UNIVERSITY of RWANDA

COLLEGE OF BUSINESS AND ECONOMICS

THE IMPACT OF FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH OF RWANDA

HAPPINESS BAITAN

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A DISSERTATION SUBMITTED FOR A PARTIAL FULFILMENT OF DEGREE OF MASTERS OF BUSINESS ADMINISTRATION

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Declaration

I declare that this dissertation is my original work and that it has not been presented to any other university.

Signed……. Date……

Recommendation

This dissertation has been submitted for examination with our approval as university supervisor.

Signature…… Date……

Dr. Moise Bigirimana

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Dedication

I really thank the almighty God who made heaven and earth for his might power, presence whereby he was with me throughout the whole process of making this research. Surely, he has done a lot to me (protecting, guiding and providing everything needed). Glory and honor be to him. Thank you, my God.

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Abstract

This study intended to assess the impact of Foreign Direct Investment on the economic growth of Rwanda. In order to achieve this objective, the study used multivariate time series analysis on the relationship that exists between FDI and GDP controlled by other macroeconomic variables such as, BOT, inflation and exchange rate. The study adopted vector error correction model analysis from 2006 and 2018. The results obtained in this research suggest that increase in FDI has been associated with positive economic growth in Rwanda. FDI was linked with increases in the exchange rate and a negative trade balance. The study involved numerous diagnostic tests and the results showed that the model was well specified with one omitted variable (Ramsey RESET test) at 10% with 0.1190 probability value and R squared 0.1336. The results test on BG-LM test suggests that the variables were not seriously affected by collinearity, heteroskedasticity and serial correlation problem. This study has found out that, previous period FDI, country's real GDP and previous period exchange rate determined increase in country's economic growth of which stability in GDP performance is an important factor. This study used monthly and annual data transformed in quarterly data which have improved the results. The study recommends future researchers to consider micro panel data for selected firms, using the same analysis.

Key Words: FDI, GDP, BOT, Inflation, and Exchange rate.

Word Counts: 207.

List of tables

List of appendices

Abbreviations and acronyms

ADF – Augmented Dickey Fuller

BOT – Balance of Trade

DSP – Difference Stationary Process

ECM – Error correction Model

ECT – Error correction Term

EXCR – Exchange Rate

FDI – Foreign Direct Investment

GDP – Gross Domestic Product

INF – Inflation rate

VECM – Vector Error Correction Model

VIF – Vector Inflating Factor

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CHAPTER ONE

INTRODUCTION

1.1 Background of The Study

In academia one of the mostly discussed phenomena is how the economy of the country is affected by the presence of FDI. Researchers like Adams (2009) shows that there is a strong positive relationship between FDI and growth of the economy. Also, Neha (2018) argues that in developing country FDI showed positive association for economic determinants (trade openness, gross fixed capital formulation, and efficiency variables).

Toulaboe, Terry, and Johansen (2009) come up with this how FDI affects the economy of the recipient nation would be very important in Latin American and East Asian countries than in sub Saharan African countries due to the fact that Latin American and East Asian countries have fairly advanced development in comparison to sub Saharan African countries. Afzalur (2016) found that "growth in FDI is not associated with positive economic growth. FDI was associated with unfavorable balance of trade and the rise of the rate of inflation". By considering findings above the researchers has different outcomes for the recipient nation about how FDI affect its economy. Furthermore Mohammad, et al. (2008) shows that "GDP and trade openness have a significant positive impact on Rwanda's FDI inflows. Depreciation of the real exchange rate stimulates FDI inflows and inflation rate did not significantly affect FDI inflows".

UNCTAD and Ministry of Trade and Industry of Rwanda (2010). Rwanda has a vision of building a knowledge-based economy and to become a private sector led middle income country by 2020. Rwanda's strongminded Programme for development is summarized in Vision 2020. The Economic Development and Poverty Reduction Strategy (EDPRS) is the mid-term framework to implement the Government's long-term development agenda. Rwanda has been aware of the importance and necessity of foreign direct investment. As per Rwanda

Development Board (2018) “immediately after 1994 genocide, Rwanda began strategically to increase foreign direct investment with an intention of getting investment foundation, technological transferring and transferring of knowledge. When the Government of Rwanda adopted a new industrial policy FDI inflow was increasing significantly since 2008.

The intention of this research is to find on how FDI has affected the recipient nation economically, case study in Rwanda.

1.2 Statement of The Problem

Evidence from Bangladesh Afzalur (2016) shows that “FDI increases the inflation rate and a negative trade balances which also affect the country’s economic growth”. Also, Mohammad, et al. (2008) shows that “GDP and trade openness have a significant positive impact on Rwanda’s FDI inflows. Depreciation of the real exchange rate stimulates FDI inflows and inflation rate did not significantly affect FDI inflows”.

But modernization theory states that FDI may contribute positively to the economic growth in developing countries and dependence theory states that FDI may have a negative effect on the economic growth of the host country. While absorptive capacity theory states that the effect of FDI in recipient country depends on its absorptive capacity.

Basing on that evidence it is clear that there is a difference between what theories states and the results from the field, at the same time there is no current case study conducted in Rwanda which shows the contribution of FDI to the economic growth of the country.

This study investigated on whether the increase of foreign direct investment due to policies reforms from 2006 to 2018 (13 years) has significantly brought a positive or negative contribution on economic growth of Rwanda.

1.4 Objectives

1.4.1 General objectives

The major aim of the research is to evaluate on how FDI affects the economy of Rwanda.

1.4.2 Specific objectives

i. To analyzes the effects of inflation rate in the county's economic growth (GDP).
ii. To analyzes the effects of exchange in the county's economic growth (GDP).
iii. To analyze the effects of balance of trade (BOT)and its outcome in the economy (GDP).
iv. Analyzing effects of FDI's inflows and its outcome in the economy (GDP).

1.5 Research Hypothesis

Thus, this study has examined the following hypotheses:

H1: Ho: Rate of inflation and growth of GDP are not affected negatively in Rwanda

H2: Ho: Exchange rate and growth of GDP are not affected positively in Rwanda.

H3: Ho: BOT and growth of GDP are not affected positively in Rwanda.

H4: Ho: FDI and growth of GDP are not affected positively in Rwanda.

1.6 Justification of the study

This study is very important in the development of the investment policy reform toward the economic growth of Rwanda. This is also helpful to the policy Professionals and graduate students in determination of the areas of improvement. Moreover, this study gives the clear insight about the relationship between FDI and (Gross Domestic Product, Balance of Trade, inflation rate and exchange rate).

1.7 Limitation of the study

This study faced some challenges which was solved during implementation of it. And these are; first was slowness of the internet network whereby speed internet network was obtained. Second was lack of enough fund where prioritization regarding the importance was considered. Another one was the absence of supervisor whereby communication using email and scheduling the meeting regarding his availability was a solution.

1.8 Significance of the study.

This study is significant in many ways. First, findings of the study do update the policy designers for promotion of investment sector. Further, this study does add to existing literature on FDI performance in Rwanda.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Literature Review

Central purpose of this section is to review the theories and research which are associated with how FDI affect the economy of the nation. The section explains the modern theory, dependency theory, absorptive Capacity theory, and economic growth theory. Lastly it explains the types of foreign direct investment.

2.1.1 Modernization Theory

It states that in developing countries FDI may contribute positively in their economy.

Agosin and Mayer (2000) in their research showed that" foreign investment has positive influence in domestic investment in Asian countries, this evidence shows that foreign investment encourages domestic investment". Makki and Somwaru (2004) in a study of 66 developing countries,) shows that "FDI attracted domestic investment, which in turn lead to economic growth".

Also, (Ahmed, 2005; Khan, 2007; and Kabir, 2007) showed that "Foreign Direct Investment has contributed to the increase of GNP, GDP, and PPP, reduction of foreign exchange gap, domestic savings gap, deficit balance of payment, deficit balance of trade, rate of inflation, rate of unemployment and poverty level. Also, FDI has associated with corporate social responsibilities, developing financial institutions, and diversifying export".

Nevertheless, Baliamoune (2004) shows that "FDI affect positively the economy of the country when export is improved". Zhang (2006) found that "Foreign direct investment has boosted chines' economy by improving export". Kabir (2007) argues that" FDI increases export and leads to increase in foreign currency earnings, which can help in paying external debts". Other research carried out by Adams (2009) found that "FDI leads to the transfer of technology,

and knowledge which may contribute to the economic growth of the recipient country".

Moreover Farla et al. (2016) argue that "most developing countries have introduced new policies and regulations to attract foreign investment including preferential tax system and preferential loans". (Ayyagari and Kosova (2010) found "FDI has become a significant source of finance rather than official development aid". Also, Romm and Fedderke (2005) found that "policy, financial structure, savings, and investment, institutional structure all determine, and to some extent are determined by economic development in South Africa".

Furthermore, Chen d, Yu X and Zhang (2019) found that "there are high friction costs for inward FDI as the Chinese government has imposed many cumbersome and restrictive rules on how foreign firms can invest in China. For example, the government imposes tight controls on the funds flow into and out of China. National "strategic" industries, foreign firms must form a joint venture and transfer technology to local partners to enter the market. Furthermore, Chinese capital and product markets are characterized by a lack of publicly available information, a high degree of government intervention and local protectionism, a limited supply of funds, and quick changes in the direction of government policies. These market imperfections can result in managers of foreign firms expending less effort to acquire private information and instead relying on resources available in their home countries, if such resources exist".

2.1.2 Dependency Theory

It states that in the host country FDI may affect its economy negatively. Quazi (2004) states that "FDI might have a negative impact on the host country because of capital flight, which is the outflow of domestic capital, hence lead to an adverse effect on the country's current account and foreign exchange account'. Eller, Steiner, and Haiss (2005) shows that foreign direct investment crowded out domestic capital. Rahman (2008) argues that "FDI increases imports of the host country due to the fact that FDI financed companies mostly uses high technology capital machinery and some intermediate goods which are not

available in a host country". Aitken et al (2004) argued that "the penetration of the domestic firms into the international markets depends on the FDI's inflows in that domestic country which helps the domestic firms in improving their level of exports hence higher level of country's comparative advantage in terms of technological transfers and competitive workforce by increasing technical and management skills", on the other hand, UNCTAD (2012) accounts that "savings and investment rates in developing countries are much attributed by high rate of FDI inflows in a recipient country's dynamic comparative advantages".

2.1.3 Absorptive Capacity theory

It states that in recipient country the effect of FDI on its economy depends on its absorptive capacity. Whereby Buckley, Clegg and Wang (2008) found that "FDI can be important in economic growth if socially, politically and economically are complementary in the hosting country. Though, a nation may have no conducive environment for business where it may gain due to the coming of foreign firms".

Malikane and Chitambara (2018) found that "African countries has weak positive effect of FDI in production development". Buckley, Clegg, and Wang (2007) found that "there is a great spillover from inward FDI in technology-intensive compared with labour intensive industries, which justifies the policy in developing countries like China, which have in recent years offered generous incentives package to attract foreign investors to high- technology industries".

Toulaboe, Terry and Johansen (2009) found that "FDI has great significant on the economic growth in Latin American and East Asian countries because Latin American and East Asian countries have higher level of advancement compared to sub Saharan countries".

2.1.4 Economic growth theory

In recent decades most of developing economies including Rwanda has been experiencing rapid growth which reflects the Solow growth model. Romer (1996) and Baumol and Blinder (2010), argue that "the growth model relies on

the assumption of a constant saving rate which attracts to understand the nature of the country's growth in terms of labour, capital, and technology. However, the model specifically explains the understand the people's welfare of which the model explains the relationship between the aggregate variable and individual's outcome in terms of satisfaction".

Mankiw (2011), states that "economic growth should be designed in a sense that capital stock, labour force and advanced technology interact with the economy's growth, also how individuals are able to access goods and services within a nation".

2.1.6 Types of FDI

According to Ball & McCulloch, (1999), "FDI can be classified into five different types which include: (1) greenfield investment, (2) merger or acquisition, (3) joint venture, (4) horizontal FDI, and (5) vertical FDI ". They are discussed in the following sections:

Greenfield Investment

Ball & McCulloch, (1999)" A company that wishes to own a foreign subsidiary outright may start from a greenfield investment by building new facilities or expanding existing facilities". The establishment of industrial plants and facilities at export processing zones (EPZs) are examples of Greenfield investment in Rwanda.

Merger or Acquisition

Ball & McCulloch, (1999), "A merger or acquisition occurs when a foreign firm purchases the existing assets of a local firm". For example, in 2018, a major telecommunications firm called Airtel purchased Tigo Telecom. in Rwanda. This acquisition was used to establish a business known as "Tigo-Airtel"

Joint Venture (JV)

Ball & McCulloch, (1999) “A joint venture can be established in numerous ways. A joint venture can be established when an international company joins with a local company (or with another international company) to form a corporate entity. On the other hand, the international company could join with the government of the country of investment to form a corporate entity”. For example, construction companies in Rwanda.

Horizontal FDI

Ball & McCulloch, (1999) “Horizontal FDI refers to the situation where a company invests in the same type of industry abroad that they are involved in at home”. For example, Azam in Rwanda.

Vertical FDI

Ball & McCulloch, (1999) “Vertical FDI has two forms: (1) Backward vertical FDI involves investing in an industry which provides inputs for the investing firm’s domestic production; and (2) Forward vertical FDI involves investing in an industry which sells the output of the investing firm’s domestic production”.

2.2 Conceptual Review

Foreign direct investment is regarded as the ownership of ten percent or more on company’s shares that provides the owner’s voting power of on the existing unincorporated business. FDI is expected to possess a positive effect on the economy stimulated by increase in production of output. However, inflation and exchange rate are the control variables of the increase in foreign direct investment as they are associated with the cost of production hence determining the level of countries economic growth. GDP is the economic variable which tells us how many dollars are flowing around the economy’s circular flow per unit of time. Inflation measures how fast prices are rising. It measures the percentage change in the average level of prices from the year before. The exchange rate between two countries is the price at which residents of those countries trade with each other. Trade balance is the calculation of a country’s exports minus its imports.

Due to the depreciation in domestic currency accelerates the increase in country's exports which in turn increases country's balance of trade. Moreover, balance of trade was expected to have a positive effect on country's economic growth caused by increase in foreign direct investment inflows in a host country. The adverse selection of the foreign direct investment on the balance of trade, it leads to negative effect of inflation and exchange rate on country's economic growth. Furthermore, the evidence from Rwanda by Mohammad, Tamwesigire and Mugisha (2008). Shows that "GDP and openness of trade have positive association with Rwanda's FDI inflows. Depreciation of the real exchange rate stimulates FDI inflows and inflation rate did not significantly affect FDI inflows". And Hakizimana (2015) found that "inflows of FDI and development of economy have strong positive association".

Basing on those research views this study investigate to find if the increase of foreign direct investment due to policies reforms has brought a significant impact on the economic growth of Rwanda over a period of 13 years, from 2006 to 2018.

2.3 Empirical Review

2.3.1 Effect of FDI inflows and its outcome on economic growth

In recent years, the empirical analyses of the relationship between Foreign Direct Investment and its determinants have received considerable attention in response to the dynamics of the investment environment. However, Mika'ilu and Fu'ad (2013) in their paper evaluated "the determinants of inflows of FDI in Nigeria from 1981 to 2010. They developed a model where FDI was used as the dependent variable and economy openness, inflation, infrastructural development, natural resource, and market size were used as the independent variables. Their method employed co-integration and granger's causality tests analysis. Empirical result from their co-integration test revealed that inflation, economy openness, and market size do not attract FDI in the long run, whereas

in the granger's causality test result, both inflation and market size were found to have positive effects on FDI in the short run".

Mohsen and Masoumeh (2012) investigated "the determinant of FDI in developing countries. Econometric approach was used in which panels of 123 developing countries were selected for the period of 15 years (1997-2010). FDI was regressed on market size, foreign debt, economic openness, political rights, natural resources, economic growth, corruption, and wage rate. Result from their findings revealed that economic growth, foreign debt, and economic openness have significant positive effect on FDI, while wage rate exert as negative one. The remaining variables were however not found to be significant". Abor et al (2008), argued that "the penetration of the domestic firms into the international markets depends on the FDI's inflows in that domestic country which helps the domestic firms in improving their level of exports hence higher level of country's comparative advantage in terms of technological transfers and competitive workforce by increasing technical and management skills", on the other hand, UNCTAD (2002) accounts that "savings and investment rates in developing countries are much attributed by high rate of FDI inflows in a recipient country's dynamic comparative advantages".

Hosein and Maryam (2012) examined "the impact of volatility of exchange rate on FDI in Iran". Johansen co-integration technique was used. They specified their model considering FDI as the dependent variable and GDP, world oil price, openness, exchange rate volatility, and nominal exchange rate as independent variables. Their result showed that, GDP, nominal exchange rate and openness exerted positive relation with FDI, while exchange rate volatility and world oil price exerted negative ones". Afzalur (2016) evaluated" the impact of FDI on economic growth of Bangladesh. Multiple regression analysis was conducted where FDI inflows was independent variable and Gross Domestic Product, Balance of trade and rate of inflation was three dependent variables. The findings showed that an increase in FDI has not associated with positive economic growth in Bangladesh. FDI was accompanying with an increase in rate of inflation and

unfavorable balance of trade". Also, Neha (2018) argues that "in his findings of 20 countries evidence, in developed countries, FDI seeks policy-related determinants (GDP growth, trade openness, and freedom index), and in developing country FDI found to have a positive association for economic determinants (gross fixed capital formulation, trade openness, and efficiency variables)".

2.3.2 Effect of inflation and exchange rate on country's economic growth.

Rwanda was attentively on the importance and necessity of foreign direct investment. Instantly after 1994 genocide, Rwanda began to encourage FDI with the intention of getting capital formation, technological transfer and transfer of knowledge. There was significant increase in FDI inflow since 2008.Mohammad, Tamwesigire and Mugisha (2008) examined "the determinants of FDI inflow into Rwanda from 1971 – 2003, using vector autoregressive (VAR) model and suggests that GDP and trade openness are positively affect the inflows of FDI in Rwanda significantly. The depreciation of real rate of exchange stimulates inflows of FDI, and somewhat surprisingly, the inflation rate did not significantly affect FDI inflows". Ministry of Trade and Industry (2010) state that "Rwanda takes a developmental state method with the key objective being sustainable economic growth and social development. The main purpose of EDPRS was to overcome the key restrictions to economic growth identified through a growth diagnostic and investment climate analysis by systematically reducing the operational costs of business; investing in the private sector's capacity to innovate; and, widening and strengthening the public sector. Government policy is to promote private sector investment through good governance, a legal framework, promoting savings and the banking sector and investment in infrastructure, health and education including vocational training. The aim is to: create new jobs to absorb new entrants to the labour market and surplus labour created by the modernization of farming; facilitate technology transfer; the transfer of skills to Rwandan; an increase in the production of goods and services for export; and, largely promote economic growth. Incentives for

FDI including export processing zones and industrial parks were seen as an important element of the strategy. Partnership of FDIs with Rwandan companies was to be encouraged and stimulating domestic investment was also seen as integral element of the policy.

2.3.3 Effect of balance of trade and its outcome on economic growth.

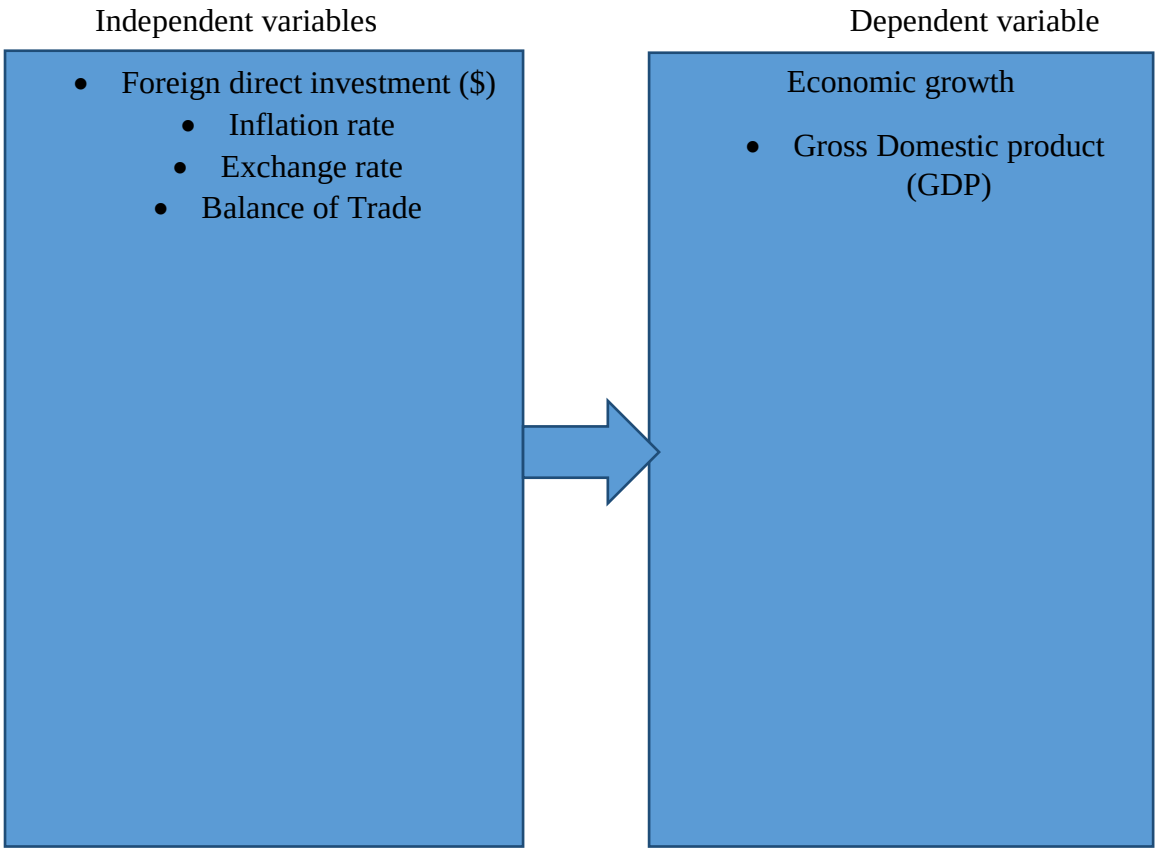
Diversifying and increasing exports was also perceived as central to the strategy and the Government has recognized the main areas for export growth, beyond the strategic exports of coffee, tea, horticulture, hides and skins and minerals. These are mining, tourism, vegetable processing, business process outsourcing, silk textiles, fruit and dairy processing". Baumol and Blinder (2010) "FDI was seen as bring a number of benefits beyond job creation including the investment of foreign capital, know-how and managerial skills and export promotion. FDI as well as local investment was been encouraged in resource-based manufacturing (e.g. coffee and tea), low technology products (e.g. footwear, textiles), high technology manufacturing (e.g. pharmaceuticals, chemicals, ICT) and services including tourism was seen to be a high potential for growth. Bruno et al (2012) in their study on analyzing relationship measured by GDP between FDI and economic growth from 1970 to 2010. There results suggest that GDP and FDI possess a long run equilibrium relationship which results from the two variables to be cointegrated and become stationary at first difference. However, they found that the only FDI inflows respond on GDP increase and not the later doesn't respond to an increase in inflows of FDI in host country".

Hakizimana (2015) in his study on "the relationship between GDP per capita and FDI in Rwanda from 2008 to 2012, the results found that inflows of FDI and GDP per capita have strong positive association which lead to positive effect on economic growth in Rwanda".

Philip et al (2016) in their study on "the drivers of Rwandan economic growth, the result suggests that FDI plays a key role for country's emerging market on a comparative advantage over the EAC countries of which the FDI inflows in

Rwanda for 2015 contributed a total of 4% on countries GDP more than other EAC countries".

2.4 Conceptual framework



Source: Developed personally.

CHAPTER THREE

METHODOLOGY

3.1 Research design

This study used ex post facto design, whereby secondary data were used to see if independent variables and dependent variables are related. The gathered data helps to understand the kind of relationship that exists between FDI and Gross Domestic Product, inflation rate, exchange rate, and trade balance.

3.2 The study population identification

The study involved quarterly secondary data from $2006q_1$ to $2018q_4$ (52quarters) for the economic variables involved in analysis. The data was collected from National Bank of Rwanda, Rwanda Development Board, Ministry of Trade and Industry, Ministry of Finance and National Institute of Statistics of Rwanda, United Nations (UN) Statistics, and World Development Indicators (WDI) 2017 by the World Bank (FDI variable). Various journals, magazines, and websites.

3.3 Operational Definition of Variables

3.3.1 Foreign Direct Investment

According to the Organization of Economic Co-operation and Development (OECD (2012) "A foreign direct investment is an enterprise resident in one economy and in which an investor resident in another economy owns, either directly or indirectly, 10% or more of its voting power if it is incorporated or the equivalent for an unincorporated enterprise… An ownership of at least 10% of the voting power of the enterprise is regarded as the necessary evidence that the investor has sufficient influence to have an effective voice in its management". This is the same as International Monetary Fund defines FDI. International Monetary Fund by Ridgeway, (2004). "FDI refers to investments made to acquire a lasting interest in enterprises operating outside of the investor's economy'. The IMF also considers an investment to be classified as FDI if the investor holds a partial ownership share of at least 10% and exercises a significant amount of management control.

3.3.2 Gross Domestic Product (GDP)

Gregory Mankiw, (2011) define GDP as "the economic variable which tells us how many dollars are flowing around the economy's circular flow per unit of time. There are two ways to view these statistics. One way to view GDP is as the total income of everyone in the economy. Another way to view GDP is as the total expenditure on the economy's output of goods and services".

3.3.3 Inflation

Gregory Mankiw, (2011) "It measures how fast prices are rising. It measures the percentage change in the average level of prices from the year before. When the inflation rate is above zero, prices are increasing. When it is below zero, prices are falling. If the inflation rate declines but remains positive, prices are increasing but at a slower rate".

3.3.4 Exchange rate

Gregory Mankiw, (2011), "The exchange rate between two countries is the price at which residents of those countries trade with each other. Nominal exchange rate is the relative price of the currency of two countries" such as U.S. dollar and Rwandan Franc is 865Rw per dollar as per National Bank of Rwanda in December 2018.

3.3.5 Balance of Trade

Gregory Mankiw, (2011)," Also known as trade balance is the calculation of a country's exports minus its imports. When a country imports more than its exports, the result is negative number is called a trade deficit. When a country exports more than its import, the result is positive number is called trade surplus".

3.4 Model

The empirical model estimated has influenced the insights from new FDI theories. The empirical model will be specified, relating to exchange rate (ER), country's inflation rate (INFL), country's GDP and balance of trade (BOT) to the level of FDI inflows as:

$$GDP_t = \beta_0 + \beta_1 FDI_t + \beta_2 INF_t + \beta_3 EXCH_t + \beta_4 BOT_t + e_t \ldots\ldots\ldots\ldots (1)$$

Where:

FDI = Foreign Direct investment

GDP = changes in Gross Domestic Product

INF= changes in rate of inflation

EXCH =changes in real rate of exchange misalignment, as a measure of real Overvaluation

BOT= net balance of Trade

3.5 Methods of data analysis

I have conducted summary of statistics and a series of testing before actual estimation such as normality testing of variables, serial correlation (autocorrelation) testing using Breusch- Godfrey Serial correlation LM test, as well as model misspecification testing using Ramsey RESET test. The results obtained led transformation of the variables to log form. Due to the problems inherent in time series data and macro-variables (variables were having a mean that changes with time and with a non-constant variance), tests for unit root/ non-stationarity has been conducted. This was followed by testing for cointegration. The econometric package used for empirical analysis and estimation was Stata 14.

The study compared scores on dependent variables and draws the conclusion if the independent variable has causal effect on the dependent variables.

3.6 Ethical considerations

In conducting this study all ethical issues have been taken into consideration like the use of data collected for the study purpose only and not for personal use or publication without a legal permission. Information has been used honestly to reach to the findings and conclusion.

Views of others have been considered, findings and data interpretations are accurate and correct.

Also, the result obtained should not be published without following the required procedure. The university procedure should be adhered.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Data presentation

4.1.1 Summary Statistics and Unit root Tests of the Variables

In analyzing the variables, all variables were not normally distributed then transformation into log form was undertaken. Appendix B shows the growth rates and trends of all variables, and appendices C and D present the summarized original and transformed variables statistically. In terms of changes, the EXCR variable had some negative values, which were eliminated and was replaced by the average of the value of the year before and after that particular time before it was transformed into log form. Tables 4.1a and 4.1b present the results of unit root tests and Table 4.1c presents the results of test for multicolinearity.

Table 4.1.1a Results: Unit Root test (Level variables)

	Augmented Dickey-Fuller	
Variable	Test Statistics	Critical value at 5%
FDI	-2.203	-2.929
GDP	0.450	-2.929
EXCR	4.087	-2.929
BOT	-2.276	-2.929
INFL	-1.664	-2.929

Source; Stata 14.

These results show that all variables are non-stationary at original variables. The result led us not to reject the null hypothesis because the t-test were small compared to critical values at 5%.

Table 4.1.1b Results: Unit Root test (At the first difference)

	Augmented Dickey-Fuller	
Variable	Test Statistics	Critical value at 5%
FDI	-6.932	-2.930
GDP	-6.575	-2.930
EXCR	-3.793	-2.930
BOT	-7.898	-2.930
INF	-3.844	-2.930

Source; Secondary data

This result present that after first difference all variables became stationary as the absolute values computed of the *tau* statistics (|t |) exceeded the critical value of ADF, which led me to reject the null hypothesis (δ= 0) at 5 per cent critical value.

Table 4.1.1c Results: Vector inflating factor (Test of Multicollinearity)

Variable	VIF	1/VIF
Excr	2.35	0.426058
Fdi	1.92	0.521754
Inf	1.68	0.596079
Bot	1.53	0.654413
Mean VIF	1.87	

Source; Secondary data.

Table 4.1c presents that multicolinearity was not a serious problem after regressing the variables and lead the existing variables to be significant for statistical analysis.

4.1.2 Cointegration Test

Due to the results in section 4.1, according to Engel and Granger (1987), "if two time series variables are integrated of order one", *I (1),* there could be a linear combination between them which may be integrated of order zero, *I (0),* this was due to the nature of the economic variables involved in analysis (Gujarati, 2012). Therefore, there was a necessity of the test for presence of integration in the variables. I conducted a test by using Johansen cointegration test (Gujarati, 2012). Table 4.2 presents the results of the test

Table 4.2 Results: Johansen tests for Cointegration

Maximum Rank	Eigenvalue	Trace Statistic	5%Critical Value
0	.	62.6647*	68.52
1	0.40281	36.8885	47.21
2	0.30375	18.7862	29.68
3	0.18581	8.5082	15.41
4	0.15637	0.0062	3.76
5	0.00012		

Source; Secondary data. *Number of obs = 50, Lags = 2*

From Table 4.2, the test shows that there is cointegration and only one maximum rank of this cointegration is there. This is due to the reason that the first significant values where trace statistic is less than critical value at 5 percent were found at maximum rank of one. This means that there is one cointegrating equation required which led me to run an Error Correction Model (ECM).

4.1.3 Vector Error Correction Model (VECM)

The ECM for this study followed the Engle- Granger two step procedures due to the reason that there is only one cointegrating vector. A regression with level variables (in log form) was run using OLS method to obtain the residual for long run relationship or an equilibrium error (Green, 2002; Gujarati,2012).

Table 4.1.3a: Results: Unit root test for the long run relationship residual

	Augmented Dickey-Fuller	
Residual	Test Statistics	Critical value at 5%
Res (ECT)	4.373	-2.620

Source; Secondary data.

The model was well specified by Ramsey RESET test, with 0.6234 probability value of F-statistic leading me to fail to reject the null (Ho: model has no omitted variables), and as the residual was stationary by ADF as presented in Table 4.1.3a, it was lagged once and used as error correction term (ECT = Res_1). The ECM form was as follows:

$$\Delta ln(GDP)_t = \propto_0 + \sum_{i=1}^{n} \propto_1 \Delta ln(FDI)_{t-1} + \sum_{i=0}^{n} \propto_2 \Delta \ln(EXCR)_{t-2} + \sum_{i=0}^{n} \propto_3 \Delta ln(INF)_{t-3} + \sum_{i=0}^{n} \propto_4 \Delta ln(BOT)_{t-4} + \rho(ECT)_{t-5} + \varepsilon_t$$

Equation (3) was estimated using the general to the specific approach. The summary of the result for the final (parsimonious) equation are given in Table 4.1.3b. The all process to final equation was through dropping (eliminating) the insignificant variables from the model. During the process variable in exchange rate (EXCR) was dropped due to its insignificant impact. However, BOT variable was not eliminated as it is among the key determinants of economic growth, though it was insignificant. Thus, the final model was estimated with; the first lags of real foreign direct investment (D_FDI) and previous period real inflation rate performance (D_INF) at their first differences, as well as the first difference of real balance of trade (D_BOT) together with the first lag of the vector error correction term (D_Res). The variables coefficients presented in the table indicates that the variables became statistically significant after taking into consideration of their previous performance at a given period. The estimates for the general VECM are presented in Appendices E and F

Table 4.1.3b: Results: VECM for the impact of FDI on Rwandan economic growth

Variable	Coefficient	Std. Error	t-value	Probability of t-value
D_FDI	.3571406	.6327878	0.56	0.575
D_BOT	.0336132	.0951342	0.35	0.725
D_INF	4.309602	1.813931	2.38	0.022
D_RES	-.1321656	.1404743	-0.94	0.352
Constant	35.95163	5.380174	6.68	0.000

No. of obs = 51; F (4, 46) = 1.77[0.1504]; R-squared = 0.1336; Root MSE=27.418

Source; Secondary data.

4.2 Data analysis

The analysis involved different diagnostic tests which indicated the model was well specified with 0.1504 probability value of F-statistic. Also, Breusch-Godfrey LM test indicated that there was no serial correlation (with chi^2value of 0.1167 at first lag). There was also no heteroskedasticity issue (reusch-Pagan / Cook-Weisberg test, with p-value of 0.1317 of chi^2). There was no serious multicolinearity issue within the independent variables, as well as in the general model (VIF 1.87 lower than 10). Moreover, the F-statistic test indicate that the dependent variables with joint significance in the model were highly significant, while the R^2 is 0.1336 showing 13.36% changes on growth of the economy are caused by the variables which are explanatory.

From the parsimonious VECM (results given in Table 4.1.3b), the D_FDI at first lag, and D_ INF at first lag were statistically significant at 5% level. The D_FDI for the previous year has a positive sign indicating that both current and previous export level possess positive relationships. However, D_GDP and D_INF for the last year possess the expected sign. Moreover, the D_Res (VECM) also possess the expected sign. For this case any rise in former FDI has an impact in changes of economic growth (GDP) by 0.36%.

For any percentage change in foreign direct investment affects the economic growth by 7.2 percent.

4.3 Data result and discussion

Obtained results in this research has differences and similarities in some aspects in comparison with other studies. In this study, previous period foreign direct investment, balance of trade, and previous period real exchange rate performance appear to have significant impact on economic growth (GDP) in Rwanda from 2006.This result correspond to Adams. (2009) who found that FDI and growth of the economy are strongly related positively. Also, Afzalur (2016) found that increase in FDI is not associated with positive economic growth, FDI brings a rise of inflation rate and negative balance of trade. Mohammad. et al., (2008) shows that GDP and trade openness are significantly affecting FDI inflows positively. The depreciation of real rate of exchange stimulates FDI inflows but rate of inflation did not affect the inflow of FDI significantly. Basing on findings of this study demonstrates that the FDI has a positive relationship with increase in economic growth, which is the result of the depreciation of Rwandan currency, hence leads to the increase of trade balance.

CHAPTER FIVE

MAJOR FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Major Findings

5.1.1 Effects of FDI's inflows and its outcome in the economy (GDP).

Statistically, the findings tell that FDI and growth of GDP are significantly positive correlated, and also a correlation between inflation rate, balance of trade and growth of the economy is strongly positive. So, the outcome of the study proposes that the increase in FDI was connected with constructive growth of economy in Rwanda. And FDI has been associated to an increase in rate of inflation and unfavorable balance of trade. Referring to the discussion above, higher rate of inflation leads to the decrease of purchasing power of people, hence economic stagnation. However, unfavorable trade balance occurs when importation is greater than exportation, which leads to resource gap in developing countries. In distinction, Statistically FDI seen to have significant positive effect on growth of GDP.

As this research show a positive correlation between growth of economy and three out of four macroeconomic variables, these outcomes may be a concern to the government of Rwanda. For sustainable growth, Rwanda should not disregard the necessity of FDI. Borensztein et al., (1998), Makki & Somwaru, (2004), suggests 'the effect of FDI on growth of the economy is related to the absorptive capacities in recipient country, whereby factors like technology, infrastructure, skilled human resources, institutional reform, political conditions and trade policy should considered".

Rahman, (2008). "There are number of factors which are responsible for hindering positive results from foreign direct investment in Rwanda, such as inadequate infrastructure, a slow-moving privatization process, an unskilled labor force, political instability, recurring natural disasters and inefficient bureaucracy". Transparency, (2010), "The increase of

transparency and reduction in corruption has increases the level of doing business in Rwanda".

5.1.2 The effects of inflation rate and exchange rate in the country's economic growth (GDP).

The data analysis suggests that the country's economic growth stimulated by foreign direct inflows in the host country has a direct association effect with the level of real inflation rate and real exchange rate. Depending on the nature of the variables used in this study the moderate inflation rate has a positive effect on Rwandan economic growth which was accelerated by the depreciation of country's currency to make the country's exchange rate to be competitive enough to attract more export and reduce imports hence control domestic prices. Both real inflation rate and exchange rate in the model became stationary after the first difference a negative effect on country's economic growth as presented in table 4.1.1b.

5.1.3 Effects of balance of trade (BOT)and its outcome in the economy (GDP).

Comparative advantage of Rwanda depends on the major production factors like low cost of labour. Even though, the nation would advance the efficient and effectiveness of its labor market by generating knowledgeable and skilled labour. This is due to the fact that a capable labor is regarded as a progressive production factor that qualify for development and economic growth. Furthermore, the essential reform and implication of policy must improve the task in growth of Rwandan economy. Profits of FDI not is automatic. To spot the FDI benefits, the government of Rwanda should expand the absorptive capacity of the nation such as knowledgeable and skilled labors, advanced technology, investment friendly policy, interrupted supply of utilities, strong infrastructure and political stability.

5.2 Conclusions

5.2.1 Effects of FDI's inflows and its outcome in the economy (GDP).

This study has reveals that, previous period FDI, country's real GDP and previous period exchange rate determined increase in country's economic growth. Which means that in order to encourage foreign direct investment in Rwanda policy should pay attention on improving foreign direct investment performance. Factors which have been constraining performance of foreign direct investment, especially exchange rate instabilities must be taken into consideration for the future better performance. Strategies for restructuring and improving performance Basing on the environment of competitive market restructuring strategies and performance improvement must be considered, taken as national corporate and firm specific industry policies and plans.

5.2.2 The effects of inflation rate and exchange rate in the county's economic growth (GDP).

Stability in GDP performance is a significant factor. Subsequently it has been shown that any change of FDI affect the growth of an economy significantly, therefore important measures for stabilization should be taken. The use of gas as an alternative solution to energy problem, Strategies such as advancing economic productivity by improving infrastructure and provision of labor force training should be enhanced as well. Promoting small and medium manufacturing firms, on other words, should be specified as urgency as they constitute most part of Rwandan manufacturing sector and they contribute to an increase of GDP. Strategies like loan provision schemes with reasonable interest rates and formation of permanent markets for their products should be considered. Additionally, policies and plans to formalize informal sector in Rwanda should be unceasingly designed due to the fact that the sector contributes the large part of the economy.

In other side, rate of exchange is still a big challenge with floating system. As the results reveal on how rate of exchange is significantly affecting FDI performance, instabilities in exchange rate need to be controlled. Serious

continuous central bank intervention in exchange rate markets are still very important to take care of this challenge because there is no clear-cut solution. However, increase in manufacturing output and manufacturing exports should be considered for the determination of domestic currency appreciation. Non-inflationary and investment stimulating policies should be considered.

5.2.3 Effects of balance of trade (BOT)and its outcome in the economy (GDP).

The increase in foreign direct investment inflows in Rwanda has acted as catalyst on current country's impressive economic growth. The increase in FDI has increased production of goods and services which in turn has increased country's exports hence positive effect on economic growth.

5.3 Recommendations

This research faced some restrictions in which two major points has been developed. Different sources were used to obtain the required data for this research, in the sense that each source has its own means of getting and analyzing data, hence this may affect greatly on the outcomes and interpretation in general. and constraints of time. This research contributes in the existing literature to add knowledge on analyzing the impact of FDI inflows on economic growth of Rwanda.

Regardless of the above challenges, am assured enough that the results obtained to be the best one. Even though this research involves all necessary efforts to analyze empirically on how FDI affect the growth of economy in Rwanda in 2006s, there is still a gap to be dealt with in this research monthly data and annually data was transformed in quarterly data which have improved the results. Also, future researchers can consider micro panel data for selected firms, using the same analysis. These may bring corresponding views to the research results found.

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APPENDICES

Appendix A: Data used for analysis of this study

YEAR	GDP	FDI	EXCH	BOT	INF
2006Q1	380.00	7.65	553.54	-185.5	6.60
2006Q2	431.00	7.54	552.16	-192.2	8.20
2006Q3	464.00	7.76	551.36	-187.2	9.20
2006Q4	488.00	7.65	549.94	-186.4	11.30
2007Q1	484.00	20.58	548.11	-185.2	11.80
2007Q2	519.00	20.75	546.19	-189.1	8.80
2007Q3	547.00	20.57	548.19	-190.0	8.20
2007Q4	571.00	20.68	545.58	-191.2	7.70
2008Q1	575.00	25.85	544.31	-188.2	6.80
2008Q2	653.00	25.74	543.35	-185.9	13.00
2008Q3	715.00	25.96	547.14	-191.1	19.60
2008Q4	750.00	25.85	553.02	-189.1	22.20
2009Q1	753.00	29.67	566.47	-196.2	19.00
2009Q2	741.00	30.10	567.88	-198.2	11.70
2009Q3	776.00	29.56	568.71	-200.0	6.30
2009Q4	828.00	30.00	569.97	-202.1	5.80
2010Q1	819.00	62.63	572.51	-210.0	3.00
2010Q2	818.00	63.04	579.00	-185.6	4.00
2010Q3	866.00	62.50	588.90	-187.4	2.10
2010Q4	908.00	62.96	592.12	-185.2	0.20
2011Q1	930.00	30.02	598.88	-211.2	2.60
2011Q2	968.00	29.46	600.67	-204.2	5.10
2011Q3	1038.00	30.00	600.03	-186.2	7.10
2011Q4	1055.00	29.75	602.17	-213.4	7.80
2012Q1	1074.00	63.75	605.42	-222.1	7.90
2012Q2	1106.00	63.54	608.51	-218.1	7.10

2012Q3	1175.00	64.02	608.51	-220.6	5.70
2012Q4	1205.00	63.57	608.51	-234.5	4.60
2013Q1	1186.00	64.40	633.17	-246.5	4.60
2013Q2	1224.00	64.76	639.72	-227.0	3.70
2013Q3	1225.00	63.95	649.17	-382.8	4.20
2013Q4	1293.00	64.30	664.44	-304.5	4.40
2014Q1	1321.00	78.68	674.60	-309.0	3.10
2014Q2	1354.00	79.10	680.97	-297.7	2.00
2014Q3	1396.00	78.94	684.39	-233.9	1.00
2014Q4	1395.00	78.47	690.53	-253.1	1.10
2015Q1	1422.00	55.83	701.72	-292.8	1.00
2015Q2	1422.00	56.32	712.77	-326.3	2.00
2015Q3	1522.00	55.95	725.02	-338.9	3.00
2015Q4	1567.00	56.01	738.89	-341.4	4.10
2016Q1	1596.00	66.58	758.59	-71.07	4.50
2016Q2	1636.00	66.76	775.95	-72.82	4.90
2016Q3	1689.00	67.00	799.61	-94.24	6.40
2016Q4	1751.00	66.38	815.23	-80.62	7.00
2017Q1	1820.00	73.35	822.88	-69.94	7.70
2017Q2	1869.00	73.53	827.83	-59.23	6.20
2017Q3	1927.00	73.23	833.66	-95.61	3.50
2017Q4	1985.00	73.65	833.66	-84.72	2.20
2018Q1	1986.00	43.38	848.84	-76.86	2.40
2018Q2	2000.00	43.01	856.16	-83.05	3.00
2018Q3	2062.00	43.32	864.39	-127.9	3.40
2018Q4	2016.00	43.75	874.88	-138.2	2.10

Appendix B: Summary Statistics for Original Variables

Variable	*GDP*	*FDI*	*EXCH*	*BOT*	*INFL*
Observations	52	52	52	52	52
Mean	1159.635	47.91923	656.3119	-195.1083	6.171154
Std. Dev.	496.3482	22.21482	107.8641	76.39473	4.618095
Min	380	7.54	543.35	-382.85	.2
Max	2062	79.1	874.88	-59.23	22.2

Appendix C: Summary Statistics for transformed Variables

Variable	*D_GDP*	*D_FDI*	*D_EXCH*	*D_BOT*	*D_INFL*
Observations	51	51	51	51	51
Mean	32.07843	.7078431	6.300785	.9268627	-.0882353
Std. Dev.	28.25374	10.28683	6.773175	48.76313	2.286714
Min	-46	-32.94	-2.609985	-155.83	-7.3
Max	100	34	24.65997	270.34	6.6

Appendix D Shapiro-Wilk W test for normal data

Variable	Observation	W	V	Z	Prob>z
D_GDP	51	0.98721	0.611	-1.052	0.85357
D_FDI	51	0.61703	18.294	6.206	0.00000
D_EXC	51	0.92720	3.478	2.661	0.00389
D_BOT	51	0.58871	19.647	6.358	0.00000
D_INF	51	0.92943	3.371	2.595	0.00474

Appendix E: The Parsimonious VECM estimation results

Sample: 2006q3 - 2018q4 Number of obs = 50

Log likelihood = -903.2633 AIC = 38.33053

FPE = 3.16e+10 HQIC = 39.13145

Det (Sigma_ml) = 3.38e+09 SBIC = 40.43376

Equation	Parms	RMSE	R-sq.	chi2	P>chi2
GDP	11	29.1606	0.9971	17107.81	0.0000
Fdi	11	10.0275	0.8200	227.7812	0.0000
exch	11	5.48362	0.9979	24299.14	0.0000
bot	11	48.4769	0.6920	112.3234	0.0000
inf	11	1.73007	0.8922	413.9852	0.0000

Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]
GDP |				
GDP |				
L1. |	.838908	.1707285	4.91	0.000 .5042863 1.17353
L2. |	.0586123	.1646303	0.36	0.722 -.2640572 .3812817
Fdi |				
L1. |	.572768	.4065518	1.41	0.159 -.2240588 1.369595
L2. |	.0466059	.4383337	0.11	0.915 -.8125125 .9057242
exch |				
L1. |	.7921916	.7647803	1.04	0.300 -.7067501 2.291133
L2. |	-.3892745	.8099888	-0.48	0.631 -1.976823 1.198274
bot |				
L1. |	-.0664689	.0857232	-0.78	0.438 -.2344833 .1015455
L2. |	.0592181	.0879673	0.67	0.501 -.1131947 .2316308

```
             |
         inf |
          L1. |   2.568071   2.039675     1.26   0.208   -1.429618
6.56576
          L2. |  -2.766068   1.843398    -1.50   0.133   -6.379061
.8469252
             |
       _cons |  -143.7128    106.442    -1.35   0.177   -352.3352
64.90959
-------------+----------------------------------------------------------------
fdi          |
         gdp |
          L1. |   .0727686   .0587086     1.24   0.215   -.0422981
.1878353
          L2. |  -.0423014   .0566116    -0.75   0.455    -.153258
.0686553
             |
         fdi |
          L1. |   .8035294   .1398013     5.75   0.000    .5295238
1.077535
          L2. |  -.2046715   .1507302    -1.36   0.175   -.5000973
.0907543
             |
        exch |
          L1. |    .400769   .2629857     1.52   0.128   -.1146735
.9162115
          L2. |  -.5150434   .2785316    -1.85   0.064   -
1.060955    .0308685
             |         bot |
          L1. |  -.0116176   .0294777    -0.39   0.693   -.0693928
.0461577
```

```
        L2. |      -.0085768   .0302494    -0.28   0.777    -.0678645
.0507109
            |
        inf |
        L1. |      -.2321306   .7013849    -0.33   0.741     -1.60682
1.142559
        L2. |       .2204728   .6338909     0.35    0.728    -1.021931
1.462876
            |
      _cons |      51.06482    36.6023      1.40   0.163    -20.67436
122.804
-------------+----------------------------------------------------------------
exch         |
        gdp |
        L1. |      -.0010655   .0321053    -0.03   0.974    -
.0639907    .0618598
        L2. |       .0119959   .0309586     0.39   0.698    -.0486818
.0726735
            |
        fdi |
        L1. |       .0636631   .0764516     0.83   0.405    -.0861793
.2135055
        L2. |      -.0170923   .0824282    -0.21   0.836    -
.1786485    .144464
            |
       exch |
        L1. |       1.228277   .1438161     8.54   0.000     .9464023
1.510151
        L2. |      -.2529683   .1523175    -1.66   0.097    -.5515051
.0455686
            |
```

```
         bot |
         L1. |  -.006336   .0161202    -0.39   0.694    -.0379309    .0252589
         L2. |  -.0070859   .0165422    -0.43   0.668    -.0395079    .0253361
             |
         inf |
         L1. |   .5892961   .3835587     1.54   0.124    -.1624651    1.341057
         L2. |  -.4917954    .346649    -1.42   0.156    -1.171215    .1876241
       _cons |   3.267669   20.0163      0.16   0.870    -35.96355    42.49889
-------------+----------------------------------------------------------------
bot          |
         gdp |
         L1. |  -.0815667   .2838207    -0.29   0.774    -.637845     .4747117
         L2. |  -.0213253    .273683    -0.08   0.938    -.5577341    .5150836
             |
         fdi |
         L1. |   .4297165   .6758556     0.64   0.525    -.8949362    1.754369
         L2. |  -.6223369   .7286903    -0.85   0.393    -2.050544    .8058698
             |
        exch |
         L1. |   1.381643   1.271378     1.09   0.277    -1.110213    3.873498
         L2. |  -.7589378   1.346533    -0.56   0.573    -3.398094    1.880219
```

```
             |
         bot |
          L1. |       .6296227       .1425071        4.42   0.000            .3503139
.9089315
          L2. |       .0095213       .1462377        0.07   0.948           -.2770992
.2961419
             |
         inf |
          L1. |       1.712591       3.390775        0.51   0.614          -4.933207
8.358388
          L2. |      -.4478168       3.064483       -0.15   0.884          -6.454092
5.558459
             |
       _cons |      -362.2295       176.9502       -2.05   0.041      -709.0454     -
15.41355
-------------+----------------------------------------------------------------
inf          |
         gdp |
          L1. |       .0065542       .0101292        0.65   0.518          -.0132986
.026407
          L2. |      -.0075867       .0097674       -0.78   0.437          -.0267304
.0115569
             |
         fdi |
          L1. |      -.0043376       .0241203       -0.18   0.857          -
.0516126    .0429374
          L2. |      -.0108778       .0260059       -0.42   0.676          -.0618485
.0400929
             |
        exch |
```

L1.	-.0225242	.0453737	-0.50	0.620	-.1114549 .0664066
L2.	.0207927	.0480559	0.43	0.665	-.0733951 .1149804
bot					
L1.	.0030054	.0050859	0.59	0.555	-.0069627 .0129735
L2.	.0019866	.005219	0.38	0.703	-.0082425 .0122157
inf					
L1.	1.31991	.121012	10.91	0.000	1.082731 1.557089
L2.	-.6526877	.109367	-5.97	0.000	-.8670431 -.4383323
_cons	5.917604	6.3151	0.94	0.349	-6.459764 18.29497