing the neoclassical model of growth recourse is made to the Solow (1956) growth model formulated by Robert Solow for which he earned the Nobel Prize in economics. In the Solow growth model there are two equations; a production function and a capital accumulation equation. Solow model is based on aggregate output constant returns to scale and diminishing returns to capital and labour. The Cobb-Douglass production with two inputs Labour and Capital is appropriate in explaining the Solow model. It will then take the form Y=Kα, L1-α where α is the contribution of capital to output- it is positive and less than 1.

Since the model assumes constant returns to scale and diminishing returns to capital it means capital accumulation can drive long run growth. Neo-classical growth models assign a significant role to Domestic investment because it enhances production and technology. According to Gylfason (1999) observes that since domestic capital is incapable to cause growth, it is then only through technology working exogenously that some growth can take place. However Nair-Reichert and Weinhold (2001) asserts that increases in the volume of investment or in its efficiency level influences the effect of FDI on growth in this model in the medium and long run. It therefore transforms the Cobb Douglas production function into an aggregated production function displaying a relationship between (Y) output, (K) capital, (L) labor and (A) technology also called the Solow residual as below:

Y=A.f(K,L)…………………………..……..……………………………………....(1)

The Accumulation of Capital equation is expressed as follows below showing how capital stock (K) relates to investment in physical capital:

Ќ= sY – δK

In above equation s is the saving rate and δ is the depreciation rate of physical capital. Both s and δ are exogenous to the model OR

K = sy – (n-δ)k, 0<s, δ<1

Where s is the propensity to save and δ is the rate of depreciation of physical capital

ΔKt = It- α Kt-1***…………………………………………………………….………………………………………….***(2)

Holding the assumptions of competition in factor markets and constant return to scale ensures that all factors of production are paid their marginal products. Equation (3) shows the coefficient are such that βK, βL are the shares of output caused by capital and labor, and ΔlnA – the Solow residual:

ΔlnY= βKlnK+ βKlnL+ Δ lnA……….………………….…………………………(3)

The relationship above indicates the theoretical background for the direct linkage between investments and economic growth. Since the Solow model assumes no technological progress the assumption of diminishing returns means a point will be reached where addition to capital stock is only sufficient to replace the capital used up in production and so there is no more growth in the economy. This implies that at some point called the steady state the economy ceases to grow meaning there is no development in the economy in the Solow model over the long-run period. Therefore the overall variation in per capita output over time and space can’t be explained by the buildup in the stock of capital amongst countries and therefore unable to address the central questions of growth theories. Therefore the new growth theories were developed to address limitations inherent in the neoclassical model incorporate means through which growth may arise endogenously.

Romer (1994) is the basis of the endogenous growth models. In endogenous growth models on the other hand, FDI supplements domestic investments and considerably impact on GDP growth (Ghazali, 2010). The reason being that the technology from FDI overflows into the whole economy and reduces the influence that diminishing returns would otherwise have on output thereby increasing long run growth. Also the exposure of agents in the local economy to best international practice enables them to acquire more knowledge and skill sets through the best training also increasing growth in the economic (Borensztein, 1998; Grossman and Helpman, 19991; Romer1986). According to Borensztein, De Grgorio and Lee (1995) effective training of labour is manifested in new approaches to management including modern organizational structures. All of these attributes facilitates the economy to grow.

Marvin Frankel (Carlin and Soskice, 2006) developed a variant of the endogenous growth models informed by the Cobb-Douglas production function the intention being to preserve the appropriate attributes of the neoclassical production functions:

Yi = Ki∝ (ALi) 1-∝………………………………………..………………………….(4)

In equation 4 above the symbols stand for Yi: Total output, Kiα: Total capital representing physical capital and human capital, and A is the resulting technology, knowledge and economic culture that influence production technology. Note while A is called the Solow residual it is also called Total factor productivity (TFP) it is what influences productivity or output. In the Solow model TFP is exogenously determined but in the new growth theories TFP is endogenously determined. The reason knowledge play a big role in enhancing productivity is because it is a public good meaning when one person acquires knowledge through learning by doing or on the job training the whole society benefits and the overall level of knowledge improves. Knowledge in the economy is given as:

A = A0Kη………………………………………….………………...………..……..(5)

With a given A and also when η is a positive constant, all the firms ‘production function is expressed as:

Y = K ∝ (AL)1-∝= K∝(A0Kη L) 1-∝= A0(1-∝)Kη (1-∝)+∝L1-∝………..………………….(6)

A is constant hence there are diminishing and constant returns to scale to capital. The returns to scale for the economy are increasing (η (1-∝)+∝+1-∝ ˃ 1) and if the knowledge spillover from capital accumulation, η, is 1, then returns to aggregate capital accumulation are constant:

Y = A01-∝KL1-∝………………………..……………………………………………(7)

In equation 7 above the growth of the economy does not depend on the savings/investment rate if η˂1**,** although its per capita output grows in contrast tothe case in Solow-Swan model. For clarity we take the logarithm of the production function Y = A0(1-∝)Kη (1-∝)+∝L1-∝and then differentiate with respect to time:

gy = [η (1-∝)+∝)]gk+(1-∝ )η……………………….………………………………(8)

Given that output increases along a balanced growth path gy=gkwe get:

(9)

In steady state output per capita grows at, gy- n**=** -n giving:

gy= n…………………………………………………………………………(10)

The driver of per capita output must be progress in technology which is endogenous.

According to (Gries, 2002; Gorg and Strobl, 2001, Haddad and Harrison, 1993) although the level of technology is low in developing they don’t have to reinvent the wheel because they can creatively imitate and apply technology available in the developed countries. What this means is that although developing countries are significantly disadvantaged the immediate solution lies in concurrently investing in the right education while attracting foreign direct investment so as to reap the benefits that come with it. Without developing education capability and skills of its peoples the country will not be able to absorb the new technology that multinationals have in abundance (Borensztein et al, 1998).Education allows improvement in skills and these with the right experience stimulate the development of new and relevant technology.

The endogenous growth theory is an explanation of economic growth as the product of the structural features of an economy. It holds that the main source of long run economic growth are policy measures, research and development, [human capital](http://en.wikipedia.org/wiki/Human_capital), [innovation](http://en.wikipedia.org/wiki/Innovation), and knowledge (Borensztein et al., 1998; Chao and Yu, 1994; Grossman and Helpman, 1991; Barro and Sala-I-Martin, 1995; Haddad and Harrison 1993). The theory also focuses on [positive externalities](http://en.wikipedia.org/wiki/Positive_externalities) and [spillover effects](http://en.wikipedia.org/wiki/Spillover_effects) of a knowledge-based economy which will lead to economic development. Importantly it endogenises the growth rate of GDP which in turn requires the rate of investment to be endogenised. Diminishing returns on capital stock is prevented leading to factor accumulation that ultimately accounts for growth.

Note that this hypothesis that economic growth depends on changes in technology and human capital was regarded as exogenous in neoclassical theory but is now being used to explain long-term convergence in per capita incomes and outputs between countries. The changes in technology and human capital are also known as the coefficient of ignorance in the Solow model. This hypothesis has also been applied to regional development.

Therefore the neoclassical approach argue that Foreign Direct Investment only affects the level of income while leaving the long-run growth unchanged (Solow, 1957; De Mello, 1996). Furthermore they argue that long-run growth can only happen because of technological progress and/or population growth, which are both exogenous. Thus, according to neoclassical models of economic growth, Foreign Direct Investment will only advance growth if it has a permanent and positive effect on technology.

However the counter argument posited by the endogenous model school is that the externalities and increased knowledge generated by FDI can reverse the diminishing returns to capital and allow the economy to grow. For a country to achieve increasing return sit has to embrace novel methods of managing and organizing entities which is a function of improving education. To this end FDI is a major contributor (Herzer et al, 2008).

# FDI and Economic Growth

Amongst the pioneers explaining the relationship between FDI and development in the economy of any given country were (Dunning and Narula 1996); they developed the theory of Investment Development Path through which capital and technology is transferred to FDI recipient countries. This was a major boost to endogenous theory of growth.

A significant limitation of the neoclassical theory of growth is that capital is subjected to diminishing returns and therefore a point will be reached when addition to capital is only adequate for its reproduction and not production meaning capital can only grow the economy in the short run because technology is exogenous. This limitation is addressed by endogenous growth theory in that whenever there are positive externalities of FDIs, then diminishing returns on capital is countervailed. Since foreign investment is necessarily accompanied with new technology and knowledge it is therefore a stimulant to a long run growth of the economy.

Borensztein, et al., (1998) developed a model showing that FDI enables more variety of capital goods to be brought in and this stimulates technology progress. The unit cost of capital falls indicating that progress in technology is a function of capital deepening and development in human capital and so grows the economy.

According to Gries (2002) a small economy with rudimentary technology cannot gain from FDI unless it has a highly developed human capital. This notwithstanding that it is integrated into the global economy. For the country to undergo technological transformation the education of its people is the key and not FDI in isolation.

Markusen et al., (1999) asserted that under competition local businesses are not able to compete with foreign investors who necessarily have lower costs of production and therefore they perish. Secondly more of them are attracted into the economy due to the resulting lower prices of inputs that translate into higher profits for the strong. This stimulates local investments allowing them a profitable role side by side with foreign investors according to Barrios, et al., (2005).

# Theories of FDI

# Production Cycle Theory of Vernon

In 1996 Vernon developed the Production cycle theory in which he identified four stages of production cycle as innovation, growth, maturity and decline. In the first stage the foreign companies create new innovative products for consumption in the market and the surplus is exported in order to serve the foreign markets and earn foreign exchange. After a point domestic companies begin to copy the new technology. Due to this potential threat the foreign companies set up production in the local market on their own or jointly with the local entrepreneurs.

# The Theory of Exchange Rates on Imperfect Capital Markets

The influence of uncertainty as a factor of FDI was by analyzed Itagaki (1981) and Cushman (1985). This emphasise that Volatility and uncertainty is also a factor influencing FDI. According to Cushman (1985) the appreciation of the USA dollar has reduced American FDI by 25%. Furthermore Cushman also established that when there is an increase in the real exchange rate USA foreign direct investment increases. Critics contend that when countries don’t have the same currency then it is fruitless to employ currency risk rate theory to explain simultaneous foreign direct investment between countries.

# The Internalisation Theory

The internationalization which was developed by Buckley and Casson (1976) and refined by Hennart, in 1982 attempts to provide reasons for the proliferation of multinational and why they engage in foreign direct investment. (Hymer, 1976) identified the removal of competition and the advantages a firm has as the two main determinants of FDI flows. The theory underscores that the engagement of multinational in FDI is really predicated on their self-interest in terms of their competitive advantages and costs advantage in particular areas of activity and locations.

# The Eclectic Paradigm of Dunning

The eclectic theory is a mix of three different theories of direct foreign investments. This refers to intangible assets, which are, exclusively possessed by the company and may be transferred within transnational companies at low costs, leading either to higher incomes or reduced costs. But TNCs operations performed in different countries face some additional costs. To successfully enter a foreign market, a company must have certain characteristics that would lower operating costs on a foreign market.

# Empirical Literature Review

There is a wealth of literature on the relationship between Foreign Direct Investment and economic growth at the macro level.The taxonomy of these studies recognises three approaches (Strelchuk, 2012). Studies employing panel data methodology constitutes the first group. The second group is based on Time series i.e. analyzing data through time periods. And finally are studies based on cross section data analysis; these are data across observations at a specific point in time. This section briefly discusses some studies based on the relationship between FDI and economic growth.

Much as most studies find that the relationship between FDI and economic growth is positive for example Dees (1998) attributes China's phenomenal economic growth to FDI inflows into that country, De Mello (1996) studied some countries in south America and finds that the correlation is positive however these scholars reiterates the importance of having the capacity to absorb the new technology. It is in this breadth therefore that developing countries with higher incomes are found to be the exclusive beneficiaries of FDI inflows (Blomstrom, Lipsey, and Zejan 1994). Generally high income is commensurate with higher education.

At a specific level, Borenzstein, De Gregorio, and Lee (1995) employing panel data analysis on 69 developing countries found that whereas the importance of FDI can never be downplayed yet it is the countries with a more developed human capital that benefitted the most. Concomitantly it crowds in local investments.

The crowding in of domestic investment occurs because local investors will respond to the increased investments opportunities and this coupled with the exposure of the local human capital to state of the art technology all contribute to growing the country’s GDP. Furthermore domestic businesses through horizontal and vertical linkages will improve the quantity and quality of their output and thereby grow (Borensztein et al., 1995).

Borensztein et al., (1995) find the latter effect dominating in their study. Thus FDI can increase growth through increasing total investment by attracting higher levels of domestic investment. Secondly through interaction of the more advanced technology with the host's human capital, FDI is more productive than domestic investment.

Balasubramayam, et al., (1996 and 1999) used the cross section methodology and econometric analysis to study 46 developing countries and they found that countries that liberalized their export regime experienced greater growth when this is coupled with FDI inflows and an educated labour force. They concluded that GDP growth was influenced by FDI.

Applying endogenous growth theory to a cross section of 46 developing countries, (Balasubramanyam, Salisu, and Sapsford,1999), have shown that the growth-enhancing effects of FDI are stronger in countries that pursued a policy of export promotion rather than import substitution. Their econometric analysis indicates that the elasticity of output with respect to FDI exceeds that of domestic capital investment, which implies that FDI is the driving force in the growth process.

Nair-Reichert and Weinhold (2000) used the panel data analysis approach on 24 developing countries over the period from 1971 to 1995 to study the effect of FDI on economic growth. To allow for the differences amongst countries the mixed fixed and random (MFR) panel data estimation method was used. The conclusion of this study was that those countries with deregulated and liberal trade and export regimes were the major beneficiaries in terms of contribution of FDI to GDP growth. The effect of FDI on GDP growth was also highly heterogeneous across countries.

Basu et al., (2003), explored the inter-relationship between FDI and economic growth for 23 developing countries using Cointegration and panel data analysis. The results reveal that FDI and GDP have a long-run cointegrating relationship. The results of findings also indicate bidirectional long run causality or two way causal relationship between GDP and FDI for economies that are open, whereas for the relationship is one way or unidirectional for closed economies.

Chowdhury and Mavrotas (2003) used the Toda-Yamamoto to test for causality and assessed the relationship between FDI and economic growth for Chile, Malaysia and Thailand from the years 1969 to 2000. Their empirical findings suggest a one-way causality link from economic growth to FDI in Chile whereas in the case of Malaysia and Thailand a feedback reversal is observed. The results have been confirmed using a bootstrap test with 1000 replications.

Shan et al., (1997) studied the effect of FDI on economic growth for China a leading FDI recipient country in the world. The study used time series data analysis and a Vector Auto Regressive model with six variables in order to avoid any possible specification bias leading to spurious causality. To test for Granger causality the Toda-Yamamoto tests was used. The study finding is that there is a two way causality between FDI inflows and economic growth.

Athukorala (2003) assessed evidence for effect of FDI on growth from Sri-Lanka for the period 1959-2002. Using a VECM and Granger causality tests involving the following variables: foreign direct investment, GDP, exports, imports and Domestic investment his findings found no support that FDI contributes to GDP growth in that country. However, the growth-driven FDI hypothesis could not be rejected. However, Balamurali and Bogahawatte (2004) drew different conclusion. Using Granger causality tests based on a VECM over the period 1977-2003, their findings supported feedback causality for Sri Lanka.

Seetanah et al., (2006) using a panel data analysis studied whether there is a relationship between FDI and the economic growth in 39 African countries for the years 1980 to 2000. This study found a positive relationship between FDI and economic growth. The positive link was also confirmed by GMM panel estimates in a dynamic panel analysis.

Mutenyo (2008) used both a static panel regression with fixed effect and a dynamic panel using the GMM estimator to study FDI’s impact on economic growth in 32 countries from Sub Saharan African. His findings show the relationship between FDI and economic growth to be positive albeit not as efficient as private domestic investment.

Frimpong et al., (2006) examined the nature of the relationship between FDI and GDP in Ghana and applied the Toda-Yamamoto Granger causality test. The study found no evidence of granger causality between FDI and growth for the period preceding the Structural Adjustment Programme. Nonetheless one-way causality running from Foreign Direct Investment to economic growth was found in the period following the Structural Adjustment Programme.

Mafusire (2001) used a VAR model to test for causation between Gross National product, exports and FDI for Zimbabwe. Using a Variance decomposition analysis for the period 1967-1994, his results concluded that causation between those variables can’t be rejected and that significant strong feedback effects exist.

Mpanju (2012) used a case study design with a quantitative research approach and studied the effect of Foreign Direct Investment on employment during 1990 to 2008 in Tanzania. These findings from the study having been subjected to econometric analysis indicate a positive relationship between FDI and employment.

A countervailing opinion is posited by Rodrik (1999) arguing that evidence of FDI fuelling growth is inconclusive since foreign investors will always locate in countries whose economy is vibrant and on the rise. In reference to Bosworth et al., (1999) whose study on total capital flows, finds no crowding-in effect and further even in cases where FDI stimulates domestic fixed investment this does not hold account is taken of specific characteristics of countries. In spite of the aforementioned it must be pointed out that Bosworth et al., (1999) acknowledge positive impact on total factor productivity.

Recent empirical studies on direction of the causal link between FDI inflows and economic growth have in addition to considering the assumption of a one way causal link between FDI to economic growth have also considered the possibility of a bidirectional or non-existent causality among the variables of interest. Tang et al., (2008) using a cointegration time series technique for China found a bidirectional causality between domestic and economic growth and only a unidirectional causality from FDI inflows to domestic investment and economic growth. They confirm that FDI inflow complements domestic investment and jointly their effects boost gross domestic product (economic growth). Ghazali (2010) found bidirectional causality between domestic investment and GDP growth and concludes that FDI inflows have a complementary effect on domestic investment also that long-run economic growth is positively associated with FDI.

In a study on china employing the technique of cointegration time series, Tang et al., (2008) found that the relationship between domestic investment and GDP growth was two ways i.e. flowing in both directions. They found the relationship between FDI and GDP growth to flow from one direction only i.e. FDI inflows goes through domestic investment and eventually cause growth of the economy underscoring.

Though our review of the various studies on FDI and growth is not exhaustive it is nonetheless useful to study the influence of FDI on GDP and domestic investment in the case of Tanzania so that the importance of FDI inflow can be measured by its contribution to GDP and domestic investment. This study, by using VAR, VECM and Granger causality tests, will contribute to the understanding of the relationship between FDI inflows, export and economic growth so as to accelerate the growth rate of Tanzania’s GDP.

Though our review of the various studies on FDI and growth is not exhaustive it is nonetheless useful to study the influence of FDI on the economy of Tanzania so as to gauge its effects on promoting overall investments and economic growth. Therefore this study, by using VAR, VECM and Granger causality tests, will contribute to understanding the interaction between FDI inflows, export and GDP growth so as to accelerate the growth rate of Tanzania’s GDP.

# Conceptual Framework

In macroeconomics aggregate production functions are estimated to create a framework in which to distinguish how much economic growth to attribute to change in the factor allocation and advancing technology. This study starts from the standard aggregate production function and extend it by including variables of interest in order to test whether FDI explains growth in Tanzania (FDI- Growth linkage hypothesis). The importance of productivity factor A (which is a technology or any other factor which affect long run growth in addition to Labor and Capital) is augmented in the production function. The model is built by starting with the basic production function augmented by the productivity factor (A) and the production technology to determine the growth in the economy. However there is a movement away from neoclassical economic growth models to endogenous models in explaining growth. Endogenous growth models have now taken the center stage, (Romer, 1986, and Barro, 1991). This study will use models employed in the empirical works of Mankin et al., (1992) and Frankel et al., (2006) amongst others to explain the effects of FDI on economic growth in Tanzania. The analysis begins with the Cobb-Douglas production function.

# Description Of The Variables

Gross Domestic Product growth rate (GDPGR) in the study constitutes dependent variable, used as a proxy of macroeconomic performance. GDP stands for gross domestic product. It represents all the goods and services that a country produces in a period of one year having resolved for the double counting problem.

Gross capital formation represents the addition to the domestic stock of capital expressed as GCF. It represents all the investment in that economy in the given year. It is important that capital formation is decomposed into private and public investments to nail the source. This facilitates the identification of FDI. In this study export is expressed as a percent of GDP and it is used as an explanatory variable for economic growth.

Exports expressed as EX are the products of a country that is traded to the external economy. Export is a percent of GDP and it is an explanatory variable. The extent to which a country is engage in external reflects the degree of openness of the economy. Since a positive balance of trade is an important element in the balance of payments account it can’t be negative because a positive balance of trade means local firms are competitive in global trade. Hence increasing export is tantamount to increasing GDP.

The rate of inflation is expressed as INFRATE its inclusion is for measuring how stable the macro economy is. Inflation has an effect on the prices of both domestic goods and exports, and finally on the gross output in the economy. In general other factors being equal there is an inverse relation between the inflation rate and the general economy. To capture the inflation rate the consumer price index over time is used.

The net inflows of foreign direct investment (FDI), is given as a percent of GDP in this study. According to the WB acquisition of a permanent management control and a not less than 10% shareholding of an enterprise resident in a given country by an investor resident in another country constitutes FDI. The lasting interest in an investment enterprise typically involves establishing warehouses, plants and management in the foreign country.FDI can be divided in to flow and stock of FDI. Whereas FDI flow refers yearly inflows of foreign capital, stock is the total value of capital owned by foreigners. This empirical analysis uses FDI inflow as percentage of GDP. The main variable of interest is FDI. FDI consist a package of technology, management skill, capital, market access and others. Access to FDI inflow helps the host country to create economies of scale and linkage effect and raise productivity.

Total Labour force represented by LBF is the total supply of labour available for producing goods and services in an economy during a specified period.

The African Development bank (2012) categorises the population into the economically active population i.e. those who are supplying labour; those who are not supplying labour actively, this includes those who are willing to supply labour, and those who are not. According to the employment and labour relations act of 2004 of Tanzania, Total labour force comprises people ages 15 and older.

This definition also meets the International Labour Organization definition of the economically active population: all people who supply labour for the production of goods and services during a specified period. It includes people who are currently employed and people who are unemployed but seeking work as well as first-time job-seekers.

Not everyone who works is included, however. Unpaid workers, family workers, and students are often omitted, and some countries do not count members of the armed forces. However because of the constraint in data availability this study adopted the figure for population which is used as a proxy for total labour force. Accordingly the conceptual model is presented below:-

**Predictor variable Mediator Variable Outcome Variable**

Figure 2:1Conceptual Model for FDI effects on Economic growth

The conceptual model in Figure 2.1 indicates that FDI inflow (FDI) coupled with gross capital formation (FDI), exports (EX), and macroeconomic stability reflected in stable inflation (INFRATE) and labour supply (LBF) will lead to economic growth.

# CHAPTER THREE

# RESEARCH METHODOLOGY

# Chapter Overview

This chapter outlines the methodology, model specification, measurement issues, estimation techniques and type of data that are used in empirical analysis. The empirical analysis is conducted by using annual data on Foreign Direct Investment inflows, related explanatory variables and economic growth in Tanzania from 1990 to 2013. The rationale for choice of variables and various tests used in time series is also given in this chapter. The tests are important to trace significant shifts in the variables before they are subjected to empirical analysis and obtain unbiased estimates and meaningful interpretation of results.

Two models are employed to study the relationship between the key variables and economic growth. The first model; is the FDI-Growth model which estimates the effects of FDI and other key variables on economic growth, secondly is the causality model which is used to identify the direction of causation between FDI Inflow, Gross Capital Formation and GDP. These variables are examined separately so as to understand how domestic and foreign investment components contribute to economic growth, this

Two models are employed to study the relationship between the key variables and GDP. In order to estimate the effects of FDI and other key variables on GDP a model relating FDI to growth of the economy is presented. Secondly is the causality approach which is used to identify the direction of causation between FDI Inflow, Gross Capital Formation and GDP. These variables are examined separately so as to ascertain the influence of the elements of investments on GDP growth, this important in a developing economy where policy makers have to acquire the tools necessary for effective decision making.

# Model Specification

This study uses the growth function shown below. This has its roots in the (Solow, 1957) model. The model hypothesises that output depends on capital and labour inputs. In terms of the neo-classical models modeled on Solow (1957), diminishing returns to physical capital limited the impact of FDI on the growth rate of output. Therefore, FDI exerts only a level effect, and not a rate effect on output per capita. In the long run, FDI can’t change the of output growth rate. In this framework, FDI is not an engine of growth.

In this study the endogenous growth model is used to estimate the relationship between Foreign Direct Investment GDP in Tanzania. The starting point is the following simplified Cobb-Douglas production function:

Y=AKaLb,………………………………………………………………………….(11)

Where Y denotes the amount of output produced that is the Gross Domestic Product. K and L is the amount of capital and labour force in the economy. A is a productivity factor representing technological or organizational changes and other factors that can raise output for given levels of K and L. In the neoclassical model A represents the exogenous state of technology or the production efficiency; it is also called the residual factor in growth and can increase output without changing the inputs of labor and capital. This production function indicates that output is dependent capital and labour input and on the productivity parameter. In the endogenous growth models technological change is driven by an interaction of factors within the economy. The challenge is to separate the effects of FDI from the effects of other sources of improved efficiency in production and thus we resort to endogenous growth models.

This model follows the endogenous growth model used by (Balasubramanyam et al, 1996) and (Borensztein et al, 1998). Its focus is on the endegoneity of technology in terms of its role in research and technology, the influence of learning, and externalities. Therefore growth reflects the contribution to productivity of structural and governance reforms on the one hand and the adoption of new technology on the other hand. Foreign Direct Investment is seen as affecting long run economic growth through new technology. Technology and managerial skills is transferred from developed countries into production function through the total productivity parameter. FDI also by augments the inadequate savings. However although local firms in different countries may import capital and technology they will experience different effect on growth depending on the extent of the absorptive capacity of the host economy (Borensztein et al., 1998; Balasubramanyam et al., 1996).Overall, it is a catalyst for the development of infrastructure, human capital and institutions.

# FDI-Growth Model

In the endogenous growth theory of Balasubramanyam et al., (1996) foreign direct investment inflow is presented as an extra input directly contributing to output via new technologies and other inputs. Incidentally it plays a role through trade open trade regime and improvement in human capital. Domestic investment, FDI inflow, labour, trade openness are the predictors influencing growth. The model in the study is based on the aforementioned model. Since the production function takes a linear form, the empirical regression model used to test the relationship, is specified as in the below equation:

Growth rate of GDPi,t= **∝** +βXi,t + εi,t ,…..……………………………………….(12)

Where X is a set of independent variables affecting GDP, t is the time dimension. However in this study the model to be used in estimation is modified by adding variables to make it more suitable for as follows;

GDPGRt= β0 + β1FDIt+ β2LBFt + β3EXPt + β4GCFt + β4INFRATEt + εt….……(13)

Where GDPGRtis growth in GDP to GDP ratio, this is the dependent variable and it is the measure of economic growth. The ratio of the FDI inflow to GDP is given as LFDI, EXPt is the Exports as a percent of GDP, LBF is growth in labour force, INFRATE is Inflation as a percentage of GDP and GCF is the gross capital formation as a percentage of GDP, this is a proxy for domestic investment.

Since the relationship is multiplicative in variables, it is linearised by transforming it into logarithms, note that the sum of the logarithms, equals the logarithm of a product irrespective of the base of the logarithm. In this way, the multiplicative relationship is transformed into additive relationships, and likewise exponential tendencies to linear tendencies. We can therefore explain the behavior of variables having multiplicative relationship or which are exponential by linear models. Hence the econometric model is linearised by transforming it into logarithm form as follows:

LnGDPGRt=β0+β1LnFDIt+β2LnLBFt+β3LnEXPt+β4LnGCFt+β4LnINFRATEt+εt…….....(14)

Where GDPGR is growth in GDP, LBF is labour force supply while LnGCF, LnFDI, LnEXP, LnINFRATE are respective the logs of GCF, FDI inflow, Exports and Inflation to GDP and εi,t is the error term. As is customary in most empirical studies on growth, the GDP is used to measure of economic growth. Having transformed the independent variables are Labour, Gross Capital Formation and Inflation are into logarithmic forms the coefficients of the Log of the independent variables shows the extent of the percentage change in the dependent variable as a result of a 1% change in the predictors (Wooldridge, 2009).

# Causality Between Growth, FDI And Domestic Investment

Although current studies support the FDI and economic growth relation as positive, the direction of causation remains unclear. Thus the direction can go either way either meaning FDI inflow can promote higher growth or vice versa. To investigate the possible direction of causation between FDI, GCF and GDP the following model can be estimated:-

LGDPt=Σni=1αLGDPt-í + Σnj=1βjLFDIt-j + Σnk=1 ckLGCFt-k+µ…………….………(15)

Where the response of LGDPt to LGCF, LFDI, occurs at some period of time in the future. In the same time period the change in the average value of the dependent variable is given by value of βi variables in terms of a unit change in explanatory and µ is the error term.

# The Data

The research is based on secondary yearly data set covering the years from 1990 to 2013; this period is long enough to enable the running of a reasonable econometric analysis. In the analysis stage the data was first tested for stationarity using the Dickey Fuller test to avoid spurious results and the Johansen cointegration model and the Vector error model and the granger causality method. The main sources of data for this study includes the International financial statistics year book, Bank of Tanzania economic and operations report, National Accounts of Tanzania Mainland report, National bureau of statistics publications, Tanzania Investment Report, World Investment Report, IMF Publications, AfDB Publications and UNCTAD Publications. Appropriate data transformation was employed to obtain series that mimic the normal distribution. However the major shortcoming in the data used in this study is inconsistency of the data of the same variables among different institutions particularly some the local data sources and this is the reason for selecting the sources used which are the most reliable.

# Data Analysis Methods

The data analysis in this study is conducted with the STATA software. The first step was to identify the contribution of the individual variables to GDP growth. Then the direction of causation between GDP, GCF and EXPORT was examined in the second step.

To test for whether the data has unit root i.e. nonstationarity the Augmented Dickey Fuller (ADF) test for unit root is employed. According to Gujarati and Porter (2009) paramount consideration must be given to establishing whether a data is stationary or otherwise lest they yield inconsistent estimates. Then it must be established whether the observed relationship amongst the variables is indeed a long run relationship versus a short term relationship because interpretation of the results are different. Lastly the need to identify the direction between FDI inflows, domestic investment and economic growth called for the Granger Causality test.

# Unit RootTest

Before making any econometric estimation on times series data the researcher has to undertake a test for unit root test to check for the Stationarity otherwise as observed by Granger and Newbold (1974) the results will be incorrect or nonsensical.

This study uses the Augmented Dickey Fuller (ADF) test as the primary test for unit root both in levels and in first differences. In the ADF test the Null Hypothesis is given as the variable has unit root or time series is not stationary while the Alternative Hypothesis is the variable does not have unit root or time series is stationary. If the absolute value of the test statistics is smaller than critical value (we normally use the 5% critical value) then we cannot reject Null Hypothesis i.e. the variable has unit root or not stationary. When the ADF results indicate presence of unit root then differencing of variables is undertaken to make the variables stationary.

# Cointegration Test

The Johansen test for cointegration is employed in this study to establish the existence of relationships amongst the study variables. In this test the Null hypothesis is given no cointegration among the variables while the Alternative Hypothesis is there is cointegration among the variables. The results in STATA give values for the trace statistics. The decision rule is if stata output a trace statistic value greater than the critical value then reject the null hypothesis. Rejecting means there is cointegration amongst the variables. Then the subsequent rank values become the null hypothesis and it cannot be rejected unless trace statistics is greater than critical value. The VECM is only run when the variables have long run association i.e. Cointegration is indicated in the variables otherwise run VAR.

# Vector Error Correction Model.

Once cointegration is confirmed we run the Vector error correction model. The VECM involves testing for Long run and Short run causality. The VECM model converts the variables into first difference and the first difference is a stationary data. The cointegrating equation labeled Cel 1 is the error term. When the error term has negative Coefficient and the p value is significant then there is long run causality and it’s a good model. The value of error term is also called the speed of adjustment towards the equilibrium; it gives the adjustment rate towards the long run equilibrium. The coefficient sign must be negative then and only then can it adjust towards long run equilibrium.

# Diagnostic Test For Vector Error Correction Model

In addition, diagnostic tests are conducted to find out the behavior of the data in terms of whether the Time series is autocorrelated is heteroskedastic or normally distributed. The Lagrange Multiplier test for autocorrelation is used to check if the model has serial correlation. In the LM test for autocorrelation the Null hypothesis is given as no autocorrelation and the alternative Hypothesis is there is autocorrelation. When the value of ρ is above 5% then the null hypothesis of no autocorrelation can’t be rejected. If there is autocorrelation then we cannot accept the model that is we have to redesign the model.

The Jarque-Berra test is applied to check whether error terms are normally distributed or not. In this test the null hypothesis is given as the residuals are normally distributed while the alternative is that the residuals are not normally distributed. If the computed p value in all cases is above 5% then the null is not rejected meaning the residual are normally distributed.

Econometrically the equations for examining the short run estimated models of the growth enhancing factors on economic growth is written as follows:

ΔGDPt=α0+ Σki=k α1íΔGDPt-i+Σki=k α2iΔLFDIt-í+ Σnk=1α2iΔLFt-í+Σki=k α3iΔEXPt-í+Σki=k α4iΔGCFt-í+Σnk=1+Σki=k α5i ΔINFRATEt-í+Σki=k α6 ECTt-í+µt …………….(15)

In this model the error-correction term is ECTt-í, the lags of α’sare k, the difference operator Δ is, µt error term and t is time period expressed annually. In equation (15) the long term association of the variables i.e. Cointegration is indicated when the α’s of error correction term given its t-value is statistically significant and negative showing that given a short duration this model is able to revert to the long run equilibrium. The speed of adjustment is important because it indicates the duration of time that the data set takes to revert to its original position wherein it is in equilibrium.

# Regression Analysis

Regression model was applied to test the extent to which the independent variable impact on dependent variable. In the Regression analysis, R-squared (R2) and Standard Error are the key aspects in the statistics. The coefficient of determination which is R2 measures percent of the variation of the dependent variable around its mean explained by the independent or predictor variables (Velnampy, 2008).

# Diagnostic Tests For The Regression Model

Then some diagnostic checking is done. First the residuals are checked if they are normally distributed or not. Residual is the difference between actual data minus the fitted data. For this the Shapiro-Wilk normality test was applied. In this test the null Hypothesis is expressed as residuals are normally distributed and the Alternative Hypothesis is given as residuals are not normally distributed; Ho: residuals are normally distributed and HA: residuals are not normally distributed. When the ρ value is more than critical value at 5% the null hypothesis cannot be rejected, meaning the random error term is normally distributed.

Then the Breusch-Pagan test is applied to check whether the model has heteroscedasticity or not. The Null Hypothesis is residuals are homoscedastic (have constant variance) and the Alternative Hypothesis is residuals are heteroscedasticity (don’t have constant variance). When the probability value is more than critical value at 5% null Hypothesis can’t be rejected meaning there is constant variance, the residuals are homoscedastic.

The Durbin Watson Test and the Godfrey Quandt test is applied to investigate for presence of serial correlation (auto-correlated). In both tests the Null Hypothesis is that Residuals are not serially correlated and the Alternative Hypothesis is the residuals are autocorrelated. When the value of the probability is greater than 5% critical value then the null Hypothesis cannot be rejected meaning the model has no serial correlation.

# Granger Causality Test

This Test is employed in order to establish the direction of causality between the variables. The causality can be flowing in both directions i.e. bi-directional, flowing only in one direction i.e. uni-directional and not flowing in either direction i.e. there is no causality. Granger causality (Granger, 1969) separates cause and effect in order to identify which is the cause and which is the effect. More importantly granger establishes the cause of every economic variable. Therefore given two variables X and Y the variable X is said to Granger-cause the variable Y, if the present value of Y depends on the past values of X. in other words knowing the past value of X the future value of Y can be well predicted (Konya, 2004). However the variables must be stationary, if not it has to be made stationary before conducting the test for the nature of granger causality. This is a two-step process.

First the Vector Auto Regressive model is developed from which the Granger causality test is done. The lagged values of the independent variables is then checked if they granger cause change in the outcome variable. Then hypothesis test is undertaken and are stated as; Ho: Lagged independent variable doesn’t granger cause econ growth and HA: Lagged independent variable granger cause econ growth. When the value of p is more than critical value at 5% then lagged independent variable does not cause GDP i.e. null hypothesis can’t be rejected. In STATA we can continue changing the lags to achieve different outcomes. Econometrics through stata provides many approaches for decision making on the appropriate lags while conducting the granger causality tests but herein we employ AIC.

The Granger causality test will enable the capturing the of possible causality relationships between economic growth, domestic investment. It also indicates the presence or absence and nature of causality in terms of the variables under consideration. The error correction model (ECM) in the VAR system below is used for testing for causality:

ΔLGDPt=α1+αgdpê t-1+Σki=kα11ΔLGDPt-1+Σki=k α12 ΔLFDIt-1Σnk=1+Σki=k α13ΔLGCFt-1Σnk=1εgdpt…........................................................................................................….(16)

ΔLFDIt=α1+ αfdiê t-1+Σki=k α21ΔLFDIt-1+Σki=k α22ΔLGDPt-1Σnk=1+Σki=k α23ΔLGCFt-1Σnk=1εfdit ..........................................................................................................……(17)

ΔLGCFt=α1+ αgdpê t-1+Σki=k α31ΔLGCFt-1+Σki=k α32ΔLFDIt-1Σnk=1+Σki=k α33ΔLGCFt1Σnk=1εgcft..........................................................................................…..(18***)***

Where Δ means differencing is applied the results of the unit root test denotes that there is unit root. There is no correlation amongst εgdpt,εfdit and εgcft; these are the error. The relationship of GDP to its lagged value and to FDI and GCF is indicated in Equation (16). Likewise the case for FDI and GCF is shown in equations (17) and (18) respectively.

# CHAPTER FOUR

# ANALYSIS AND DISCUSSION OF FINDINGS

# Chapter Overview

This chapter presents the empirical results of the econometric analysis from the model for estimation. Effective policy decisions can only come from drawing acceptable statistical inferences. The data was subjected to the Augmented Dickey Fuller (ADF) test to test for the presence of unit root so as to avoid the problem of spurious regression. Having eliminated the unit root in the data the johansen Cointegration test was used to test for the cointegration of the variables after which the Vector Error Correction Model is employed to establish for the long run and short run associations amongst the variables. The vector autoregressive model was used to test for the Cointegration of the variables after which the VECM was employed to establish for the long run and short run causality amongst the variables.

Then results for causality between FDI, GCF and growth are presented in this chapter. Before presenting the results of the unit root test in the next section we present the summary of the data used in this study in Table 4.1below:-

Table 4:1 Descriptive Statistics

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **VARIABLE** | **OBS** | **MEAN** | **STD. DEV.** | **MIN** | **MAX** |
| GDPGR | 44 | 4.368182 | 2.337637 | 0 | 7.8 |
| LNGDPGR | 44 | .9727273 | 1.817012 | -6.91 | 2.05 |
| LNFDIGDP | 44 | -1.484091 | 3.606846 | -10.04 | 1.97 |
| LNGCFGDP | 44 | 3.369773 | .3329326 | 2.67 | 4 |
| LNEXPGDP | 44 | 2.353409 | .4140663 | 1.34 | 3.01 |
| LNINFRATE | 44 | 2.603864 | .7504734 | .88 | 3.59 |
| LNLBF | 44 | 17.03023 | .3619359 | 16.4 | 17.61 |

# Unit Root Test

Table 4.2 indicates the result of the ADF test for Stationarity of the study variables. TheADF test involves testing the null Hypothesis that the variable is not stationary whereas the Alternative Hypothesis states that there is no unit root implying that it is stationary. When unit root is detected the variables are differenced until they become stationary.

Table 4.1:1 ADF Unit Root Test Result for Variables at Levels at Lag 0 Diff

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **Test Statistics**  **at lagged diff 1** | | **Critical Values(lag 1)**  **With no trend** | | | **Critical Values(lag 1)**  **With trend** | | |
| no trend (1) | With trend (1) | **1%** | **5%** | **10%** | **1%** | **5%** | **10%** |
| GDPGR | -2.982 | -4.005 | -3.628 | -2.950 | -2.608 | -4.214 | -3.528 | -3.197 |
| LNGDPGR | -4.991 | -5.479 | -3.628 | -2.950 | -2.608 | -4.214 | -3.528 | -3.197 |
| LNFDI | -3.130 | -4.179 | -3.628 | -2.950 | -2.608 | -4.214 | -3.528 | -3.197 |
| LNGCF | -2.543 | -2.479 | -3.628 | -2.950 | -2.608 | -4.214 | -3.528 | -3.197 |
| LNEX | -2.194 | -2.088 | -3.628 | -2.950 | -2.608 | -4.214 | -3.528 | -3.197 |
| LNINFRATE | -2.807 | -3.335 | -3.628 | -2.950 | -2.608 | -4.214 | -3.528 | -3.197 |
| LNLBF | -1.431 | -2.253 | -3.628 | -2.950 | -2.608 | -4.214 | -3.528 | -3.197 |

The ADF test results indicate that GDPGR with trend has no unit root meaning it is stationary at 5% and 10% critical value at 0 lag difference but has unit root at 1%. But GDPGR has unit for all critical values of 1% and 5% and is stationary at 10%. LNGDPGR has no at all critical values. LNFDI with no trend has no unit root in level form for 5% and 10% critical values but has unit root at 1%. Also LNFDI with trend has no unit root in level form for 5% and 10% critical values but has unit root at 1%. The variables LNGCF, LNEX, and LNLBF all have unit root at all critical values. INFLATION with no trend has unit at 1% and 5% but is stationary at 10%. In testing for hypothesis in STATA the resulting test statistics is normally tested against the 5% critical value ignoring the other critical values.

Table 4.1:2 ADF Unit Root Test Result for Variables at Levels at Lagged 1 Diff

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **Test Statistics**  **at lagged diff 1** | | **Critical Values(lag 1)**  **With no trend** | | | **Critical Values(lag 1)**  **With trend** | | |
| no trend (1) | With trend (1) | **1%** | **5%** | **10%** | **1%** | **5%** | **10%** |
| GDPGR | -1.997 | -2.966 | -3.634 | -2.952 | -2.610 | -4.224 | -3.532 | -3.199 |
| LNGDPGR | -2.439 | -2.883 | -3.634 | -2.952 | -2.610 | -4.224 | -3.532 | -3.199 |
| LNFDI | -2.526 | -3.799 | -3.634 | -2.952 | -2.610 | -4.224 | -3.532 | -3.199 |
| LNGCF | -2.649 | -2.514 | -3.634 | -2.952 | -2.610 | -4.224 | -3.532 | -3.199 |
| LNEX | -2.050 | -1.952 | -3.634 | -2.952 | -2.610 | -4.224 | -3.532 | -3.199 |
| LNINFRATE | -2.045 | -2.789 | -3.634 | -2.952 | -2.610 | -4.224 | -3.532 | -3.199 |
| LNLBF | -1.540 | -2.154 | -3.634 | -2.952 | -2.610 | -4.224 | -3.532 | -3.199 |

For the variables at one lagged difference the ADF output in Table 4.3 indicate that GDPGR and LNGDPGR have unit root at all critical levels. LNFDI with no trend has unit root meaning it is not stationary in level form for all critical values. But LNFDI is at 5% and10% critical value. But LNFDI has unit root in level at 1% critical level. The variables LNEX, and LNINFRATE have unit root at all critical values. LNGCF has unit root in level at 1% and 5% but has no unit root at 10% critical value. LNGCF with trend has unit root for critical values of 1%, 5% and 10%. LNLBF has unit root meaning it is not stationary for constant and no trend at all critical values.

Table 4.1:3 ADF Unit Root Test Result for First Differenced Variables at Lag 0

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **Test Statistics**  **at lagged diff 1** | | **Critical Values(lag 1)**  **With no trend** | | | **Critical Values(lag 1)**  **With trend** | | |
| no trend (1) | With trend (1) | **1%** | **5%** | **10%** | **1%** | **5%** | **10%** |
| DGDPGR | -8.954 | -8.892 | -3.634 | -2.952 | -2.610 | -4.224 | -3.532 | -3.199 |
| DLNGDPGR | -13.476 | -13.340 | -3.634 | -2.952 | -2.610 | -4.224 | -3.532 | -3.199 |
| DLNFDI | -8.205 | -8.128 | -3.634 | -2.952 | -2.610 | -4.224 | -3.532 | -3.199 |
| DLNGCF | -6.772 | -6.763 | -3.634 | -2.952 | -2.610 | -4.224 | -3.532 | -3.199 |
| DLNEX | -7.577 | -7.613 | -3.634 | -2.952 | -2.610 | -4.224 | -3.532 | -3.199 |
| DLNFRATE | -8.722 | -8.896 | -3.634 | -2.952 | -2.610 | -4.224 | -3.532 | -3.199 |
| DLNLBF | -6.315 | -6.492 | -3.634 | -2.952 | -2.610 | -4.224 | -3.532 | -3.199 |

For the variables at 0 (zero) lagged difference, the ADF results in Table 4.4 shows DLNGDPGR, DLNFDI, DLNGCF, LNEX and DLNINFRATE have no unit root for the constant and no trend and constant and time trend at all critical values. The variables are all free of unit root at first differencing.

Table 4.1:4 ADF Unit Root Test Result for First Differenced Variables at Lag 0

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **Test Statistics**  **at lagged diff 1** | | **Critical Values(lag 1)**  **With no trend** | | | **Critical Values(lag 1)**  **With trend** | | |
| no trend (1) | With trend (1) | **1%** | **5%** | **10%** | **1%** | **5%** | **10%** |
| DGDPGR | -7.330 | -7.455 | -3.641 | -2.955 | -2.611 | -4.224 | -3.536 | -3.202 |
| DLNGDPGR | -5.835 | -5.792 | -3.641 | -2.955 | -2.611 | -4.224 | -3.536 | -3.202 |
| DLNFDI | -7.983 | -7.951 | -3.641 | -2.955 | -2.611 | -4.224 | -3.536 | -3.202 |
| DLNGCF | -5.893 | -5.886 | -3.641 | -2.955 | -2.611 | -4.224 | -3.536 | -3.202 |
| DLNEX | -4.629 | -4.718 | -3.641 | -2.955 | -2.611 | -4.224 | -3.536 | -3.202 |
| DLNFRATE | -5.183 | -5.206 | -3.641 | -2.955 | -2.611 | -4.224 | -3.536 | -3.202 |
| DLNLBF | -3.566 | -3.829 | -3.641 | -2.955 | -2.611 | -4.224 | -3.536 | -3.202 |

For the variables in differenced form at 1(one) lagged differencing the ADF results in Table 4.5 indicate that DLNGDP (GDP growth rate), DLNFDI, DLNEX and DLNINFRATE have no unit root. DLNLBF with no trend has unit root meaning it is not stationary at 1% critical value but stationary for 5% and 10% critical value. While for constant and time trend DLNLBF has no unit root at 5% and 10% critical values but has unit root at 1% critical value. To normally after first differencing most of the study variables are stationary.

# Graphical Analysis



Figure 4.1: Log of GDP against Log of FDI at level

**Source: Appendix 1 (From Various Economic Surveys)**

The log of GDP (LNGDP) growth rate and FDI (LNFDI) at any point in time is computed as a ratio of GDP and so allows us to evaluate the speed at which the variables are moving as well as the direction, but they at times move in opposite direction and also exhibit greater volatility particularly before the 1990’s. From 1993 onwards both GDP and FDI show a positive upward trend. This might suggest that from the mid 1990’s to date FDI inflow has played a major role in growing the economy. However it must be observed that the data is merely indicative of an association of the rate at which the variables are moving.



Figure 4.2:1GDP and FDI growth rate at first difference

**Source: Appendix 1(From Various Economic Surveys)**

Figure 4.2 is graph for the first difference of the log of GDP against the first difference of the log of FDI. This shows there is greater volatility in the movement of the GDP and FDI before the late 1990’s and also moving in opposite direction at times. After this period there is a close relationship and less volatility in the movement of GDP and FDI.

The following is the graphical presentation of the association between growth in GDP and variation in Gross Capital Formation and FDI for the study period.



Figure 4.2:2GDPD, FDI and GCF growth at Difference

**Source: Appendix 1(From Various Economic Surveys)**

The graph in Figure 4.3 is the presentation of GDP growth rate, FDI inflow and Gross capital formation at difference for the study time. It can be seen that GDP is growing at a pace which is stable while foreign direct investment and GCF show greater volatility particularly before the mid ninety’s. From this period onwards GDP and GCF continues to display stable growth also there is remarkably less volatility in FDI inflow.

# Regression Analysis

The data was subjected to regression analysis and the output is presented below to find out whether the independent variables jointly influence the dependent variable-economic growth. The Null hypothesis is stated as the explanatory variables don’t jointly influence the outcome variable i.e. GDP growth, whereas the Alternative hypothesis is the independent variables jointly influence the Economic Growth. When the computed probability value for the F-statistics is below 5%reject the null hypothesis. This may be interpreted to mean the independent variables are not jointly significant in explaining economic growth.

Table 4.3:1 Regression Estimation Results At Difference, with LnGDPGR as the Dependent Variable

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Source** | **SS** | **Df** | **Ms** |  | **Number of obs - 41** | |
|  | | | | |  | |
| Mode1  Residual 1 | 105.78437  34.3674187 | 14  26 | 7.55602643  1.32182379 |  | F( 1426)=-5.72  Prob> F =0.0001 | |
| Total | 140.151789 | 40 | 3.50379472 | R-Squared=– 0.7548  AdjR-squared=0.6227 | |
|  |  |  |  | Root MSE = 1.1497 | |
| **Lngdpgr** | **Coef.** | **Std error** | **T** | **p>[t]** | **{95% conf. interval** | |
| DLngdpgr\_1 | .4705874 | .1688904 | 2.79 | 0.010 | .1234282 | .8177466 |
| DLngdpgr\_2 | .3595193 | .1444176 | 2.49 | 0.020 | .0626646 | .656374 |
| DLnfdi | -.1397195 | .1411604 | -0.99 | 0.331 | -.4298788 | .1504398 |
| DLnfdi\_1 | -.1944872 | .2454349 | -0.79 | 0.435 | -.698986 | .3100115 |
| DLnfdi\_2 | .3610092 | .5650211 | 0.64 | 0.528 | -.8004083 | 1.522427 |
| DLngfc | 3.423287 | 1.303552 | 2.63 | 0.014 | .743797 | 6.102777 |
| DLngfci\_1 | .6593057 | .1485093 | 4.44 | 0.000 | .3540404 | .964571 |
| DLngfci\_2 | .0773818 | .1353575 | 0.57 | 0.572 | -.2008496 | .3556132 |
| DLnexport | .655856 | 1.143783 | 0.57 | 0.571 | -1.695223 | 3.006935 |
| DLnexport\_1 | .1581777 | .1021583 | 1.55 | 0.134 | -.0518117 | .368167 |
| DLninfrate | -.4086158 | .9722917 | -0.42 | 0.678 | -2.40719 | 1.589958 |
| DLninfrate\_1 | -1.912596 | 1.035368 | -1.85 | 0.076 | -4.040825 | .2156331 |
| dLlbfgr | 18.91569 | 24.10601 | 0.78 | 0.440 | -30.63493 | 68.4663 |
| Lnlbfgr | -17.13335 | 23.88856 | -0.72 | 0.480 | -66.23697 | 31.97028 |
| \_cons | -29.96219 | 10.81386 | -2.77 | 0.010 | -52.19039 | -7.733991 |

Table 4.6 indicates the coefficients of the study variables and their corresponding probability values. Of interest is the sign of the coefficients and whether their probability value is less than 5% or greater. Table 4.6 indicates that GDPGR lag 1 and GDPGR lag 2 have a p value of 0.010 and 0.020 respectively which is less than 5% and a positive coefficient. Therefore in the first, differenced regression there is a positive and significant effect of the GDPGR lag I and GDPGR lag 2. Secondly FDI and FDI lag 1 and FDI lag 2 all have a p value greater than 5% with a negative coefficient, meaning they don’t move in the same direction with economic growth. But FDI lag 2 has a p has a positive coefficient meaning they move in the same direction with economic growth. This means that FDI positively affects growth, but only after a two year lag rather than instantly.

GCF and GCF lag 1 have p values of 0.014 and 0.000 respectively which is less than 5% so it is a statistically significant variable in explaining economic growth; also they have a positive coefficient, meaning that they move in the same direction with economic growth. GCF lag 2 has a p value of 0.57 which is greater than 5% which means that it is not significant to explain GDP, but it has a positive coefficient, implying that they move in the same direction with economic growth.

Both current export and lag one export have p values greater than 5% but with a positive coefficient, hence they tend to move in the same direction with economic growth. Inflation in the current year and at 1 year lag both have p value of greater than 5%, which is not statistically significant but their negative coefficient means that they move inversely to economic growth increases. Labour force growth has a p value of greater than 5% which is not statistically significant but it has a positive coefficient in the current year meaning current employment level move with economic growth.

R2 is 0.7548 meaning that 75% of the variations in Economic Growth can be explained by the FDI, GCF, EXPORT, INFLATION and LABOUR FORCE jointly and only 25% of the variation in economic growth is explained by other variables not mentioned in the model. Note that R2 is quite high at 75% as such the model is fitted very nicely or the data is fitted nicely.

The model shows a very good ability to explain the outcome variable and also the F statistic is statistically significant meaning that independent variables- FDI, GCF, EXPORT, INFLATION and LBF are jointly significant to explain Economic Growth.This is determined by setting the Null Hypothesis as independent variables don’t jointly influence GDP while the Alternative Hypothesis is the jointly influence GDP. The corresponding probability value of the F statistics is 0.0001 which is less thancritical value at 5% and as such the null hypothesis cannot be rejected so the alternative hypothesis that the independent variables jointly influence economic growth is accepted.

# Diagnostic Test Results for the Regression Analysis

Then diagnostic checking was done, first was to check if the residuals are normally distributed or not using the Shapiro-Wilk normality test and the result is presented in Table 4.7 below. Residual is the difference between actual data minus the fitted data.

Table 4.3.1:1Test For Normality Of The Error Term

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Shapiro-Wilk W test for normal data** | | | | | |
| **Variable** | **Obs** | **W** | **V** | **z** | **Prob>z** |
| U | 41 | 0.9450 | 2.034 | 1.497 | 0.06723 |

The Null Hypothesis is residuals are normally distributed and the Alternative Hypothesis is residuals are not normally distributed. The probability value at 6.723% is more than 5% meaning the null hypothesis cannot be rejected and therefore the random error term is normally distributed.

Then the model was tested for heteroscedasticity using the Breusch-Pagan test and the output is presented in Table 4.8 below.

Table 4.3.1:2Breusch-Pagan/ Cook-Weisberg Test for Heteroskedasticity

|  |
| --- |
| H0 constant variance  Variables: fitted values of lngdpgr |
| Chi2(1) = 0.00  Prob> chi2 = 0.9649 |

The Null Hypothesis is stated as residuals are homoscedastic and the Alternative Hypothesis is stated as residuals are heteroscedastic. The null Hypothesis cannot be rejected because the probability value is 96.44 % which is more than 5% critical value and so there is constant variance, the residuals are homoscedastic.

Next the Durbin Watson Test and the Godfrey Quandt test is applied to check for auto correlation and the result is shown in Table 4.9 and Table 4.10 below.

Table 4.3.1:3The Durbin Watson Test for Serial Correlation

|  |  |  |  |
| --- | --- | --- | --- |
| Lags | Chi2 | Df | Pro>chi2 |
| 1 | 1.675 | 1 | 0.1956 |
| H0: no serial correlation | | | |

Table 4.3.1:4The Godfrey Quandt Test for Serial Correlation

|  |  |  |  |
| --- | --- | --- | --- |
| Lag (p) | Chi2 | Df | Pro>chi2 |
| 1 | 3.635 | 1 | 0.0566 |
| H0: no serial correlation | | | |

In both tests the Null Hypothesis is that Residuals are not auto correlated and the Alternative Hypothesis is the residuals are serially correlated. In both Tests the results probability value is more than critical value at 5%, and so the null hypothesis cannot be rejected meaning the model has no serial correlation. The whole model is on the whole good, residuals are normally distributed, with constant variance and also there is no serial correlation.

# Johansen Cointegration Test

The results of the Johansen test for Cointegration for establishing the existence of relationships amongst the key study variables is indicated in Table 4.1below:-

Table 4.4:1Johansen Test For Cointegration

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Vecranklngdpgrlnfdilngcflnexportlninfratelnlbf, trend (constant) max  **Johansen Tests For Cointegration** | | | | | |
| Trend: | Constant | |  | Number of obs-42  Lags = 2 | |
| Sample: | 1972 – 2013 | |
| Maximum  rank | parms | LL | Eigen value | Trace  Statistics | 5% critical value |
| 0 | 42 | -29.081047 | . | 130.4206 | 94.15 |
| 1 | 53 | -6.3472458 | 0.66127 | 84.9530 | 68.52 |
| 2 | 62 | 14.335863 | 0.62653 | 43.5868\* | 47.21 |
| 3 | 68 | 26.508406 | 0.43990 | 19.2417 | 29.68 |
| 4 | 74 | 32.353434 | 0.24296 | 7.5517 | 15.41 |
| 5 | 77 | 35.589851 | 0.14283 | 1.0788 | 3.76 |
| 6 | 78 | 36.129263 | 0.02536 |  |  |

The results of the Johansen cointegration test in Table 4.11 above indicate that the variables in this study have a long term associationship. In this test the null hypothesis is that there is no cointegration amongst the variables against the alternative that there is cointegration. This null hypothesis is rejected because the trace statistic is greater than the 5% critical value. This is indicated in Table 4.11 where the trace statistic for rank 0 is 130.4206which is greater than the critical value given as 94.15. This means that there is cointegration amongst the variables. The subsequent rank values now become the null hypothesis and they also can’t be rejected since the trace statistic is smaller than the critical value. As shown in table 4.11 the variables are progressing together in the long run or they have long term associationship. This means the variables are cointegrated in this case there is three cointegration and hencethe VECM test was run.

# Vector Error Correction Model

The VECM test was run after confirming the variables were cointegrated as follows:-

Table 4.5:1Vector Error Correction Model

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Coef** | **Std. err** | **Z** | **P>[z]** | **[95% conf. Interval]** | |
| D\_lngdpgr |  |  |  |  |  |  |
| -cel  L1. | -.5175101 | .2489136 | -2.08 | 0.038 | -1.005372 | -.0296485 |
| lngdpgr |  |  |  |  |  |  |
| LD.  L2D. | -.3372168 ..3072214 | .2476573  .2094857 | -1.36  1.47 | 0.173  0.142 | -.8226162  -.1033631 | .1481827  .7178059 |
| lnfdi |  |  |  |  |  |  |
| LD.  L2D. | -.444639  -.1697115 | .1307224  . .1512957 | -3.40  -1.12 | 0.001  0.262 | -.7008501  -.4662456 | -.1884279  .1268225 |
| lngcf |  |  |  |  |  |  |
| LD.  L2D. | . 2.050712  -1.234622 | . 1.530481  1.450807 | 1.34  -0.85 | 0.180  0.395 | -.948975  -4.078151 | 5.050398  1.608908 |
| lnexport |  |  |  |  |  |  |
| LD.  L2D. | 1.161826  -.6491616 | 1.596127  1.275088 | 0.73  -0.51 | 0.467  0.611 | -1.966524  -3.148289 | 4.290177  1.849966 |
| Infrate |  |  |  |  |  |  |
| LD.  L2D. | . -1.692011  -.8201376 | .7623767  .7816345 | -2.22  -1.05 | 0.026  0.294 | -3.186242  -2.352113 | -.1977798  .7118379 |
| lnlbf |  |  |  |  |  |  |
| LD.  L2D. | .1589094  .0362991 | .1007712  .1060212 | 1.58  0.34 | 0.115  0.732 | -0.385985  -.1714985 | .3564173  .2440968 |
| cons | .1531272 | .271727 | 0.56 | 0.573 | -.379448 | .6857024 |

The VECM addresses both the issues of Long Run and Short Run Causality. The results are presented in table 4.12above. The target model is the model having the dependent variable, economic growth (GDPGR). Since VECM converts the variables into first difference the time series variables is a stationary data. The Error term Cointegrating equation 1 in the VECM model has a negative coefficient and it is significant as its p value is 3.8% which is less than 5%.This means there is long run causality between the variables.

The value of the error term in Table 4.12 is also the speed of adjustment; it indicates the model is adjusting at the rate of 51% towards the long run equilibrium. Also the negative sign of the coefficient of the error term means there is a Long run Causality running from GCF, FDI, Export and Inflation to GDP.

Secondly the Short Run causality of the individual variable is given by the coefficient of the first difference of the independent variables.

FDI lag1 is significant because its p value at 0.001 is less than 5% but FDI lag 2 is not significant to explain economic growth but both have negative coefficients meaning there is short run causality between FDI and growth.

GCF lag 1 and 2and export lag 1 and lag 2, inflation lag 2 are not significant while Inflation lag 1 is significant.

GCF lag 2, export lag 2, inflation lag 1 and 2 have negative coefficients meaning they have short run causality on growth.

Labour force at lag 1 is not significant but it is significant at lag 2 with positive slopes.All the above explanatory variables individually influence dependent variable

# Diagnostic Test for Vector Error Correction Model

The diagnostic test to check whether the independent variables can jointly influence economic growth was performed by the linear hypothesis testing in Table 4.13.

Table 4:13Linear Hypothesis Testing

|  |  |  |
| --- | --- | --- |
| **test ([D\_lngdpgr])** | | |
| ([D\_lngdpgr]) | L.\_ce1 |  |
| ([D\_lngdpgr]) | Lngdpgr LD. | =0 |
| ([D\_lngdpgr]) | Lngdpgr L2D. | =0 |
| ([D\_lngdpgr]) | lnfdi LD. | =0 |
| ([D\_lngdpgr]) | lnfdi L2D. | =0 |
| ([D\_lngdpgr]) | lngcf LD. | =0 |
| ([D\_lngdpgr]) | LngcfL2D. | =0 |
| ([D\_lngdpgr]) | Lnexport LD. | =0 |
| ([D\_lngdpgr]) | Lnexport L2D. | =0 |
| ([D\_lngdpgr]) | Infrate LD. | =0 |
| ([D\_lngdpgr]) | lnInfrate L2D  . | =0 |
| Chi2 (13) = 412.45  Prob> Chi2 = 0.0000 | | |

In this test the Null hypothesis sets the coefficients of the equations to zero. The result of the post-estimation test for linear hypothesis is presented in Table 4.13 above. The probability value is very small, less than 5% therefore the null hypothesis has to be rejected meaning that there is Short Run causality from GCF, FDI, Export, and Inflation to GDP growth. Overall both long run and short run causality going from independent variables to GDP.

The Lagrange Multiplier test for autocorrelation was done and the output is indicted in Table 4.13 below.

Table 4:24Lagrange-Multiplier Test

|  |  |  |  |
| --- | --- | --- | --- |
| Lag | Chi2 | Df | Prob>chi2 |
| 1  2 | 29.6917  39.7223 | 36  36 | 0.76178  0.30768 |

HO: no autocorrelation at lag order

The Null hypothesis is given as there is no serial correlation and the alternative Hypothesis is there is serial correlation. If the p value is more than 5% then we can’t reject the null hypothesis of no autocorrelation. In the result of the Lagrange Multiplier test the p value for both lag one and two is greater than 5% (76% and 30% respectively) meaning we cannot reject the null hypothesis therefore the model has no autocorrelation.

Then the Jarque-Berra test was applied to check for whether the disturbance term was normally distributed. The results are indicated in Table 4.15

Table 4.5.1.1:3 Jarque-Bera Test

|  |  |  |  |
| --- | --- | --- | --- |
| Equation | Chi2 | Df | Prob>chi2 |
| D\_lngdpgr  D\_lngcf  D\_lnfdi  D\_lnexport  D\_lninfrate  All | 1.204  2.853  4.493  1.547  0.554  10.650 | 2  2  2  2  2  10 | 0.54766  0.24017  0.10580  0.46150  0.75801  0.38542 |

In this test the null hypothesis is stated as the residuals are normally distributed and the alternative hypothesis is stated as the residuals are not normally distributed. The result is presented Table 4.15. The p value in all cases is more than 5% and so null hypothesis is not rejected meaning the residual are normally distributed.

# Granger Causality Test Result

The research adopted the Granger causality Test to test for the possibility of the presence a causal relationship amongst the study variables as well as to discern the direction of causality in case causality was found. Causality can flow in only one direction or flow both ways however the test can also indicate an absence of causality between variables. In this study variables of interest were FDI inflows, GCF (domestic investments) and economic growth and the output from STATA is accordingly presented in table 4.16 below.

Table 4:16 Granger Causality Wald Test

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Equation** | **Excluded** | **F** | **Df** | **Df\_r** | **Prob>F** |
| DLNGDPGR | DLNFDI | 5.2597 | 5 | 22 | 0.0025 |
| DLNGDPGR | DLNGCF | 4.7441 | 5 | 22 | 0.0043 |
| DLNGDPGR | **ALL** | 4.0307 | 10 | 22 | 0.0031 |
| DLNFDI | DLNGDPGR | 5.1145 | 5 | 22 | 0.0029 |
| DLNFDI | DLNGCF | 2.6703 | 5 | 22 | 0.0494 |
| DLNFDI | **ALL** | 5.4164 | 10 | 22 | 0.0005 |
| DLNGCF | DLNGDPGR | 4.6356 | 5 | 22 | 0.0049 |
| DLNGCF | DLNFDI | 1.4066 | 5 | 22 | 0.2607 |
| DLNGCF | **ALL** | 2.972 | 10 | 22 | 0.0159 |

With GDPGR as the dependent variable the null hypothesis was stated as Lagged FDI variable doesn’t granger cause DLNGDPR and the Alternative hypothesis was stated as Lagged DLNFDI variable cause DLNGDPR. In above table, the ganger causality test is conducted at lag 5 and the null hypothesis is rejected because the p value for FDI causing GDPGR at 0.0025 is less than 5%.Therefore lagged FDI Granger causes LNGDPR also DLNGCF does Granger cause DLNGDPR because its p value at 0.043 is less than 5%. Taking both DLNFDI and DLNGCF the Null Hypothesis is rejected because their joint p value is 0.0031%, meaning that DLNFDI and DLNGCF jointly Granger cause DLNGDPR. Both FDI and domestic investment are growth enhancing. The implication is that is the causality is towards and from the particular variables further implying that through economic growth FDI influences domestic investments. There is evidence that both domestic investment and foreign investment has a major role in promoting growth. The interpretation of this outcome is that there is causality flowing from DLNFDI and DLNGCF to DLNGDPR however this causality flows in both directions i.e. to and from movement which implies that FDI causes GDP to grow and in so doing stimulates increases in domestic investment. This is evidence that both domestic investment and foreign investment crucially contributes to promoting growth in the economy receiving FDI.

In the second test the outcome variable is changed such that FDI now becomes the outcome variable. Accordingly the null hypothesis is changed to state that individually GDP and GCF does not granger cause FDI and the alternative is that it does. In this test the null hypothesis can’t be rejected because their p value is less than 5%. Also their joint p value is only 0.0005% which is less than the 5% critical value upper limit. This suggests there is causality going in either direction and implies when the economy is growing and thus stimulating domestic investment as well as building absorptive capacity then the economy becomes attractive to FDI inflow enabling to grow even faster and longer.

In the third test the outcome variable is changed such that GCF now becomes the outcome variable. Accordingly the null hypothesis is changed to state that individually GDP and FDI does not cause GCF and the alternative is that it does. The null hypothesis for GDP having no causation on GCF is rejected because the p value is less than the 5% critical value meaning economic growth granger causes gross capital formation. However the p value for FDI granger causing gross capital formation is high at 26% which is above the 5% critical value. Also this high p value may indicate that FDI may crowd out domestic investment.

When GCF is the dependent variable the null hypothesis that GDP does not granger-cause GCF is rejected because the p value is lessthanthe5% critical value, meaning economic growth granger causes gross capital formation. However the p value for FDI granger causing gross capital formation is high at 26% which is above the 5% critical value. This implies that FDI has a subsidiary role on domestic investment. Also this high p value may indicate that FDI may crowd out domestic investment.

# CHAPTER FIVE

# CONCLUSION AND RECOMENDATIONS

# Chapter Overview

This chapter presents summary of the key findings of the study. It also provides main conclusions, recommendation and policy implication. It further suggests some areas for further studies.

# Summary Of Findings

The main purpose of this research was to examine the effects of foreign direct investments inflow on economic growth in Tanzania. To conduct this investigation time series data from 1970 to 2013 were used. To achieve the main objective, the study specifically first examined the impact on economic growth of the following variables: Foreign Direct Investment, gross capital formation, export, inflation and labour force in Tanzania. Secondly it examined whether there is cointegration amongst the key variables in the study. Thirdly it investigated the direction of causality between foreign direct investment inflow, domestic investment and economic growth. The relationship between the key variables and economic growth were subjected to regression analysis followed by the Johansen cointegration test, vector error correction and the granger causality test. Prior the test for the presence of unit root in the data was undertaken using Augmented dickey fuller test.

According to the Augmented dickey fuller test it was revealed that the data had unit root at level and so the unit root was removed with first differencing. Further the output result of the regression model shows that this is a good model to explain the relationship between FDI and GDP. This is seen from the statistical significance of the F statistics which translates into the conclusion that the independent variables-FDI, GCF, EXPORT, INFLATION and LBF are jointly significant to explain Economic Growth.

The corresponding probability value of the F statistics shows that the impact variables jointly influence economic growth in Tanzania. Furthermore R2 is high at 0.754 meaning that 75% of the variations in Economic Growth can be explained by the FDI, GCF, Export, Inflation and Labour jointly and only 25% of the variations in economic growth are explained by other variables not mentioned in the model. Thus overall it means that FDI positively affects growth, but only after some years rather than instantly. Also the relationship of the inflation coefficient and growth suggests that development within the macro economy have positive influence on FDI inflows.

The Johansen cointegration test results established that the variables in the study move in the same direction and have a long term association that is they are cointegrated. This was followed by VECM and the result indicates a Long run Causality running from Foreign Direct Investment, Gross Capital Formation, Export and Inflation to Economic growth. The adjustment speed towards the long run equilibrium is 51% which is a good rate. Overall there is both Long Run and Short Run causality going from independent variables to GDP.

The study also examined the direction of causality of the main variables. The granger causality tests result indicates joint p value of 3.2% for foreign direct investment and domestic investment, meaning that DLNFDI and DLNGCF jointly Granger causes DLNGDPR. Both FDI and domestic investment are growth enhancing. This uni-directional causality implies that FDI influences economic growth through domestic investment. It is also evidenced that both domestic investment and foreign investment play a role in promoting economic growth.

An important interpretation is that, when the impact of FDI becomes positive and significant after a one year lag and in the current year, the effect of domestic investment which is measured by gross fixed capital formation as percentage of GDP is insignificant in this period. This could imply the possibility that FDI crowds out domestic investment in Tanzania. Foreign investors may be involved in sectors, in which domestic investors are already involved in. Major building construction is now mostly undertaken by foreign firms as well as investment in high class hotels.

# Conclusion

The main objective of the study was to examine the nature of the relationship between FDI and GDP growth in Tanzania. Specifically the research was to establish whether there is any causality between FDI inflows, Gross capital formation (GCF) and economic growth and to establish its route. It is indicative in this research that FDI, Gross capital formation, labour force and exports all have a positively significant effect on GDP rate of growth. The importance of capital formation domestically is discerned as the main catalyst in attracting FDI and growing exports. This accelerates the rate of GDP growth.

The granger causality test result shows causation flowing from FDI and GCF to Economic growth. This unidirectional causal link suggest that to achieve a rapid growth of the economy effort must be geared to promoting the factors that determine FDI inflow because will stimulate domestic investment and eventually propel the economy a high ground . The empirical findings provide an indicative view that there is a need for government to formulate and pursue policies as well having in place legislations that are friendly to both local and foreign investors.

# Policy Implications and Recommendations

The econometric analysis focused on the relationship between FDI and growth. Estimating growth equations, established a positive and significant effect of FDI on economic growth of Tanzania but the effect come after two year lag. The result suggests that it may take time for the outcome of FDI to be realized, this is because the fruits of any investments are realized after some period. The lagged effect of FDI on the Tanzanian economy could be an indication that the capacity of the domestic economy to absorb foreign direct investments needs to be enhanced.

The growth model has also provided important intuitions on the possible crowding out effect on domestic investment. The government should give more attention on the potential crowding out effect on domestic investment. This can be done in a way that to create competitive advantage and benefit from spillover effect and the countries should have a higher absorptive capability of advanced technology to fully utilize of FDI benefit.

FDI have a positive role in Tanzania so as to prosper and promote economic growth. Fostering competition amongst businesses, deregulation and liberalisation of foreign and domestic trade are all policies that are attractive to FDI inflows. The caveat is policy must ensure the entire economy benefits. The experience of developing countries that have vanquished poverty e.g. South Korea and Taiwan are good case studies. This implies that activities of Multinational corporations boost economic growth in host countries. More incentives should therefore be given to foreign firms in FDI seeking nations so as to promote sustainable economic growth.

The research has considered the relationship between foreign direct investment and economic growth. Further granger causality of the key variables in the study was estimated in order to establish their direction of causality. The findings from the study indicate that FDI, domestic investment, export and labour all significantly influence economic growth. A better understanding of FDI behavior can be of great importance for its sustainability. Empirical analysis suggests that, more domestic efforts can be vital for increasing FDI inflows. The granger causality result shows FDI as granger causing economic growth. This suggests that, policies that promote investment such as macroeconomic stability, trade openness and domestic investment must be pursued. However the challenge of providing skilled labour force must be overcome so that economic growth which is the key to improving the livelihood of Tanzanians is achieved through an appropriate FDI policy.

# Suggestions for further studies

Studies that capture the relationship between Foreign Direct Investment and its welfare implications are suggested. This will shed light on the extent to which FDI can be used as part of the poverty alleviation strategy in Tanzania and other countries in sub-Saharan Africa. Furthermore a study for FDI and employment creation in different sectors of the economy is recommended using more robust econometrics tools.

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# APPENDIX 1

Raw Data Used In The Study

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **year** | GDPGR | **GDP TZS** | **FDI INFLOW** | **GCF USD** | **EXPORTS MILLION** | **Inflation** | **Pop (000)** | **ExRate TZS/US** |
| 1970 | 5.80 | 9,173 | 3,070 | 480,000 | 259,523,810 | 2.4 | 13,300 | 7.14 |
| 1971 | 4.20 | 9,814 | 5,150 | 600,000 | 278,571,429 | 4.8 | 13,700 | 7.14 |
| 1972 | 6.70 | 11,172 | 7,690 | 560,000 | 318,907,563 | 9.1 | 14,000 | 7.14 |
| 1973 | 3.10 | 13,103 | 6,030 | 650,000 | 374,057,971 | 10.4 | 14,400 | 6.90 |
| 1974 | 2.50 | 15,994 | 5 | 810,000 | 400,700,280 | 18.9 | 14,800 | 7.14 |
| 1975 | 5.90 | 19,011 | 6 | 900,000 | 334,624,697 | 27 | 15,300 | 8.26 |
| 1976 | 6.40 | 24,876 | 6,560 | 940,000 | 493,870,192 | 6.3 | 16,400 | 8.32 |
| 1977 | 0.40 | 28,868 | 2,940 | 1,300,000 | 567,587,940 | 17.6 | 16,900 | 7.96 |
| 1978 | 2.10 | 32,933 | 6,120 | 1,500,000 | 495,411,606 | 7 | 17,500 | 7.41 |
| 1979 | 2.40 | 36,283 | 8,020 | 1,600,000 | 539,416,058 | 12.1 | 18,000 | 8.22 |
| 1980 | 3.00 | 42,228 | 4,580 | 1,700,000 | 573,349,340 | 30.8 | 18,100 | 8.33 |
| 1981 | -0.50 | 51,753 | 18,920 | 1,700,000 | 534,348,739 | 25.7 | 18,600 | 9.52 |
| 1982 | 0.60 | 61,927 | 17,310 | 1,800,000 | 339,486,356 | 28.9 | 19,200 | 12.46 |
| 1983 | -2.40 | 69,522 | 1,520 | 1,200,000 | 447,268,908 | 27.1 | 19,800 | 9.52 |
| 1984 | 3.40 | 85,392 | 3 | 1,200,000 | 405,698,234 | 36.1 | 20,500 | 12.46 |
| 1985 | 4.60 | 112,213 | 14,510 | 1,700,000 | 235,560,464 | 33.3 | 21,200 | 18.11 |
| 1986 | 1.90 | 148,391 | 4 | 1,300,000 | 680,424,242 | 32.4 | 21,500 | 16.50 |
| 1987 | 4.90 | 329,486 | 7 | 1,200,000 | 326,624,130 | 29.9 | 22,200 | 51.72 |
| 1988 | 4.40 | 506,426 | 3,760 | 1,500,000 | 216,336,000 | 31.2 | 22,500 | 125.00 |
| 1989 | 2.60 | 633,752 | 5,840 | 1,800,000 | 274,451,378 | 30.4 | 23,200 | 192.30 |
| 1990 | 6.20 | 830,693 | 10,000 | 2,200,000 | 338,560,529 | 35.9 | 23,900 | 196.60 |
| 1991 | 2.80 | 1,086,273 | 10,000 | 1,800,000 | 324,843,950 | 28.8 | 24,600 | 233.90 |
| 1992 | 1.80 | 1,369,874 | 12,169 | 1,700,000 | 370,047,761 | 21.9 | 25,300 | 335.00 |
| 1993 | 0.40 | 1,725,535 | 20,457 | 1,600,000 | 377,493,905 | 24 | 26,000 | 479.87 |
| 1994 | 1.40 | 2,298,866 | 50,000 | 1,500,000 | 506,594,708 | 35.3 | 26,700 | 523.45 |
| 1995 | 3.70 | 3,020,499 | 119,936 | 1,400,000 | 709,313,904 | 27.4 | 27,500 | 550.36 |
| 1996 | 4.20 | 3,767,642 | 150,066 | 1,500,000 | 764,587,670 | 21 | 28,300 | 595.64 |
| 1997 | 3.30 | 4,708,627 | 157,885 | 1,600,000 | 735,749,280 | 16.1 | 29,100 | 624.60 |
| 1998 | 4.00 | 6,283,970 | 172,306 | 1,900,000 | 621,767,988 | 12.9 | 30,000 | 681.00 |
| 1999 | 4.80 | 7,222,561 | 516,700 | 1,700,000 | 571,500,063 | 7.9 | 30,900 | 797.30 |
| 2000 | 4.90 | 8,152,789 | 463,400 | 1,700,000 | 731,237,396 | 5.9 | 31,900 | 803.30 |
| 2001 | 6.00 | 9,100,274 | 388,800 | 1,800,000 | 814,953,618 | 5.1 | 32,900 | 916.30 |
| 2002 | 7.20 | 10,444,507 | 396,244 | 1,900,000 | 971,630,646 | 4.6 | 33,600 | 976.30 |
| 2003 | 6.90 | 12,107,060 | 364,258 | 2,200,000 | 1,194,115,380 | 5.3 | 34,200 | 1063.62 |
| 2004 | 7.80 | 13,971,591 | 226,732 | 2,900,000 | 1,540,452,175 | 4.7 | 35,300 | 1042.96 |
| 2005 | 7.40 | 15,965,293 | 935,520 | 3,500,000 | 1,630,705,013 | 4.4 | 36,200 | 1165.51 |
| 2006 | 6.70 | 17,941,268 | 403,039 | 4,000,000 | 1,905,909,768 | 7.3 | 37,500 | 1261.64 |
| 2007 | 7.10 | 20,948,403 | 581,511 | 5,000,000 | 2,440,059,536 | 7 | 38,300 | 1132.09 |
| 2008 | 7.40 | 24,728,005 | 1,383,260 | 6,200,000 | 3,343,421,073 | 10.3 | 39,500 | 1280.30 |
| 2009 | 6.00 | 28,058,587 | 952,630 | 6,200,000 | 3,311,499,364 | 12.2 | 40,700 | 1313.29 |
| 2010 | 7.00 | 32,293,479 | 1,022,809 | 7,300,000 | 4,191,521,389 | 7.2 | 41,900 | 1453.54 |
| 2011 | 6.4 | 37,532,962 | 1,095,401 | 8,800,000 | 3,039,866,667 | 12.7 | 42,500 | 1500.00 |
| 2012 | 6.9 | 44,717,663 | 1,800,000 | 9,700,000 | 2,670,838,323 | 10.23 | 43,700 | 1670.00 |
| 2013 | 7 | 53,174,678 | 1,872,000 | 10,900,000 | 3,211,941,176 | 9.4 | 44,300 | 1700.00 |

# APPENDIX 2

**Table 1.2: Tanzania’s Capital Flows and Stocks, 2008 – 2011 (USD Million)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Type of investment** | **Capital inflows** | | | | **Capital stock** | | | |
| 2008 | 2009 | 2010 | 2011 | 2008 | 2009 | 2010 | 2011 |
| Capital flows and stocks | 1,556 | 1,023 | 1,8135 | 1,330 | **7,751** | 8,566 | 9,278 | 10,393.2 |
| Foreign direct investment | 1,384 | 953 | 1,813 | 1,229 | 6,941.5 | 8,066 | 38,762 | 9,278 |
| Portfolio investment | 0.2 | 0.4 | -0.1 | 0.7 | 11.0 | 12.5 | 12.7 | 18 |
| Other investments | 172 | 70.4 | -0.7 | 99.9 | 798.5 | 487 | 503.1 | 1,098 |

Source: Tanzania Investment Report 2012