The Impact of Foreign Direct Investment on Economic Growth, Employment and Poverty Reduction in Uganda

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Abstract

The overarching objective of this study is to measure the impact of Foreign Direct Investment (FDI) on economic growth, employment and poverty reduction in Uganda. The study begins by providing a brief introduction of Uganda's economy and FDI inflows including political and governance background. Uganda's economy is classified as least-developed and highly indebted. The study noted first, that economic growth, employment and poverty are multidimensional. Second, tourism was identified as the single largest foreign exchange earner for Uganda. Further to achieve higher levels of economic growth, employment creation and poverty reduction, the Government of Uganda (GOU) introduced fiscal, monetary and commercial policies that included: openness, human capital development and controlling inflation. Following the reforms, FDI was identified as a foreign capital flow which overcomes the problem of private capital limitation in the country. Considering these observations, this study measures the impact of FDI on Uganda's economic growth, employment and poverty reduction. This study covers the sample period 1985-2014 employing time-series data.

To achieve this end, the study brought together the dependent variables as well as FDI and other explanatory variables as a pioneer in economic analysis in the context of Uganda as a least-developed nation. As such, to understand the impact of FDI and other explanatory variables on Uganda's economic growth, employment and poverty, this study employed the latest econometric techniques to test empirically the hypotheses developed using Uganda's data. In this respect, first cointegration analysis was introduced to capture long-run relationships among variables. Second, to capture short-run relationship among variables a systems simultaneous equation was developed. This is because Vector Autoregressive (VAR) treats all variables as endogenous. In this way through a simultaneous equation endogenous and exogenous variables are identified. Following this approach, employing VAR through Vector Error Correction Mechanism (VECM) procedure the simultaneous equation was simulated. The study further conducted ex-ante forecasting involving impulse response and variance decomposition simulations as well as ex-post forecasting to evaluate the period under study. Also the study examined causality relationships among series using VECM Granger causality approach that is utilised to understand short-run causality as well as endogeneity among variables via F-/Wald test simulation. Later, the systems simultaneous equation aforementioned is estimated employing Ordinary Least Square (OLS) to measure the impact of FDI and other explanatory variables on Uganda's economic growth, employment and poverty reduction.

Empirical findings indicate that FDI contributes to Uganda's economic growth, employment and poverty reduction. However, though FDI contributes to economic growth, the coefficient is negative. This is partly attributed to Total Factor Productivity (TFP), as explained by the Solow-Swan Model and the absorption capacity of Uganda being a least-developed country. This situation is worrisome for the nation because a further review of the impulse response function indicates that FDI will negatively contribute to economic growth both in the short-run and long-run. Meanwhile, tourism in indicated by the findings as an export that can spur economic growth, employment and poverty reduction in the country. This is because tourism is found to play a significant role in attracting FDI into Uganda as well as being a tool for openness. The study finds tourism as important tool for economic growth, poverty reduction, and employment through spill-over effects and human capital as well as accelerating tourism-induced foreign investments into the country. To this end, tourism plays a pivotal role to Uganda's economy as mentioned earlier but like FDI as a factor input, the coefficient is negative. However, unlike FDI, though in the short-run impulse response indicates that tourism will negatively contribute to economic growth in the long-run the impact becomes positive but *de minimis*. As such, it is important that mechanisms be put in place to make Uganda a better tourist destination compared to other countries in the region.

A further review of findings indicate that Uganda's local resources such as employment of labour force and human capital play an important role in contributing to economic growth and poverty reduction. This is because variance decomposition innovations indicate that employment will cause the greatest fluctuations in economic growth and poverty reduction in Uganda. Therefore, since impulse response indicates that employment will decline setting up mechanisms that create employment so as to accelerate economic growth and reduce poverty is important. Regarding, declining TFP the study recommends first, a review of the nation's monetary, fiscal and commercial policies as well as further human capital development. This is because the current policy regime seems to be more oriented towards promoting export-led growth and FDI without considering the negative internal impacts on the nation. Second, the study recommends improving the nation's absorptive capacity so as to spur consumption of goods and services and promote international trade and future investment.

Doctor of Philosophy Declaration

“I, **Ronald K.S Wakyereza**, declare that the PhD thesis entitled **The Impact of Foreign Direct Investment on Economic Growth, Employment and Poverty Reduction in Uganda** is no more than 100,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work”.

Signature Date

Dedication

To my Wife, Agatha

Proverbs 31: 10-12

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Thus far I have reached. Glory, thanks and honor to Jesus Christ, savior and Lord.
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List of Abbreviations

2SLS:	Two-Stage Least Square
ADB	Africa Development Bank
ADF:	Augmented Dickey-Fuller
ADLM:	Autoregressive Distributed Lag Model
ADR:	Alternative Dispute Resolution
AIC:	Akaike Information Criterion
ANC	Africa National Congress
ARCH:	Autoregressive Conditional Heteroscedasticity
ASEAN:	Association of South East Asian Nations
ASSM:	Augmented Solow-Swan Model
BITs:	Bilateral Investment Treaties
BOU:	Bank of Uganda
CCACD:	Community Capital Absorption Capacity Development
CCS:	Capacity Community Support
CET:	Common External Tariff
CMC:	Common Man's Charter
CMS:	Church Missionary Society
COMESA:	Common Market of East and Southern Africa
CPI	Consumer Price Index
CRS:	Corporate Social Responsibility
CUSUM:	Cumulative Sum Control Chart
DAPCB	Departed Asians Property Custodian Board
PCB:	Properties Custodian Board
DTA:	Double Taxation Agreement
DTL	Domestic Tax Laws
DW:	Durbin-Watson
EAC:	East African Community
EAC-DTA:	East African Community Double Taxation Agreement
EACMA:	East African Customs Management Act
ELGS:	Export-Led Growth Strategy
ERP	Economic Recovery Program

EU:	European Union
EWD	Economic War Declaration
FDI:	Foreign Direct Investment
FGT:	Foster-Greer-Thorbeke
FHHIPE:	Firm-Home-Host-IPE
FIPA:	Foreign Investment (Protection) Act
FPE:	Final Prediction Error
FTA:	Free Trade Area
GATS:	Trade in Services Agreement
GATT:	General Agreement on Trade and Tariffs
GDP:	Gross Domestic Product
GDPGR:	Gross Domestic Product Growth Rate
GE:	Government Expenditure
GNDI:	Gross National Disposable Income
GOU:	Government of Uganda
GVC:	Global Value Chain
HCA:	Head Count Approach
HDM	Harrod-Domer Model
HIPC	Highly Indebted Poor Country
H-O:	Hecksher-Ohlin
HQ:	Hannan-Quinn
IBEAC:	Imperial British East Africa Company
ICSID:	International Centre for the Settlement of Investment Disputes
ICT:	Information Communication Technology
ILO:	International Labour Organization
IMF:	International Monetary Fund
IOT:	Industrial Organisation Theory
IPE:	International Political Economy
IPI:	International Portfolio Investment
ISS:	Import Substitution Strategy
IV:	Instrument Variable
JB:	Jarque-Bera
JML	Johansen Maximum Likelihood
KPSS:	Kwiatkowski, Phillips, Schmidt and Shin

KSW	Kakira Sugar Works
KY	Kabaka Yeka
LF:	Labour Force
LFP:	Labour Force Participation
LFPR:	Labour Force Participation Rate
LI:	Laspeyres Price Index
LM:	Langrange Multiplier
LR:	Likelihood Ratio
MCPs:	Micro Community Projects
MFN:	Most Favoured Nation
MFPED:	Ministry of Finance Planning and Economic Development
MFS:	Money Financial Services
MGLSD:	Ministry of Gender, Labour and Social Development
MIGA:	Multilateral Investment Guarantee Agency
MMA:	Mobile Money Agent
MMOs:	Mobile Money Operators
MNE:	Multi-National Enterprise
MP	Money Payment
MPK:	Marginal Product of Capital
MRW:	Mankiw, Romer and Weil
MTWA:	Ministry of Tourism, Wildlife and Antiquities
MV	Money Velocity
NGT:	New Growth Theory
NLLS/ARMA:	Non-Linear Least Square/Autoregressive Moving Average
NOs:	Network Operators
NRM:	National Resistance Movement
NT:	National Treatment
NTEs:	Non-Traditional Exports
NWSC	National Water and Sewerage Corporation
OECD:	Organization of Economic Cooperation and Development
OLS:	Ordinary Least Square
OSC:	One-Stop-Centre
PAYE:	Pay as You Earn
PEAP	Poverty Eradication Action Plan

PGA:	Poverty Gap Approach
PGI:	Poverty Gap Index
PIT:	Portfolio Investment Theory
PLC:	Product Life Cycle
PP:	Phillips-Perron
PSIS:	Private-Sector Investment Surveys
RMSE:	Root Mean-Square Error
RSE:	Rural Sector Employment
RTA:	Regional Trade Agreement
SADC:	South Africa Development Community
SAGE:	Social Assistance Grants for Empowerment
SAP	Structural Adjustment Program
SCOUL	Sugar Corporation of Uganda Limited
SIC:	Schwarz Information Criterion
SMEs:	Small and Medium Enterprises
SOE:	State Owned Enterprise
SQP:	Squared Poverty Gap
TEs:	Traditional Exports
TFP:	Total Factor Productivity
TOT:	Terms of Trade
UBOS:	Uganda Bureau of Statistics
UCB:	Uganda Commercial Bank
UCSB:	Uganda Credit and Savings Bank
UCTAD:	United Nations Conference on Trade and Development
UDC:	Uganda Development Corporation
UEPB:	Uganda Export Promotion Board
UIA:	Uganda Investment Authority
UK:	United Kingdom
UNBS:	Uganda National Bureau of Standards
UNCTAD:	United Nations on Trade and Development
UNLA	Uganda National Liberation Army
UNLF	Uganda National Liberation Front
UNFPA	United Nations Population Fund
UPC:	Uganda Peoples' Congress

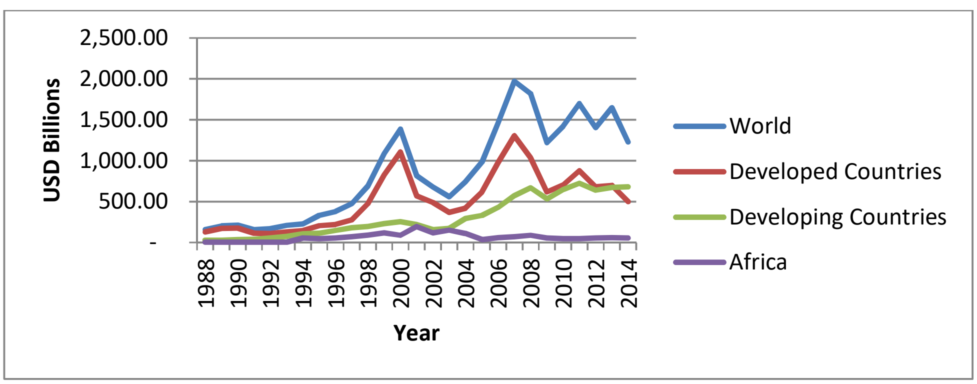
UPE:	Universal Primary Education
UR:	Uganda Railway
URA:	Uganda Revenue Authority
URSB:	Uganda Registration Services Bureau
US:	United States
USA:	United States of America
USD:	United States Dollars
USE:	Urban Sector Employment
USSE:	Universal Secondary School Education
UTB:	Uganda Tourist Board
UWA:	Uganda Wildlife Authority
UWIR	UNCTAD World Investment Reports
VAR:	Vector Autoregressive
VAT:	Value Added Tax
VCP:	Vicious Circle of Poverty
VECM:	Vector Error Correction Mechanism
WDI	World Bank Development Indicators
WDP:	Worthington Development Plan
WHT:	Withholding Tax
WIPO:	World Intellectual Property Organization
WOEs:	Wholly Owned Enterprises
WTO:	World Trade Organization

Chapter 1: Background, Objectives and Thesis Structure

1.1 Background

Economic growth, employment and poverty reduction are key concerns for nations across the globe. The need to increase economic growth and create jobs as a means of reducing poverty is even more crucial for developing countries. For developing countries, poverty deprives communities of basic human needs such as food, shelter and clothing. Governments are constantly devising ways of reducing poverty in their countries, such as through increasing domestic revenue and donor support. However, least developed countries such as Uganda are locked in a double constraint. First, they have low domestic revenue and donor financial support for infrastructure and social service delivery. Second, they have low private-sector capital and investment capacity due to poverty. In this respect, foreign direct investment (FDI) becomes an important source of private finance (Chea 2011; Sy & Rakotondrazaka 2015; UNCTAD 2015). Arising from the role FDI plays in host nations, global FDI inflows increased from United States Dollars (USD) 158 billion in 1988 to USD 1,228 billion in 2014, as indicated in Figure 1.1.

Figure 1.1 Global FDI inflows 1988–2014 (USD billions)



Source: UNCTAD: World Investment Reports (UWIR) 1988-2014

Figure 1.1 indicates that though FDI inflows have concentrated in developed countries, the importance of FDI inflows to developing countries as private capital is undeniable. FDI inflows[1] into developed countries increased from USD 129 billion in 1988 to USD 499

[1] See Appendix 1.1 for more detail

billion in 2014. During the same period, FDI inflows into developing countries rose from USD 30 billion to USD 681 billion in 2014. Regarding Africa, FDI increased from USD 4.80 billion to USD 54 billion during the period 1988-2014. Also, FDI inflows are increasing in developing countries but decreasing to some degree in developed countries.

To attract FDI, developing countries have established pro-investment policies that help firms to open subsidiaries in all parts of the world with relative ease. In this regard, policy makers in developing countries such as Uganda attract FDI to accelerate economic growth, job creation and poverty reduction. This is based on the premise that FDI is a way of obtaining capital and technology that is not available in the host country (Olusanya 2013).

Efforts to transform Uganda's economy can be traced to 1900, during the colonial times. The British Government provided grants that were used to transform the country from an agrarian society. After Independence in 1962, economic transformation became the responsibility of the Government of Uganda (GOU). To improve the living standards of Ugandans, the GOU embarked on economic reforms to attract FDI to enhance economic growth, increase employment and reduce poverty. Efforts to attract FDI to Uganda began soon after Independence, through the enactment of the Foreign Investment (Protection) Act (FIPA) of 1964. These policies culminated into the signing of the Uganda–India Trade Agreement, which allowed Indians to establish business enterprises in Uganda. World Bank development indicators revealed that Gross Domestic Product Growth Rate (GDPGR) increased from 4.1% per annum in 1962 to 7.79% per annum in 1970. Meanwhile, Gross Domestic Product (GDP) per capita increased from USD 62.02 to USD 133.40 during the same period.

Nevertheless, with a military coup in 1971 and the eventual expulsion of Indians under the 1972 Decree, followed by international sanctions, earlier efforts to attract FDI became ineffective. GDPGR declined to -2% per annum and further fell to -11% in 1979. During the same period, the GDP per capita growth rate declined from 4.56% per annum to -14.23% per annum. After the overthrow of President Amin in 1979, to rescue Uganda from the economic and social doldrums, new initiatives led by the International Monetary Fund (IMF) and World Bank were introduced (Kuteesa et al. 2006; Okidi 2000; Okidi et al. 2005; Reniers 2011). Such initiatives included the establishment of the UIA, floating of the Ugandan Shilling and rationalisation of tax structures aimed at attracting FDI. Since the reforms, FDI inflow increased from USD 30 million in 1985 to USD 1,146.13 million in 2014.

Despite Uganda's increasing FDI inflow since the reforms in early 1980s, there have been few studies on the impact of FDI on economic growth, employment and poverty reduction. In the global context, most studies have concentrated on providing evidence of the determinants and contribution of FDI on economic growth in countries such as Uganda, Nigeria and in the countries of the Association of South East Asian Nations (ASEAN). The first of these kind of studies on Uganda were by Obwona (1996, 1998, 2001), and were on FDI determinants and the impact on Uganda's economic growth. In all studies, the focus was on the period 1981–1995, and used mixed methods. All of these studies indicated a positive relationship between FDI and economic growth. However, they contain flaws in the measurements used, and the period of focus should be updated. Other studies—such as those by Riddervold (2011), the Ministry of Finance Planning and Economic Development (MFPED) and annual Private-Sector Investment Surveys (PSIS)—concentrate largely on trends of FDI inflows and general issues of investment in Uganda. Even in studies of developed and developing countries in the ASEAN region and Latin America—that are more proportionately represented in the empirical research—pay little attention to the subject of this study. Few studies have explored the impact of FDI on economic growth, employment and poverty in Uganda.

In Obwona's studies aforementioned, mixed methods were used, which employed both primary and secondary sources of data. Primary data was collected using a survey based on face-to-face interviews/discussion, and a structured questionnaire covering the sources of interest and first contact points in Uganda; attitudes about investment incentives; problems operating businesses in Uganda; recent investment activities; planned future operations; and investors' attitudes towards government regulations and agencies. In all of these studies, GDPGR (dependent variable) was used as a proxy for economic growth, while independent variables were FDI, domestic savings, other capital flows, exchange rate and foreign aid. In the Obwona (1996) study, an OLS linear regression approach was adopted. Having noted that the simultaneity problem affected his own study, in subsequent studies Obwona (1998, 2001) adopted a two-stage least square (2SLS) method. He used a small sample size of less than 30 years for his 2SLS approach, to solve the simultaneity problem. However, using small sample sizes can violate neutrality and minimum variance requirement for a good estimator (Gujarati 2003). Second, time-series secondary data linear OLS based regression methods are subject to spurious regression due to non-stationarity and inflated R-squared and t-score values. In these studies (Obwona 1996, 1998, 2001), unit root tests were not conducted. Therefore, they contain measurement errors and the findings are not likely to be valid. Also, Kiiza (2007) adopted an OLS approach for model estimation, similar to Obwona's first study (1996). Kiiza's study (2007) also suffers similar problems to Obwona's studies (1996, 1998, 2001).

1.2 The Issue and Definition of the Problem

Although Uganda's FDI inflows have significantly increased since 1985, some observations are worth mentioning. First, FDI has positive effects on the host economy by accelerating economic growth, generating employment and reducing poverty in the long-run. However, in 2010, out of a total population of 33 million, the insecure non-poor[2] were about 13 million, representing 40% of the total population (MFPED 2012). Second, empirical findings suggest contrasting findings about the contribution of FDI to host economies, especially in developing countries. The main reasons for contrasting results include total factor productivity, explained by the Solow-Swan Model and other factors explained by the Malign Model, such as the absorptive capacity of the host nation, crowding out local firms and capital flight, especially in regard to market-seeking FDI. Whereas countries expect a positive contribution to their economies, in some instances a negative relationship has been noted. For example, Attari, Kamal and Attaria (2011) found a causal link between FDI and economic growth in the Pakistani economy, as did Athukorala (2003) on the impact of FDI on Sri Lanka's economic growth. Conversely, Mucuk and Demirsel's (2013) study on the effects of FDI on employment in seven developing countries revealed contrasting results. FDI increased unemployment in Turkey and Argentina but reduced it in Thailand. Further, FDI was positively related to employment in the long-run but not in the short-run. As previously indicated, knowledge on the impact of FDI on economic growth, employment and poverty in Uganda is limited, so the key question that this study answers is: what is the impact of FDI on economic growth, employment and poverty in Uganda?

Previous studies (Obwona 1996, 1998, 2001; Kiiza 2007) focused on the determinants of FDI and its effects on economic growth in Uganda. As admitted by Obwona (1998, 2001), these studies contain measurement inadequacies, and Kiiza's (2007) has similar errors. Additionally, no econometric study has been conducted specifically on Uganda in regard to the impact of FDI on economic growth since 2007. Therefore, this study used the latest econometric methodology to measure the impact of FDI on economic growth in Uganda.

2 In Uganda, 'insecure non-poor' refers to Ugandans who may not be poor but who are vulnerable, and risk sinking rapidly into poverty if they lose their source of income.

Uganda's population is comprised of 60% youths[3]. Annually there are about 700,000 new entrants from higher institutions into the labour market, while net job creation is only 10% (MFPED 2013). Unemployment among school leavers is about 90%. It would be expected that FDI projects would have created a significant number of jobs for job seekers, especially youths, who graduated from higher institutions of learning, yet there is no evidence from MFPED to indicate that the 10% of jobs created in Uganda are due to FDI projects. In Uganda it is often assumed that as economic growth occurs automatically due to FDI, job creation and poverty reduction accrues from FDI-related projects. Two specific questions arose that require answers: 1) To what degree has FDI contributed to employment in Uganda? 2) To what extent has FDI led to poverty reduction in Uganda? These questions created the need for this a country-specific study that establishes the impact of FDI on economic growth, employment and poverty reduction in Uganda.

1.3 Contribution to Knowledge

First, this study increases knowledge of the impact of FDI on economic growth, employment and poverty in Uganda, a developing country. Second, no econometric study has examined the role of FDI in Uganda since 2007. Therefore, this research as pioneer creates a new quantitative record of FDI and its contribution to Uganda's economy since 2007 (although this study covers the period 1981–2013). Third, this study adds to knowledge and theory by bringing four variables together into one conceptual framework: FDI (and its impact), economic growth, employment and poverty. Finally, the previously mentioned studies adopted a linear regression model specification approach. As a departure from the previous studies, this study adopts the latest econometric methodology, such as: employing Vector Autoregressive (VAR) through Vector Error Correction Mechanism (VECM) procedure, using new variables and developing a multi-equation system model specification approach.

1.3.1 Statement of Significance

Developed countries, such as Britain, and newly industrialised countries like Hong Kong, Singapore, Korea, Taiwan and Botswana, are often considered to have succeeded in attaining high levels of economic growth by attracting FDI. These countries experienced a rapid rate of growth through FDI, and Uganda needs to achieve higher levels of economic growth and employment generation in order to reduce poverty and to progress from a least-developed,

[3] Youths in Uganda are comprised of the population within the ages 14-30 years

highly indebted poor country to a middle-income country. The findings of this research will be of significance to policy makers, investors, communities and academics in Uganda. Policy makers in the MFPED and the National Planning Authority in particular will find the policy implications of this thesis useful in formulating policies for both domestic and foreign investors. If FDI has a positive impact on economic growth, employment and poverty reduction, policy makers should be encouraged to develop relevant and effective policies to attract FDI into strategic industries that benefit communities and help the unemployed find jobs. Through this study, effective pro-investment policies will enable Uganda to become a more favourable destination for FDI and accelerate economic growth, employment and poverty reduction in Uganda.

The policies will benefit both foreign and local investors, as well as communities. Local investors will benefit through entrepreneurial development arising from FDI spill-over effects such as technology transfer, new skills and know-how, which will facilitate the establishment of new projects. The unemployed, especially youths, will either find jobs in FDI-related projects or in projects established by local entrepreneurs, thus accelerating economic growth and alleviating the unemployment crisis that Uganda faces. In the long-run, income and welfare will increase, thus enabling communities—especially the rural and urban poor—to move out of poverty. Finally, this research will add to knowledge through its empirical quantitative perspective that focuses on four variables: FDI and its impact on economic growth, employment and poverty in Uganda.

1.3.2 The Knowledge Gap

FDI as a source of physical capital is an important tool for investment and production, and spurs a nation's economic growth, thus leading to employment generation and poverty reduction. FDI would be the main source of capital for developing countries, including Uganda, which are without well-developed capital markets. For GDP to increase, investments have to increase, especially in the manufacturing sector and agriculture, which is the backbone of developing countries. As FDI inflows increase in a nation, GDP, market size and consumption increase, as does employment and poverty reduction in the long-run.

Since Independence in 1962, Uganda—like other developing countries—joined the race to attract FDI inflows. After enacting policies such as the reforms that led to the establishment of the UIA in 1991, and perhaps due to macroeconomic stability and the establishment of policies that create an environment favourable to investment, Uganda has successfully become a leading favourable FDI destination in East Africa.

Nevertheless, there is little or no knowledge about the impact of FDI on economic growth, employment and poverty, especially in Uganda. Therefore, this research arose because of a gap in empirical work on the extent and impact of FDI on economic growth, employment and poverty in Uganda. For decades, FDI has been recognised as a tool for economic growth, employment and poverty reduction. Considering the reforms and accelerated FDI inflow increases, the milestones achieved could have had large effects upon economic growth, employment and poverty in Uganda. Even if Uganda was a prosperous nation, a study would be necessary to establish the impact of FDI on economic growth, employment and poverty. Currently, based on PSIS surveys and a few previous studies that concentrated on a causal relationship between FDI and economic growth, it is assumed that foreign investment is positively related to the economy, as well as employment and poverty. Therefore, as the impact of FDI on economic growth, employment and poverty is often assumed to be positively related, with no empirical justification, there is a need to test the hypothesis with this study's key questions:

- What is the impact of FDI on economic growth in Uganda?
- To what degree has FDI contributed to employment in Uganda?
- To what extent has FDI led to poverty reduction in Uganda?

1.4 Aims of the Study

The main aim of this research is to investigate the impact of FDI on economic growth, employment and poverty in Uganda. The related specific aims are:

- to examine the impact of FDI on Uganda's economic growth;
- to assess the degree to which FDI has contributed to employment in Uganda; and
- to examine the extent to which FDI has led to poverty reduction in Uganda.

The general testable hypotheses are:

- FDI inflows positively and significantly affect Uganda's economic growth.
- FDI inflows positively and significantly contribute to employment creation in Uganda.

- FDI inflows positively and significantly contribute to the reduction of poverty in Uganda.

1.5 Data and Methodology

This study employs Uganda's annual time series on each of the variables: economic growth, employment, poverty, tourism, FDI, inflation openness and human capital. This study covers the period 1985–2014, and the main data sources were the World Bank Development Indicators (WDI) Database and the Uganda Bureau of Statistics (UBOS). Other data sources included the United Nations on Trade and Development (UNCTAD) database, UNCTAD World Investment Reports (UWIR), IMF, Bank of Uganda and UIA.

Unit root tests employed the Augmented Dickey-Fuller (ADF) approach (Song & Witt 2000). The ADF method is validated by the Phillips-Perron (1988) and Kwiatkowsiki-Phillips-Schmidt-Shin (1992) approach. During the study, a number of simulations were conducted to establish the impact of FDI and other explanatory variables on Uganda's economic growth, employment and poverty reduction. First, to test a long-run relationship among variables, this study employs the cointegration approach, based on Johansen's Maximum Likelihood Method multivariate cointegration test, developed by Johansen (1988, 1991, 1995) and Johansen and Juselius (1990). Second, to examine the causal link variables, the Granger Causality approach was employed, developed by (Granger 1969). Following this, we conducted the Pairwise Granger causality tests, to understand the existence of endogeneity and non-causality or causality between the variables studied. Third, following Song and Witt (2000) to capture the short-run and long-run relationships between variables, the study employs VAR through VECM procedure. This approach allows for the investigation of the long-run relationships between variables in the equilibrium, including the short-run correction from the variable to the equilibrium. Also following this approach, the study simulated ex-ante forecasting, where impulse response and variance decomposition covered a period of 10 years. Finally, to solve the simultaneity problem, following VECM the study first developed a systems simultaneous equation. As the simultaneity issue had been solved, and having applied all endogenous variables to all equations, we estimated the system employing OLS. The system was validated. Later, as it is not possible to validate each equation and also conduct ex-post analysis under OLS, we employed the Non-Linear Least Square/Autoregressive Moving Average (Non- Linear Least Squares (NLLS)/ARMA), adopting the Gauss-Newton/Marquardt steps method. Each equation has been validated by testing for stability, serial correlation, heteroscedasticity and normality.

1.6 Thesis Outline

This thesis is comprised of 11 chapters. Chapter Two presents an overview of Uganda's political, governmental and economic history. It examines the transition of the country's economy since Independence, in terms of broad economic indicators and its composition. The chapter provides an account of the country's economy since the adoption of economic reforms in early 1980s, outlining trends in the growth of Uganda's socioeconomic indicators. Following the economic reforms, the country started to experience accelerated economic growth, employment and poverty because the GOU introduced fiscal and commercial policies, such as controlling government expenditure (GE), inflation and adopting openness as a policy to stimulate international trade and investment. Following these initiatives tourism has become the single largest foreign exchange-earning commodity as an export for Uganda.

Chapter Three discusses FDI inflows into Uganda by first indicating the historical background of foreign investments into the country, and examining FDI nationalisation and FDI performance after the reforms, as well as the regulatory framework that provides a pro-investment environment. Second, the chapter provides an account of FDI inflows since the reforms, and explains the regulatory framework. Before the reforms, the chapter explains that FDI inflows became negative due to the political and economic instability exacerbated by international sanctions between 1972 and 1979. Regarding the regulatory framework, the chapter explains that Uganda is signatory to a number of international, regional and bilateral agreements, such as the World Trade Organization (WTO).

Chapter Four is divided into three sections. The first includes the definitions used in this study, followed by a historical background to the FDI phenomena. Later, the chapter discusses FDI theories in two broad sections: market-based theory and international political economy theories. Since this study examines the impact of FDI on poverty in Uganda, the last part of this chapter explains the economic importance of FDI on host nations. Based on Uganda's experience and empirical findings, the chapter identifies what is termed the *'frog-leap'* theory, explains FDI in the context of Uganda as a developing nation. This is due to the Firm-home-host-international political economic factors that play a greater role on FDI inflows to Uganda.

Chapter Five is concerned with modelling economic growth, employment and poverty. The chapter begins be explaining the background to economic growth, focusing on the Solow-Swan Model, Mankiw, Romer and Weil (MRW) model and the New Growth Theory (NGT). The chapter explains that considering these theories, the Augmented Solow-Swan Model (ASSM) is a better theory for explaining economic growth, employment and poverty. This is because by augmenting the original Solow-Swan Model, the MRW Model and the NGT are incorporated into one model. The study finds that ASSM explains that innovations are a tool for increasing economic growth, employment and poverty reduction in the long-run. However, the theory indicates that this is subject to TFP and a nation's absorption capacity.

Chapter Six concerns modelling FDI and explanatory variables as a means of establishing the approaches that can be employed to measure their effects on the dependent variables (economic growth, employment and poverty, based on the Solow-Swan Model). The other explanatory variables include: tourism, openness, GE, inflation, human capital, labour force (LF), telecommunication and civil war. The study concludes that first; FDI and tourism are foreign flows into developing countries such as Uganda, which supplement a nation's private-sector investment gap. Second, the study explains that FDI, tourism, human capital and LF are factor inputs. Third, the study finds that following the Solow-Swan Model explains that these factor inputs depend on increasing TFP so as to benefit a nation positively. Fourth, the study finds that telecommunication is an innovation in the Solow-Swan Model, and as such is a pro-poor technology for a developing nation such as Uganda. Finally, the chapter finds that openness and inflation are innovations in the Solow-Swan Model.

Chapter Seven begins by presenting the theoretical framework and the scope of the study, sources of data and by defining the variables and their measurement approaches. This is followed by an explanation of the procedure through which the study was conducted; that is, empirical analysis measuring the impact of FDI and explanatory variables on Uganda's economic growth, employment and poverty. The procedure was comprised of different stages that represent independent chapters. The first involved testing the time-series properties of the variables, which included explaining approaches such as the preliminary investigation of the relationship among variables, correlation analysis, unit root testing and endogeneity analysis simulation methods. The second procedure presented the approaches adopted to measure the short-run and long-run relationships among the variables, including ex-ante forecasting, simultaneous equation specification and validation approaches. The third procedure involved simultaneous equation simulation methods, diagnostic approaches, results presentation and interpretation, as well as Granger Causality methods. After these simulations, the findings and conclusions are presented as a summary of the chapters.

Chapter Eight involves testing the time-series properties. First, all series are transformed into logarithmic form, followed by constricting graphs as a means of deepening the understanding of the relationship among variables. Later, correlation analysis, trend analysis and endogeneity tests are conducted, followed by unit root, employing ADF, Phillips-Perron (PP) and the Kwiatkowsiki-Phillips-Schmidt-Shin (KPSS) tests. According to the findings, the series are non-stationary at level but stationary at first difference.

Chapter Nine estimates the short-run and long-run relationship among the cointegrating vectors employing Johansen's Maximum Likelihood (JML) Method. To capture a short-run relationship among the series, the study first establishes a simultaneous equation. Using VAR, which explicitly uses JML Method through the VECM procedure, short-run relationships are captured, employing the F-statistics or Wald Chi-square test. Based on the same approach, ex-ante forecasting is conducted through impulse response and variance decomposition using the Monte Carlo procedure via the Cholesky-dof adjusted ordering. The study finds that short-run and long-run relationships exist among the series.

Chapter Ten estimates the impact of FDI and other explanatory variables on economic growth, employment and poverty in Uganda. The study first examines causality tests among interrelated variables. To capture these interrelationships, the study employs VECM, a procedure that opens an avenue through which causality can be tested among variables. The second section involves estimating the simultaneous equation developed in Chapter Nine, using OLS.

Chapter Eleven summarises the study, provides its conclusions, limitations as well as some suggestions for areas of future study. The key findings are fourfold. First, FDI significantly contributes to Uganda's economic growth, employment and poverty reduction. Second, tourism significantly contributes to Uganda's economic growth, poverty alleviation and employment through spill-over effects. Third, Uganda's local resources, including labour and human capital, are important to the nation's economic growth and poverty reduction. Fourth, the coefficients for factor inputs included in the study being FDI, and human capital are negative, meaning that declining TFP is explained by the Solow-Swan Model.

Chapter 2: Uganda: The Economy and Economic Reforms

2.1 Introduction

This chapter provides a general overview of Uganda, outlining the prominent features of the country's political background, governance and economy. The first part explains Uganda's history, including colonisation and the economy before Independence in 1962. The second part examines Uganda after Independence, before and after the adoption of economic reforms. The third presents an account of Uganda's economy, particularly economic growth, employment and poverty after the adoption of economic reforms between 1985 and 2014.

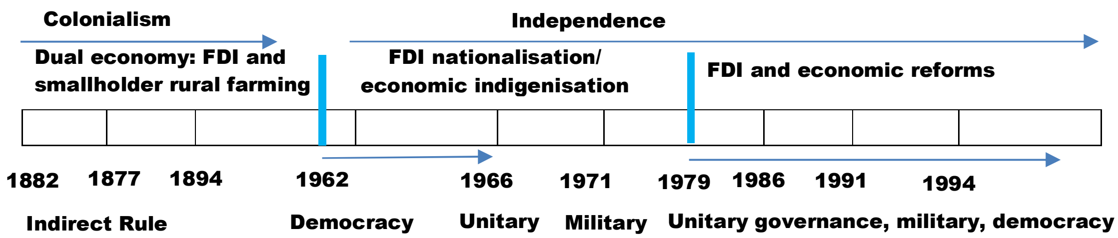
2.2 Overview of Uganda

Uganda is a least-developed highly indebted poor country (HIPC) with a GDP of about USD 27,462 million (UBOS 2014). It is located in East Africa, with an area of 241,038 square kilometres including water where the land area covers 197,323 square kilometres, and has a population 34.85 million people (Population Secretariat 2012; UBOS 2016). Uganda borders Kenya in the east, Tanzania and Rwanda in the south, the Democratic Republic of Congo in the west and South Sudan in the north.

Figure 2.1 Map of Uganda

Before Independence in 1962, Uganda was a British Protectorate. The different forms of economic, political and governance systems since colonialism are illustrated Figure 2.2.

Figure 2.2: Uganda's political, governance and economic spectrum, 1882–1994



The spectrum is marked with two main dimensions: colonialism and Independence, after 1962. During colonialism, the British Government adopted indirect rule where Imperial British East Africa Company (IBEAC) administered Uganda until independence in 1962. After Independence Uganda has been politically governed through different systems summarised in Table 2.1.

Table 2.1: Systems of governance in Uganda, 1962 until today

Years	Governance system	Party	Leader
1962–66	Multiparty democracy	Uganda Peoples' Congress (UPC)	Sir Edward Mutesa
1966–71	Unitary	None	Dr Apollo Milton Obote
1971–79	Military	None (Decree)	General Idi Amin Dada
1979–81	Three unitary governments	None	Dr Y. K. Lule, Binaisa, Paul Muwanga
1979–85	Multiparty	UPC	Dr Appollo Miltion Obote (II)
1985–86	Military	None	General Tito Okello Lutwa
1985–94	Unitary (after the National Resistance Army civil war)	None	General Y. K. Museveni
1994–today	Multiparty	National Resistance Movement (NRM)	General Y. K. Museveni

Source: Lwanga-Lunyiigo 1987; Mutibwa 1992; Reniers 2011

Since 1966, Uganda's political landscape has been muddled with hostility, civil wars and *coup d'états*. However, since the promulgation of the GOU 1995 Constitution, Uganda has been governed by a multiparty democracy. Citizens participate in the decision-making process, with elections held at a five-year interval (Konrad-Adenauer-Stiftung 2011). In accordance with the Constitution, there are three arms of government—executive, parliament and judiciary—through which decisions are made and executed. The three arms of power represent the rule of law, the separation of powers, economic freedoms and private-sector participation in the decision-making process.

2.3 Uganda's Economy

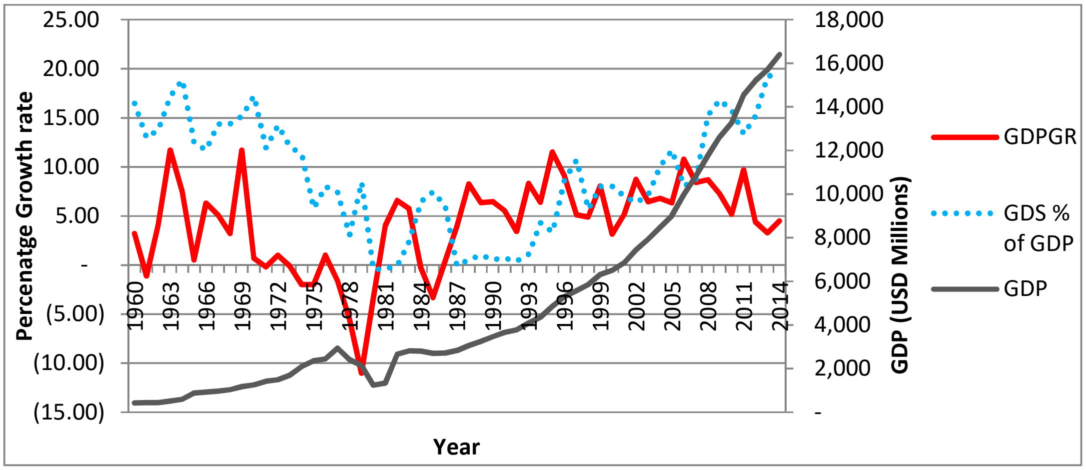
Uganda is a landlocked, least-developed country and is very densely populated, with 174 persons per square kilometre (UBOS 2015). Despite being an HIPC, the country is endowed with abundant natural resources such as fertile soil, a tropical climate with regular rainfall, freshwater fish and mineral deposits. Agriculture is the most important sector of the economy, employing over 70% of the workforce (UBOS 2014). The main cash-crops introduced into Uganda during colonial times include coffee, cotton, tea and tobacco.

Due to Uganda's abundant resources as previously explained, at Independence in 1962, Uganda's future was promising, as it had a strong, young, diversified economy. Through the IBEAC dual economic system and British Government grants the nation had been transformed into a formal cash economy. In addition to large-scale farming, Asians—especially Indians—took up trade. Later, in 1946, Governor Hall appointed Dr E. B. Worthington to review the 1941 Uganda Development Plan (Gershenberg 1972). The Worthington Development Plan (WDP) was launched in December 1946, and covered a ten-year period, 1947–1957. The plan aimed to increase GE and public investment in sectors such as industry, mining and agricultural extension. As such, at independence, Uganda's economy had a strong economic base. It relied upon four main subsistence cash-crops: cotton, coffee, tea and tobacco, with food self-sufficiency. The economy had been established on a young, growing manufacturing and mining sector.

Despite the vibrant economy at Independence, in 1966 the country descended into political and economic instability. This was after Prime Minister Sir Appollo Milton Obote overthrew the democratically elected government of Sir Edward Mutesa though a military coup (Moris 1966). Uganda's bad situation was further exacerbated following the 1971 military coup, led by Idi Amin, which overthrew the unitary government of Obote. Politically, between 1971 and 1979, Uganda experienced over five[4] uprisings and attempted coups (Sejjaaka 2004). The economy dramatically deteriorated following the international sanctions in 1972, and most economic indicators became negative, as Figure 2.3 illustrates.

4 Years of five major uprisings and civil wars in Uganda: 1972, 1974, 1975, 1976 and 1979.

Figure 2.3: Selected economic indicators, 1960–2014



Source: WDI 1960-2014 (Constant market price 2005)

Figure 2.3 demonstrates that as Uganda became more politically chaotic, the economic situation was also unravelling. By 1979, GDPGR had declined to -11% per annum[5]. Gross domestic savings as a percentage of GDP declined from 17.22% in 1963 to -0.43% in 1980. GDP per capita declined from USD 145.86 in 1971 to USD 99.19 in 1980, after Amin's overthrow. During the same period, the age dependency ratio as a percentage of working-age population increased from 98.52% to 100.19%, indicating high unemployment. As such, during the 1970s, Uganda experienced severe macroeconomic imbalances and the country remained poor and ill-governed.

Exiled Ugandans were mobilised by President Julius Nyerere of Tanzania. To bring together Ugandan exiles who had fled Amin's military dictatorship, the Moshi Conference was held. It included 28 different exiled Ugandan groups in late March 1979. At the conference, the Uganda National Liberation Front (UNLF) was formed and led by Professor Yusufu Kironde Lule. The Uganda National Liberation Army (UNLA)[6] was also created, charged with the responsibility of overthrowing Amin through a civil war. This occurred in 1979. Soon after the war, donor agencies led by the IMF and World Bank encouraged the GOU to adopt economic reforms. These reforms were aimed at rehabilitating the economy and rebuilding the dilapidated physical infrastructure, so as to provide social services.

[5] For more detail, see Annex 2.1

6 The UNLA was led by exiled ex-president Obote, commandeered by his former General Tito Okello Lutwa and Major General David Oyite Ojok; Front for National Salvation (FRONASA) was led by Yoweri Kaguta Museveni; the Save Uganda Movement was led by Akena P'Ojok, William Omaria and Ateker Ejalu; and the Uganda Freedom Union was led by Godfrey Binaisa, Andrew Kayiira and Olara Otunnu.

2.4 Uganda Adopts Economic Reforms

After the overthrow of Amin, the Government, led by Lule, was preoccupied with two critical tasks: political stability and economic recovery. Lule presided over a political grouping that had been hastily formed under the guidance of President Nyerere of Tanzania. Due to the hasty formation of the UNLF and UNLA, Uganda's political situation turned chaotic soon after the overthrow of Amin. Within six years—between April 1979 and January 1986—Uganda had six short-lived regimes (see Table 2.1). The years soon after Amin's overthrow were muddled by political infighting between factions that had come together to form the UNLF and UNLA. Two phases of economic reforms can be identified.

2.4.1 Economic Reforms Phase One: 1979–1985

The vibrant economy that was in the making at Independence was crippled under Amin's military regime. With the closure of borders, there were neither imports nor exports. All industries closed down and consumer goods were scarce. Out of 930 enterprises registered in 1971, only 300 remained in the early 1980s, with an estimated capacity utilisation of just 5% (Livingstone 1998).

After the overthrow of Amin, relative peace returned to Uganda. Rehabilitation of the social and economic infrastructure was a priority. Democracy returned to the country, and in December 1980 elections were held and won by Obote. The elected government inherited an economy with a destroyed infrastructure and industrial base, so they embarked upon economic recovery after a decade of international sanctions. In 1981, the Structural Adjustment Programme (SAP) was adopted, supported by donor agencies led by the IMF and the World Bank (Holmgren et al. 1999; Nyorekwa & Odhiambo 2014). The SAP was comprised of three broad strategies: macroeconomic stability, openness and inviting foreign investors back. By controlling GE, reducing the overall budget deficit and increasing public sector accountability, the intention was to curb corruption.

While the government was encouraging foreign investors, the country became politically insecure again. The Moshi Conference had brought together Ugandan exiled groups with different ideological dispensations and objectives. Soon after the elections in 1980, though relative peace had returned, insurgency started. To this end five insurgent groups (Lindemann

2010)[7] emerged between 1981 and 1985. The situation further deteriorated when Obote was overthrown in a 1985 military coup, led General Tito Okello Lutwa. Later, in turn, the military junta was overthrown by the NRM, led by Museveni. This marked the beginning of the second phase of economic reforms.

2.4.2 Economic Reforms Phase Two: 1986–2014

To accelerate economic growth and reduce poverty, after overthrowing the 1985 military junta, the NRM Government made extensive and sustained economic reforms. These were implemented with support from the IMF and World Bank. The SAP, which had been suspended during the war, was resumed, and the Economic Recovery Program (ERP) was introduced in 1987 (Holmgren et al. 1999; Nyorekwa & Odhiambo 2014; Sejjaaka 2004). In 1997, to implement the ERP, the government introduced the Poverty Eradication Action Plan (PEAP), which had five pillars: Pillar 1: economic management; Pillar 2: enhancing production, competitiveness and income; Pillar 3: security, conflict resolution and disaster management; Pillar- 4 Good governance and Pillar- 5 Human development.

The PEAP aimed to reduce poverty through accelerated economic growth and employment. First, it aimed to streamline fiscal policy reforms through GE efficiency and human capital development. Second, it aimed to control inflation through monetary policy reforms. Third, commercial policies were introduced to increase international trade, communication and tourism and spur private investment. Following these reforms as indicated by Figure 2.3, WDI indicates GDP 2005 constant market price increased from USD 2,708.22 million in 1985 to USD 16,406.24 million in 2014. Meanwhile, GDPGR has been increasing but with wide fluctuations and often declining. For example GDPGR increased from -3.31 percent per annum in 1985 to 11.52 percent per annum in 1995. Since 1995, Uganda has been experiencing declined GDPGR. In particular, from 1995 level GDPGR declined to 3.27 percent per annum in 2013, though increased to 4.51 percent per annum in 2014. However, in general economic and social indicators as indicated under Appendix 2.2 demonstrate that the economy of Uganda has improved during the period 1985-2014. This achievement can be attributed to various macroeconomic reforms adopted by the GOU.

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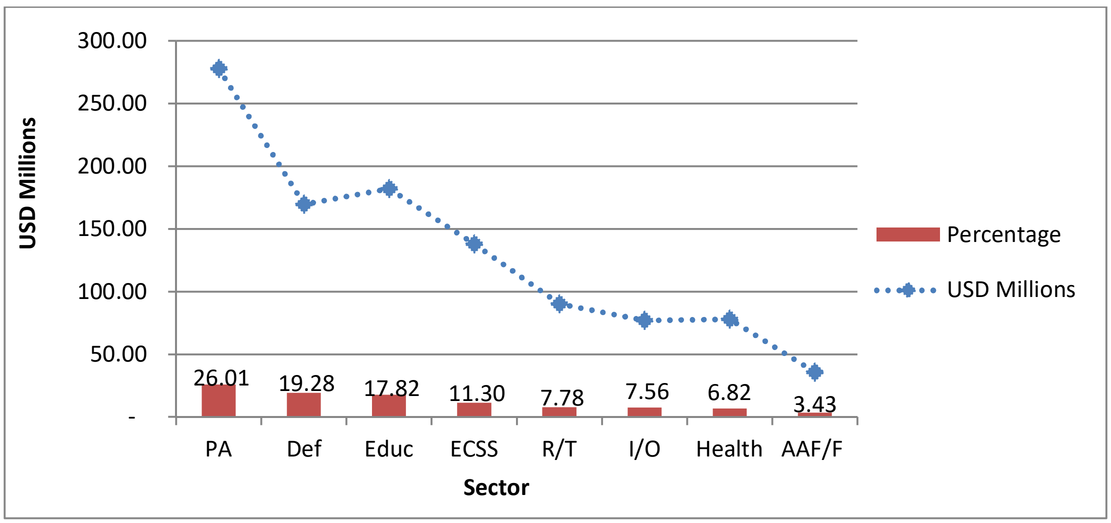
7 These five insurgent groups were the Uganda National Rescue Front, the Former Uganda National Army, the Uganda Freedom Movement, the National Resistance Army and the Federal Democratic Movement.

2.5 Government Expenditure Reforms

Following the SAP and ERP, the GOU implemented fiscal policy reforms in public expenditure management through the Medium-Term Economic Framework (Fan & Zhang 2008; Fölscher 2006). The reforms were aimed at improving efficiency and effective utilisation of public funds, to reduce poverty, improve management and accountability. Fiscal reforms were to improve the transparency in the national budget process and implementing public projects supported by domestic tax revenue and grants. As a result, WDI indicate that GE increased from USD 483.68 million in 1985 to USD 1,794.76 million in 2014.

Figure 2.4: Total government sectoral consumption and percentage distribution per sector, 1985–2014



Source: WDI 1985-2014 (constant market prices 2005); UBOS (Sectoral distribution 1985-2014); own calculations

Note: PA=Public administration; Def=Defence; Educ=Education; ECSS=Economic and social services; R/T=Road and Transport; AAF/F=Agriculture, animals, fisheries and forestry; I/O=Internal order.

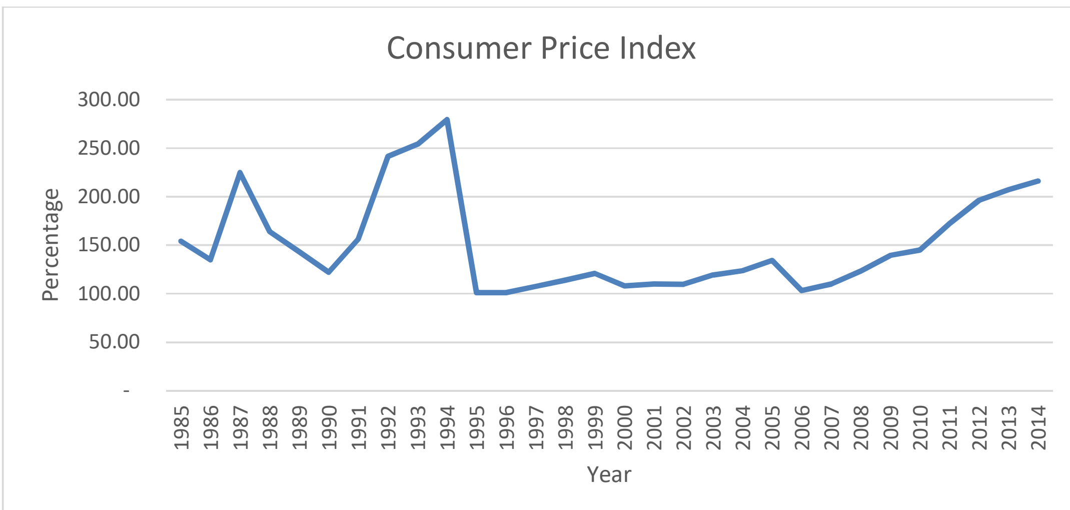
The priorities of the GOU are reflected through the GE sectoral composition. In particular, public administration, defence and education are the main priorities of government. However, as indicated by Appendex-2.3, the GOU has shifted attention to other sectors, such as community and the roads and transport.

2.6 Inflation Control and Economic Reforms

Inflation is a general rise in the level of prices paid for goods and services over time, and usually reported monthly, quarterly and annually. Across the world, inflation is one of the main economic challenges faced by households, because it affects the material living standards of communities, especially the poor in developing countries. Prices for goods and services rise but income remains constant. Inflation denies the basic commodities of life to households, such as food, clothing and housing. In extreme cases, countries experience hyperinflation, which is when prices rise rapidly by 100% or more per annum. Conversely, nations may experience deflationary situations, when prices for goods and services decline. This may lead to a depression.

In the 1970s, Uganda experienced hyperinflation. Inflation was recorded at 216% per annum in 1979 (Bigsten & Kayizzi-Mugerwa 1999). As part of the ERP and PEAP initiatives, inflation started to decline, indicated by the Consumer Price Index (CPI).

Figure 2.5: Trends in Uganda's CPI 1985–2014



Source: WDI, UBOS (1985-2014)

With donor support, CPI started to decline. For example, it went from 154% to 101.10% per annum in 1996. Though CPI started to rise to the current 216% per annum, headline inflation reduced from 157.66% per annum in 1985 to 4.3% per annum in 2014. Despite advances in macroeconomic stability, CPI again increased to 216% per annum in 2014. Economic growth declined while unemployment and poverty increased.

2.6.1 Impact of Inflation on Economic Growth, Employment and Poverty in Uganda

Inflation in Uganda can be attributed to increasing money supply, world energy and food prices. Since inflation leads to price increases, rural poor communities (comprising 80% of the total population in Uganda) are most affected. This is because, first, the share of consumption in total income is larger for consumer goods such as food, soap, salt and cloth. Second, the income for agricultural products and salary earners does not increase in a similar proportion to manufactured products. Thus, increases in price reduce the range of goods available and real incomes to the poor. In turn, savings, future investment and welfare reduce.

Considering the effects of inflation, ERP and PEAP became the avenues through which macroeconomic stability could be achieved in Uganda. Targeting inflation and achieving high economic growth are two fundamental macroeconomic objectives of most economies (Mwanga & Sanday 2013; Kasidi & Mwakanemela 2013). In Uganda, the government uses interest rates to control inflation, often increasing them. However, this means that the cost of borrowing increases while investments reduce. Since inflation affects consumption, production slows due to low purchasing power, and in-turn employment reduces.

2.6.2 Causes of Inflation in Uganda

Despite successes in Uganda's monetary policy, the country continues to experience high and volatile inflation rates (Kabundi 2012; Opolot & Kyeyune 2012).The main causes of inflation in Uganda can be considered both theoretical and empirical, originating from food and transport costs, fiscal and monetary factors, demand and cost factors and international factors.

2.6.2.1 Food and Transport Costs

About 84.23% of Uganda's population lives in rural areas, of which the majority practice subsistence agriculture. Households are concerned with producing food to feed their families, and earn income for basic needs such as clothing and essential commodities. Reliance on subsistence agriculture and life in underdeveloped rural areas creates challenges for Uganda. First, as population increases, so does land fragmentation, while food production decreases. Second, Uganda's farming has remained rain-fed, meaning that harvests remain low, especially during droughts, and are exacerbated by pests and diseases (World Food Program 2013). Due to declining agricultural production, Uganda has become a food-insecure country. Households have two main food sources: markets and subsistence production. The poorest rural households resort to purchasing their food, creating vulnerability to increasing food price rises and food inflation in the country.

Food insecurity in Uganda is mainly attributed to the British colonial agriculture policy, lack of agriculture mechanisation, population growth and political instability (Leliveld et al. 2013). During colonial times, the British did not encourage Ugandans to develop large-scale plantations. Ugandans only practiced subsistence cash-crop farming, and depended on four traditional cash crops: coffee, cotton, tobacco and tea. Alongside cash-crop farming, Ugandans grew enough food crops to feed themselves. Agriculture depended on smallholder subsistence farming, was rain-fed, not mechanised and depended on smallholders. This legacy has continued until today. With population growth of about 3.25% per annum, agriculture output cannot cope with population growth, and Uganda has become food-insecure. In turn, food shortages create pressure on food prices, causing food price inflation.

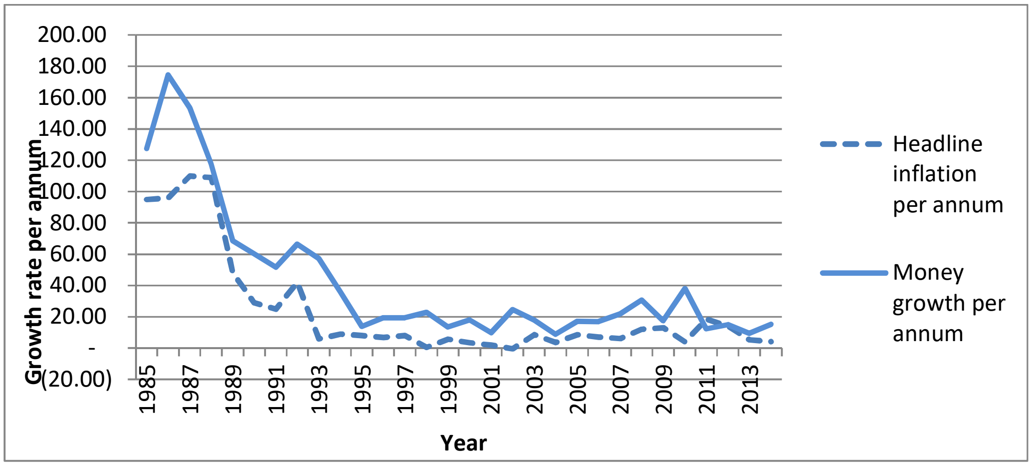
Uganda's increasing food insufficiency is further exacerbated by the poor conditions of the national road network, which has become a major development issue (Barungi 1997; Booth & Golooba-Mutebi 2015; Gollin & Rogerson 2010). The main cause of the poor national road network is the low level of funding for the sector. During the period under study, the Government has spent about USD 3 million per annum covering administration, construction and maintenance in the road sector. Out of Uganda's total land surface of 200,523 square kilometres, only 20,999 kilometres, representing 10.4% is comprised of the government-funded road network (UBOS 2015). The limited paved road network of about 3,795 square kilometres, representing only 1.9% of the national funded road network, worsens the situation. The rest of the road network (about 55,000 square kilometres) is comprised of poorly constructed and unmaintained community roads. Due to the poor feeder road network, people often rely on walking, head loading and bicycle transport. The poor, small roadwork is further worsened by torrential tropical rainfall, which often damages the limited road infrastructure. Consequently, the cost of vehicle maintenance increases due to high demand for bicycle and vehicle spare parts leading to high food prices and food inflation.

2.6.2.2 Fiscal Deficit and Monetary Factors

A nation's budget is the basis for its economic growth, as it contains the infrastructural development and social service programmes reflected by the revenue and expenditure outlay. Before Independence, the British Government provided finances for development and social service delivery. After Independence, financing such programmes became the responsibility of the GOU. However, developing countries such as Uganda have a narrow tax base. To finance government programmes, foreign aid and *seigniorage*[8] are important revenue sources, required to bridge the tax gap. Since *seigniorage* is associated with money expansion, inflation is inevitable in Uganda (Bwire & Nampewo 2014; Kabundi 2012). As money expansion increases, so does inflation.

8 Defined as a government's ability to print money (Quartey 2010).

Figure 2.6: The relationship between annual growth and inflation in Uganda



Source: UBOS and WDI database (1985-2014)

Notes: As money supply increases, so does inflation. In 1985, when the money growth rate was 127.43 per annum, headline inflation was 95%, while CPI averaged 154% during the same period. However, money supply increased to 153.39 per annum in 1987, and headline inflation increased to 110%, triggering CPI, which mostly affects poor households, to rise to 225% per annum. This trend can be noted by the figure that indicates that there is a relationship between money supply and inflation, and more so in the case of Uganda. As the need to finance government deficit creates a pressure to print money, inflation becomes inevitable in Uganda.

Money supply growth rate in 1987 increased sharply increased to 153.39% per annum, and headline inflation increased by 99% per annum. During this time, the increase in money supply was attributed to the need to increase crop finance requirements to subsidise agricultural production. Although the government supplements its budget deficit through money expansion, welfare declines in the long-run, especially among salary earners. This is because wages do not increase in proportion to inflation caused by money expansion in the country. Though money expansion is a major cause of inflation in Uganda, there are other causes, attributed to the demand for goods and services.

2.6.2.3 Demand and Cost Factors

Theoretically, inflation in Uganda can first be attributed to demand and cost factors, leading to demand-pull and cost-push inflation (Opolot & Kyeyune 2012). Demand factors cause demand-pull inflation, whereby aggregate demand exceeds aggregate supply. As the gap between aggregate demand and supply increases, so does inflation. Faced with international sanctions, import of consumer goods became difficult, causing demand-pull inflation. For example, inflation was -11% in 1966, but skyrocketed to 219% per annum in 1979.

Shortages of commodities increase prices for consumer goods. The price for intermediate goods also increases, because cost factors can also cause cost-push inflation, due to a rise in the price of factors of production. As firms are driven by profit, a rise in cost of production leads to increase in prices for goods and services. Cost-push inflation helps producers pass the higher costs of production to consumers through high consumer prices. Higher costs of production can originate from increases in wages, raw materials, imports and indirect taxes, or a reduction in government subsidies (Modigliani & Papademos 1975; Tobin 1975).

2.6.2.4 International Factors

As countries become more integrated, inflation spreads worldwide. When prices rise in major industrialised countries, the effect of inflation spreads to developing countries, and trade relations become vulnerable. When food and fuel prices sharply rose between 2008 and 2011, the effects were transmitted from industrialised nations to developing countries. Meanwhile HIPCs such as Uganda, were generally hit harder than advanced economies. In Uganda during the same period, the CPI rose from 85% per annum to 118.69%. Since then, the CPI has continued to increase, affecting workers and poor households, whose incomes do not rise proportionally. Domestic factors that cause inflation in Uganda are further complicated by international factors, such as world food and energy price shocks. In September 2011, food price inflation stood at 50.4%, while non-food inflation rose to 18.1% (Mugume 2011).

As a net fuel importer, world energy price volatility directly affects prices in Uganda. UBOS measures inflation in Uganda as headline and core. Headline inflation indicates the relative changes in prices of all goods and services in the consumption basket, usually reported monthly, quarterly and annually. Core inflation indicates relative changes in the prices of all goods and services in the expenditure basket, excluding food and energy.[9]

2.7 The Importance of Openness in Uganda’s Economy

Openness is a nation’s outward-oriented domestic and international trade policy, as well as investment through FDI. Openness allows a nation to access international markets, facilitating innovation and technology diffusion as knowledge dissemination (Ramanayake & Lee 2015). For a developing country such as Uganda, openness can enable access to niche markets for exports, and access to cheaper advanced technology not available at home, for the

[9] The main food items excluded are fresh fruits, fresh vegetables, dried vegetables and fresh milk. Energy commodities excluded are tobacco leaves, electricity, petrol, diesel, paraffin, propane gas and metered water.

manufacture of goods. Openness allows a nation to increase domestic production and access cheaper goods, which in turn increases the standard of living. The GOU introduced openness to promote trade and investment as a means of increasing economic growth and employment and reducing poverty. The Export-Led Growth Strategy (ELGS) initiative was devised (Kaberuka, Rwakinanga & Tibesigwa 2014); (Ministry of Trade, Tourism and Industry 2007).[10] To promote exports, by Act of Parliament in 1996 the Uganda Export Promotion Board (UEPB) was established, supervised by the Ministry of Trade, Industry and Cooperatives.

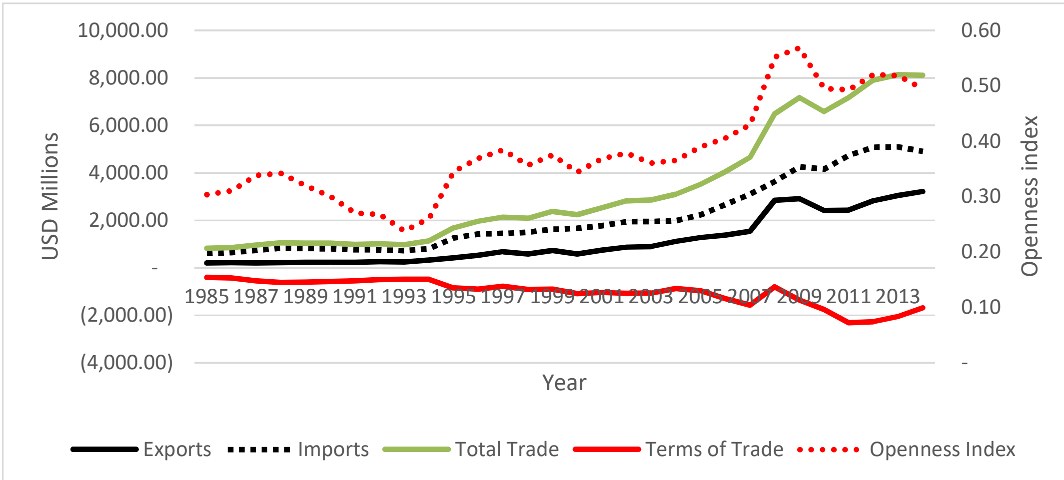
The role of openness in a nation such as Uganda can be reflected through the sources that enhance the growth of GDP per capita, namely capital accumulation and productivity (Babula & Andersen 2008; Selassie 2008). Openness can ease the transfer of international flows from industrialised nations to developing nations. For a developing country such as Uganda, international trade is the immediate channel through which capital—in the form of goods and services, skills, humans and physical capital—can flow. Through international trade, produced goods and services can find a market beyond Uganda. Imports can enable, Uganda-based firms can access technology transfer such as Information Communication Technology (ICT). Through movement of persons, skills can easily be transferred to Uganda through training in Uganda and abroad. Also, Uganda can become a better destination for tourism. FDI can also facilitate capital accumulation, which in turn enhances production and productivity. Trade benefits to Uganda can be indicated through four key aspects: contribution to the current account, tax revenue, production and productivity.

2.7.1 Contribution of Openness to the Current Account

Since adopting openness, Uganda has witnessed remarkable improvement in international trade. Total trade increased from USD 1,012 million in 1985 to USD 12,908 million in 2014 as indicated under Appendix 2.4. During the same period, exports increased from USD 204.6 million to USD 5,219,655 million, while imports increased from USD 528,243 million to USD 7,688,318 million. The openness index increased from 0.29 in 1985 to 0.49 in 2014. However, as illustrated by Figure 2.7, the external balance of trade declined from USD -45 million in 1985 to USD -2,469 million in 2014.

[10] The Ministry of Trade, Tourism and Industry is now called the Ministry of Trade, Industry and Cooperatives.

Figure 2.7: Uganda's international trade trends, 1985–2014



Source: WDI 1985-2014 (Constant market price 2005)

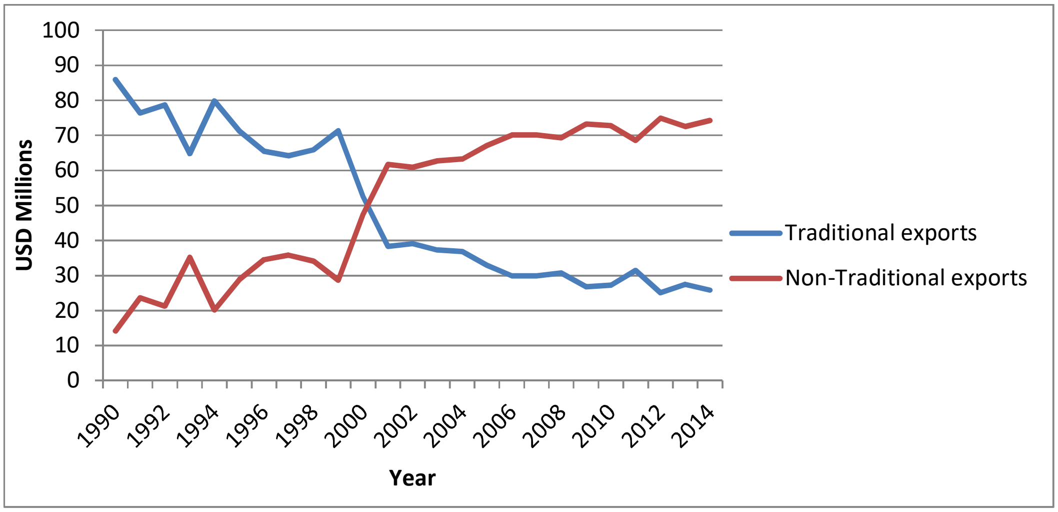
Despite the worsening Terms of Trade (TOT), domestically produced goods have gained market access abroad. Increased imports can be attributed to the need for intermediate goods that are required for rehabilitating critical sectors such as manufacturing. In this way, consumer goods would increase in the country through import substitution.

2.7.2 The Contribution of Openness to Production and Productivity

International trade can enable a nation to specialise in the production of goods and services of comparative advantage. Trade increases commercial activities and investment in a nation through private-sector development (UNCTAD 2014). To achieve accelerated growth through trade, the GOU adopted openness through Pillar 2 of the PEAP. Consequently, Uganda can access finance, technology and services that are necessary to improve agriculture, industry and service productivity.

The sectors that contribute to Uganda's exports are broadly categorised as Traditional Exports (TEs) and Non-Traditional Exports (NTEs). TEs include coffee, cotton, tea and tobacco, which were introduced to Uganda during the early colonial period. NTEs include recent merchandise exports that have gained prominence, such as fish, flowers, manufactured goods and services. Following the reforms, as indicated under Appendix 2.5, Uganda's export structure has shifted from over-dependence on TEs, so the prominence of NTEs has increased. This is illustrated by Figure 2.8.

Figure 2.8: The changing structure of Uganda's export sector



Source: UBOS 1990-2014 own calculations (2005 base year)

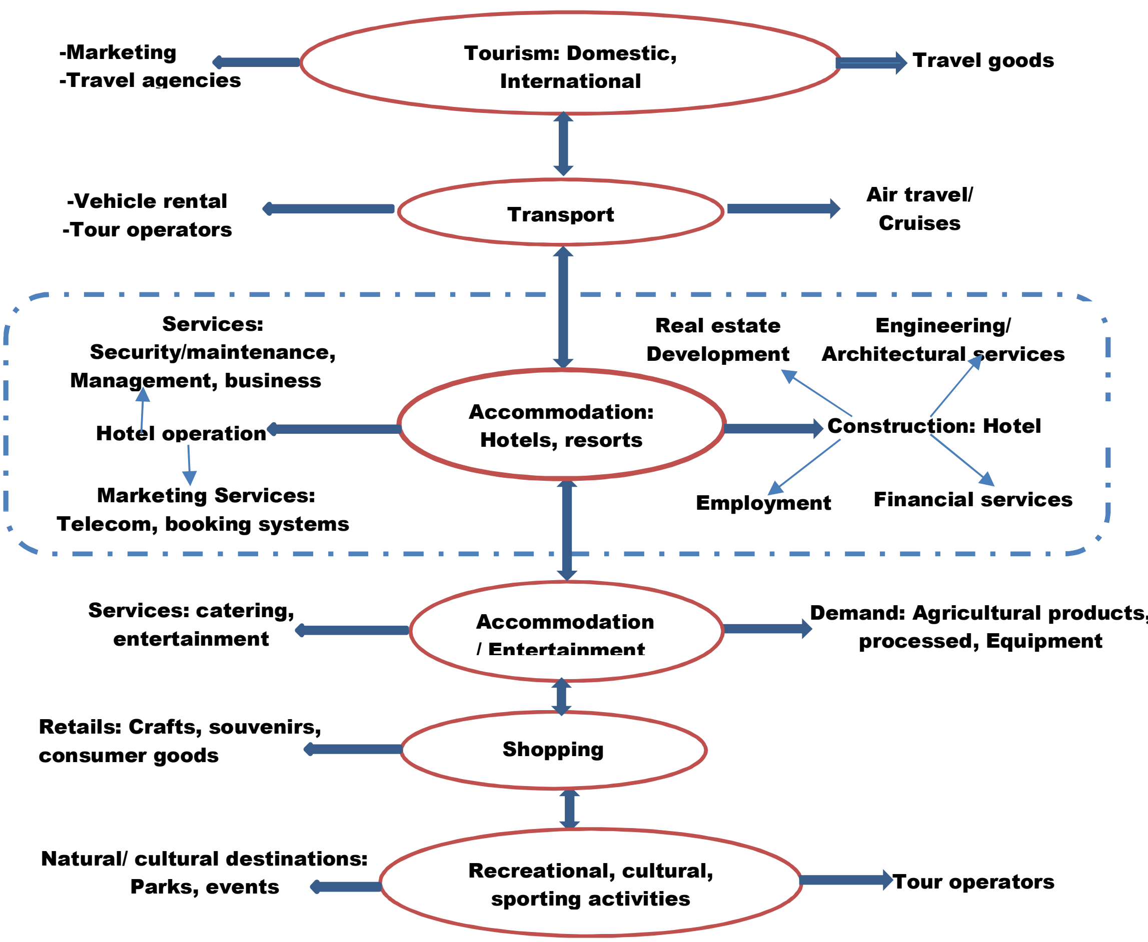
Figure 2.8 explains the changing structure of Uganda's exports from TEs to NTEs. First, as imports increase, products and technologies not produced in Uganda increase. In turn, innovation and productivity has increased in sectors such as agriculture, manufacturing, industry and service delivery, as well as exploration in the mining and oil sector. Second, through imports and exports Uganda's market size has been increasing, as have productivity, market size, economies of scale and GDP.

2.8 The Contribution of Tourism to Uganda's Economy

Tourism is a major source of income for many developing countries, including Uganda. In 1970, tourism was Uganda's second most important export commodity for the country after coffee (Holland, Burian & Dixey 2003). However, in 1980, tourism expenditure accounted for only 1.52% of Uganda's exports after Amin's overthrow in 1979 (World Bank 2000). Following the reforms, the GOU started to devise ways of reviving the tourism sector. By an Act of Parliament in 1994, the Uganda Tourist Board (UTB) was established, to promote tourism in Uganda. Second, in 1996, the Uganda Wildlife Authority (UWA) was established. UWA is responsible for conserving and sustainably managing wildlife. To further promote tourism, in 2012 the Ministry of Tourism, Wildlife and Antiquities (MTWA) was created.

As a member of the WTO, Uganda made commitments under the General Agreement on Trade in Services (GATS) to revive viable sectors such as tourism. Following the GATS commitments, tourists can use any of the four modes of supply to take advantage of the country's tourism potential. First, through cross-border supply (Mode-1) tourists utilize the services of sectors such as banks to book hotel accommodation via telecommunications or mail before the journey. Second, through Consumption abroad (Mode-2), tourists move abroad to obtain a service such as recreation and medical services. Third, considering business in tourism sector, MNEs have established Commercial presence (Mode-3) in various countries by establishing subsidiaries abroad. After establishing subsidies MNES seek the presence of experts in countries of destination (Presence of natural persons[Mode 4]). In this way, tourists are attracted to countries such as Uganda with relative ease by utilizing any of the services provided. As a result, the contribution of tourism can be identified through backward and forward linkages created by integrating Uganda into regional and global value chains (GVCs) (Mwaura & Ssekitoleko 2012; UNCTAD 2013). Following the value chain, the impact of tourism on Uganda can be assessed as demonstrated by Figure 2.9.

Figure 2.9: The Tourism value chain

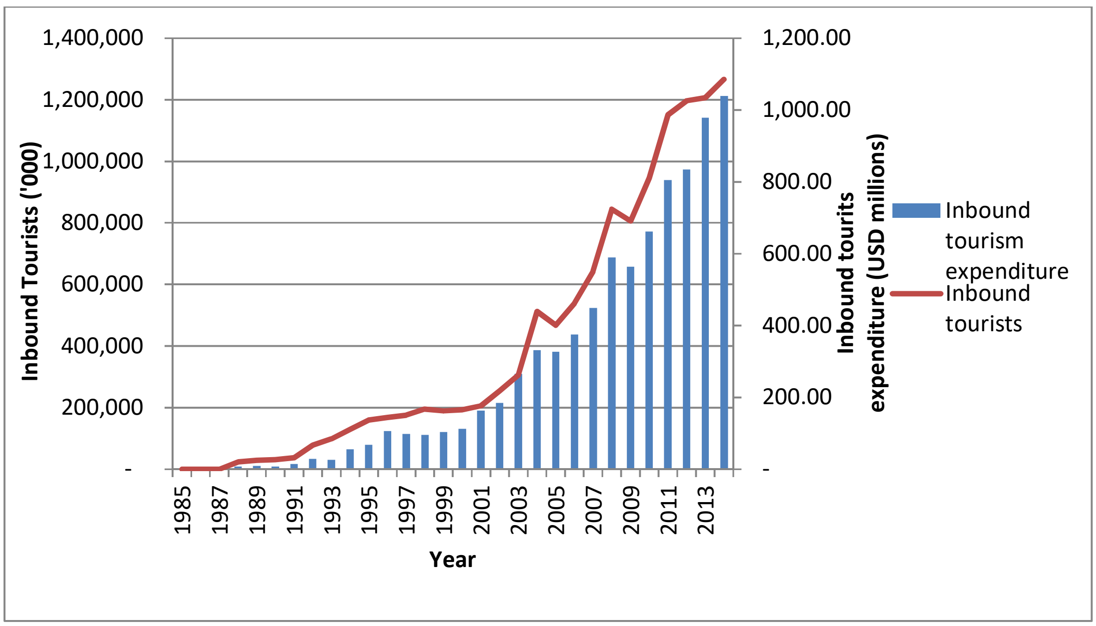


Source: Based on UCTAD (2013)

As indicated through the value chain, the benefits of tourism to a nation are various. As a result, the GOU has endeavoured to provide the necessary avenues for the country to be identified as a better destination for tourists in the region. Arising from these initiatives, inbound tourists and expenditure has increased.

Figure 2.10 indicates that inbound tourists have increased from 27,336 in 1990 to 1.266 million in 2014. Inbound tourist expenditure increased from USD 1.003 million in 1985 to 1,039 million in 2014. The benefits of tourism on Uganda's economic growth, employment and poverty reduction though the value chain can be explained by the importance of tourism on exports, investment and as revenue for firms and government, as well households.

Figure 2.10: The growth of tourism in Uganda, 1985–2014



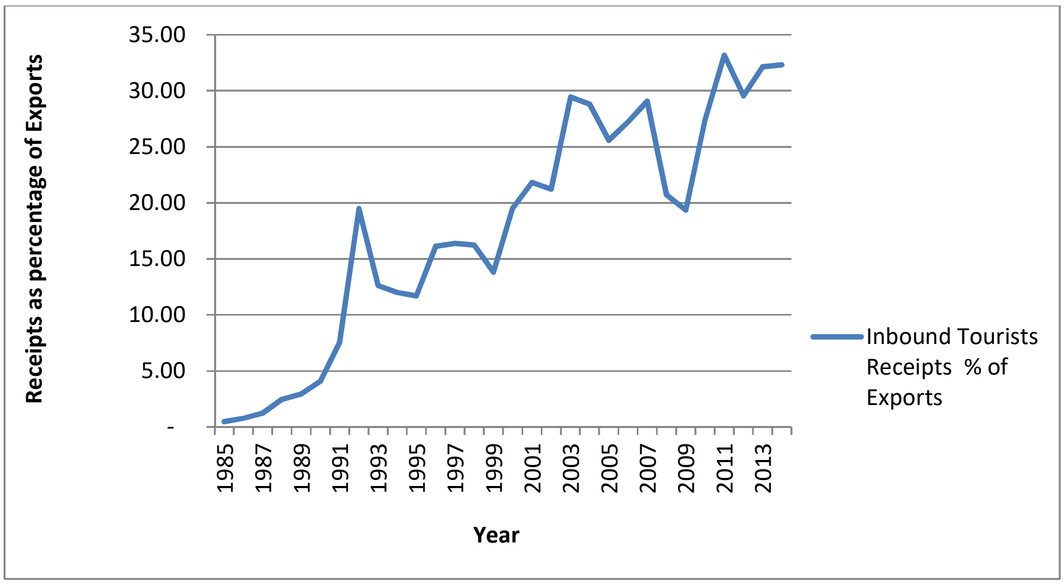
Source: WDI; UBOS (1985-2014)

As aforementioned through tourism expenditure, Uganda benefits through tourism.

2.8.1 The Contribution of Tourism and Foreign Exchange

The contribution of tourism can be identified by tourists' contribution to the balance of payment (MTWA 2014; Witt, Brooke & Buckley 1991, 2013). This is indicated by the manner in which the balance of receipts arising from inbound tourist receipts and expenditures gives rise to tourism balance, reported by many countries. Tourists' receipts are their contribution towards GDP. The contribution of tourists' receipts to the balance of payments can also be assessed in terms of percentage share to exports, as indicated by many developing countries, including Uganda. However, inbound tourism expenditure in Uganda generates import demand, which has implications for the generation of foreign exchange. Tourism also has implications for exports and the balance of payments. The importance of tourism to a nation can be indicated by the ratio of inbound tourists' expenditure to a nation's exports. Since the establishment of the UTB in 1994, the contribution of tourism expenditure to exports increased.

Figure 2.11: Tourism expenditure as a percentage contribution to exports



Source: UBOS; WDI (2014-2014)

Exports have increased from USD 204.6 million in 1985 to USD 3,215 million in 2014. During the same period, tourist receipts increased from USD1.003 million to USD 1,039 million. Tourists' expenditure as a percentage of exports increased from 0.49% to 32.31% making tourism the single largest foreign exchange-earning commodity for Uganda. This indicates that tourists' expenditure represents more than twice the earnings of coffee, the country's second biggest export (UBOS 2014).

Foreign exchange comes in the form of money spent by tourists in Uganda, as visitor exports World Travel (International Trade Center and UEPB 2005; World Travel and Tourism Council 2015). Most hotels and restaurants, in addition to offering accommodation and catering services, provide one-stop shop service to clients. Further, the airport in Uganda is well-equipped with duty-free shops that sell merchandise in foreign currency. Some businesses have developed into craft villages/centres, specialising in merchandise for tourists, such as souvenirs and handicrafts. Finally, services in transport and telecommunications have developed that specialise in providing services to tourists. In these ways, tourism has become a source of revenue.

2.8.2 Tourism and Tax Revenue for Government

Tax revenue is one of the immediate direct contributions of tourism. Tourists coming to Uganda are not obliged to pay visa fees before starting their journey in their country of origin, but upon entry they must pay visa fees at the Entebbe Airport. Tourists pay Value Added Tax (VAT), which is included in transport services, conference hall hiring, consumer goods, theatre fees, mountain climbing and cruises. Tourism also contributes towards other taxes, indirectly. Due to the growing tourism industry, a number of firms have been established that specifically target tourists, so the link between tourism and investment has been established.

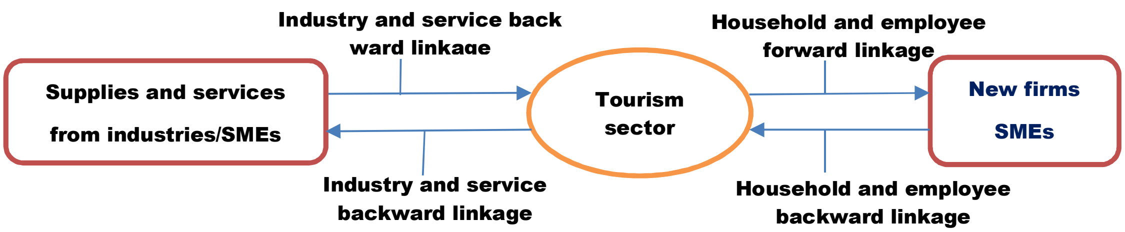
2.8.3 The Impact of Tourism on Investment in Uganda

The contribution of tourism to Uganda comes from the foreign currency spent by tourists. New money enters the country, and is used variously by different sections within the country (Ardahaey 2011). This money becomes revenue for government and income for firms and employees, in the form of wages and salaries within the tourism sector. Therefore, tourism induces investment for small and medium enterprises (SMEs), and FDI inflows lead to economic growth, employment and poverty reduction.

2.8.3.1 The Contribution of Tourism to SMEs

The money spent by tourists has direct, indirect and induced effects on Uganda. The direct effects are associated with immediate production changes arising from tourist spending. Indirect effects arise from tourists' expenditure in the form of goods and services, and the associated backward and forward linkages. Backward linkages may include various supplies from industries and services offering catering services linked to hotels and tourism sites. Forward linkages are due to SMEs serving the tourism sector. Induced effects are related to economic activity changes within Uganda arising from household spending. Household spending and savings are sometimes translated into investment capital. The impact of forward and backward linkages are summarised in Figure 2.12.

Figure 2.12: Forward and backward linkages in the tourism sector



SMEs arise depending on the sector of engagement. Uganda has witnessed growing agricultural tourism arising from SMEs, local products and labour engaged in tourism. In western Uganda, the livelihood of the Bigodi community around Kibale National Park has been uplifted through improved rural agricultural markets (Lepp 2004). The link between the trade in agricultural products and tourism can also be extended to other rural communities situated near sites of interest to tourists, in two ways. According to Lepp (2004), in Bigodi the community demand for consumer goods is enhanced through the tourism multiplier effect as explained by Figure 2.13.

Figure 2.13: The tourism multiplier effect to a community

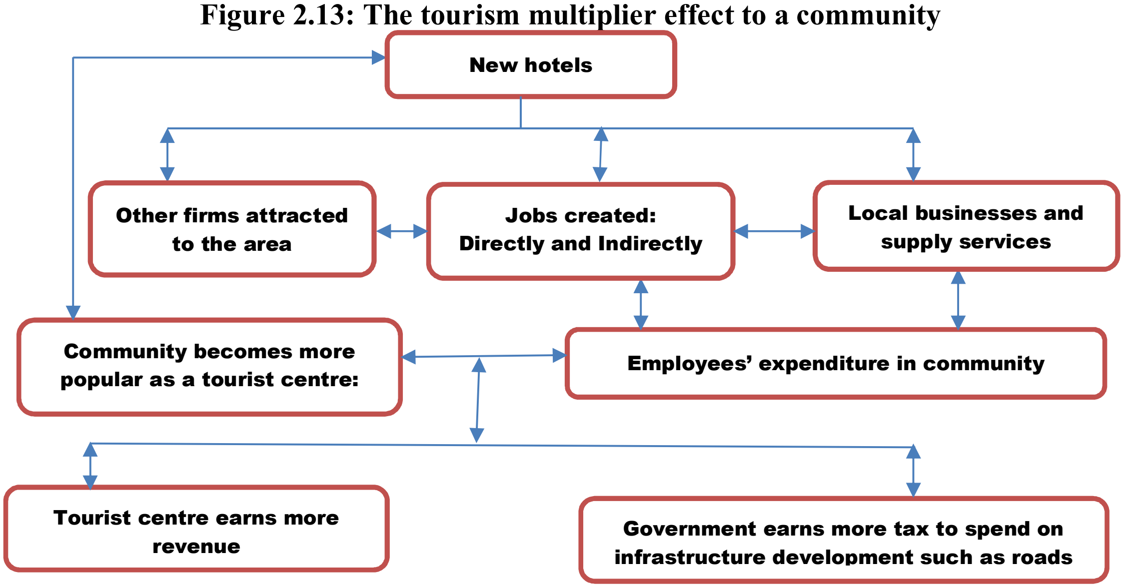


Figure 2.13 illustrates the manner tourism multiplier effects benefit a community and a nation in general. To this extent first, community organisations such as the Kibale Association for Rural and Environmental Development and the Uganda Community Tourism Association are established to employ local tour guides. Second, the structure of peasants' livelihood is transformed from total dependence on agriculture to the tourism service-oriented sector. Third, agricultural production in such areas is stimulated as those employed in tourism have to buy food and other agricultural consumer goods. Finally, the demand for agricultural

consumer goods is further extended to hotels, lodges and camp sites that purchase such products in bulk.

2.8.3.2 Tourism-Induced Foreign Investments in Uganda

In addition to the increased household income and establishment of SMEs, tourism induces FDI investments in Uganda because of tourists' demands in the host country. Tourism is a base investment promotion in Uganda, and a pro-poor source of development projects, generating significant flows of FDI into the Ugandan economy. In 2011, FDI investment in the hospitality industry was about USD 141 million (MTWA 2014). Approximately 50% of top positions in FDI-established firms in the tourism sector are filled by expatriates, particularly roles that require technical knowledge (UNCTAD 2008). New technologies from abroad are not familiar to Ugandans, so expatriates are hired to train local employees. New skills are learned and new technologies transferred, which is a key to economic growth and poverty reduction in Uganda.

2.8.4 The Impact of Tourism on Employment and Poverty Elimination

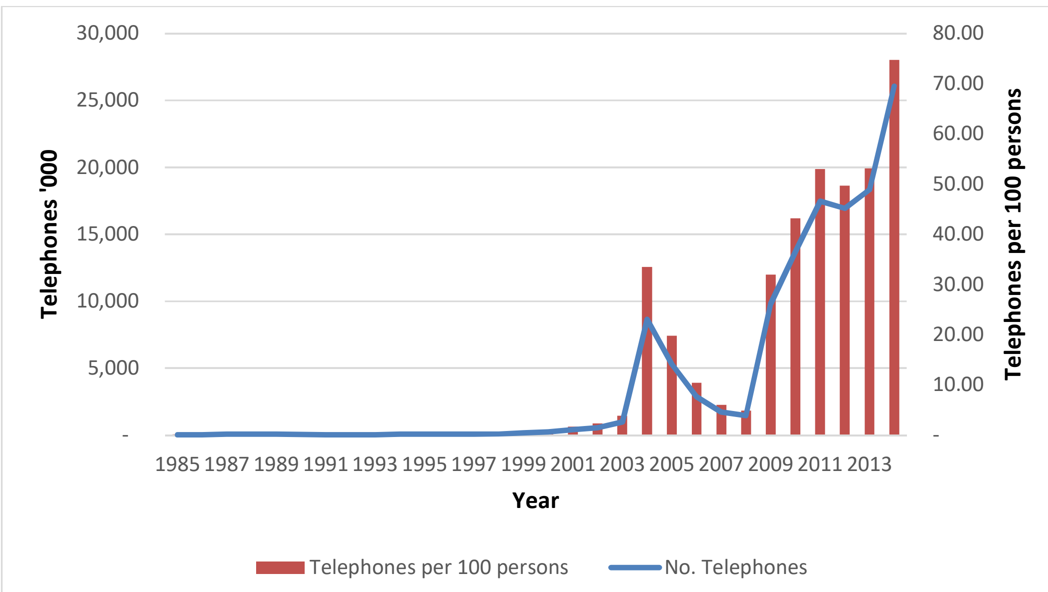
The money spent by tourists has the ability to transform communities with forward and backward linkages. Tourism is a direct channel for job creation, and local and foreign investors contribute towards raising the income of Ugandans, thus contributing to poverty reduction. Investment in the tourism sector potentially creates jobs due to the labour-intensive nature of activities in the hospitality industry. Tourism creates jobs directly, and tourists indirectly contribute on a nation's supply-side (UNCTAD 2008; United Nations Environment Programme 2011). Direct employment in tourism is evident in employees in various sectors, such as hotels, travel agencies, tourism information offices and shopping outlets. Firms engaged in these sectors provide direct employment because their employees are in contact with tourists, and cater to tourist demand.

Tourism contributes indirect employment in Uganda through restaurant suppliers of agricultural products. Bulk buyers directly purchase products from rural farmers and sometimes through intermediaries in rural markets, creating a value-chain-multiplier effect. Indirect jobs created by tourism include firm and GOU employees of construction companies in housing and infrastructure. In addition, tourism has created employment in the rural sector, leading to the growth of handicraft producers, designers, marketing agencies and accounting services. Furthermore, as explained Figure 2.7, as the structure of Uganda's exports has changed so has the production structure. In this regard, towns such as Jinja, Mbale and Soroti that were in past dependant on agro processing have now become tourist urban centres.

2.9 Telecommunications

As discussed earlier, after the overthrown of Amin in 1979, economic reforms were introduced. Similar to other sectors, as indicated under Appendix 2.6, the ICT sector has increased. Since 1985, the usage of services such as internet and other forms of telecommunication that included mobile cellular has increased drastically. This is illustrated below by the increasing trends in telephone usage.

Figure 2.14: The growth of telecommunications



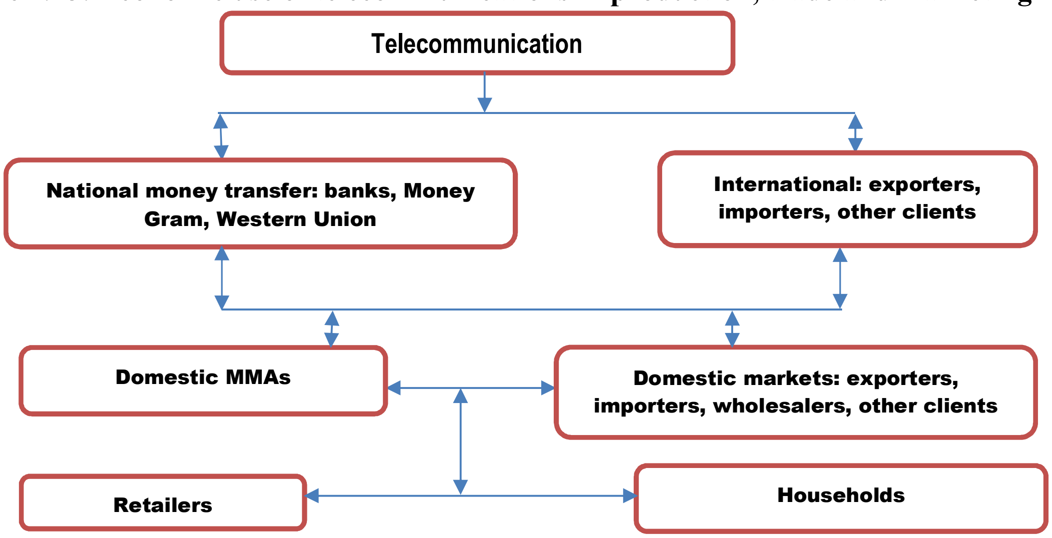
Source: UBOS; WDI (1985-2014).

The number of telephone users (both mobile and landline) has increased from 25,580 in 1986 to over 26.069 million in 2014. During the same period, telephone ownership per capita increased from 0.11 telephones per 100 persons to 74.79 telephones per 100 persons. Therefore, telephones can be considered a pro-poor form of technology because they enhance access to and dissemination of information for social and economic purposes (Aker & Mbiti 2010; Blauw & Franses 2011; Maree et al. 2013). Telephones in Uganda play a role in economic growth, job creation and poverty reduction through network operators (NOs) in three ways: facilitating business and social financial transactions, promoting agriculture production and productivity.

2.9.1.1 Telecommunications' Facilitation of Business and Social Financial Transactions

Mobile money operators (MMOs) allow firms, government agencies and households to send and receive money without travelling long and costly distances. MMOs are made possible by connecting the sender (source) to a recipient, to access funds from the nearest mobile money agent (MMA). MMOs such as MTN-Uganda, Western Union and Money Gram have established MMAs throughout the country, including in rural areas. Telephones facilitate social networks, production, trade and marketing under three broad categories: money transfer, money payment (MP) and money financial services (MFS) (Maree et al. 2013).

Figure 2.15: Economic use of telecommunications in production, trade and marketing



Through MMOs, money is transferred from one source to another without the exchange of goods or services for social and economic purposes. This occurs through web connectivity between international and national MMOs (such as banks, Western Union and Money Gram) linking them to domestic MMOs and retail outlets. As a result, money transfer in Urban and rural areas create cheaper avenues for supporting individuals and families. Further, MP involves the exchange of goods and services between two sources, with an accompanying exchange of goods or services with a web spanning from government to private entities. MP eliminates cash payments at service provider offices, such as Umeme Company limited[11] and the National Water and Sewerage Corporation (NWSC), for the payment of utility bills. These utility firms meet the cost for remitting dues through networks because it is a cheaper avenue for the regular collection of dues. Consequently, operating costs are reduced, which

[11] The company responsible for electricity distribution in Uganda.

increases production and productivity. Though at firm-level many people have lost jobs, many multi-national organisations have facilitated the creation of more jobs, in both urban and rural areas.

MFS is linked to a bank account to provide the user with a whole range of transactions that are not limited to savings and credit. In particular, the Ministry of Gender, Labour and Social Development (MGLSD) is implementing a project through MFS and the Expanding Social Protection programme, which covers the Social Assistance Grants for Empowerment (SAGE) project piloted in 14 districts (MGLSD 2013). SAGE is as household support project under the MGLSD, in partnership with donor agencies such as the United Kingdom (UK) Department for International Development, Irish Aid and the United Nations Children's Fund. The aim of SAGE is to reduce chronic poverty by enabling vulnerable communities to receive financial support via telephones, thus reducing the cost of transport. Through MNOs, money is transferred to rural households, as the cheapest mode of money transfer.

2.9.1.2 Promoting Agriculture Production and Productivity

As discussed, telephones in Uganda have been a life-changing technology for poor and rural Ugandans. Important to rural farmers in Uganda, telephones are a means of market access and a way of increasing efficiency. They have become essential to agricultural productivity and output, through reducing the cost of production and market access (Martin & Abbott 2011). In rural Uganda, where transport is difficult, telephones are used to arrange farmers' meetings, thus avoiding unnecessary trips to trading centres or far-away markets. In addition to facilitating business MNOs, farmers can easily transact business, receive farm inputs and send money through telephones, thus saving time, reducing costs and increasing efficiency in production.

2.9.1.3 Facilitating Awareness and Community Sensitisation

In Uganda, telephones have become market information system and health information system channels (Aker & Mbiti 2011). Telephones have replaced letters, which took a long time to deliver, as well as radio announcements, which are often expensive and not easily accessible. Telephones are also a channel for communicating health information about epidemics and communicable diseases.

Via mobile money networks, farmers and traders use telephones during production, trade, marketing and purchasing. Internet networks and telephones also play a significant role in facilitating access and disseminating marketing information and source of firm inputs. Use of internet services is growing in many developing countries to a tool for facilitating international trade (Meltzer, J 2014). In this respect, in Uganda internet has become platform for businesses to sell and market to customers domestically and overseas. This, increases productivity and the ability of businesses to compete as enterprises are easily connected via a computer network. However, as least developed country connectivity is not wide to cover rural areas largely due to lack of electricity.

Telephone usage plays a significant role in firm productivity and entrepreneurial development, which increases output and jobs while reducing poverty. This is made possible through information asymmetry and transport substitution, reducing production costs while increasing productivity (Bhavnani et al. 2008). Mobile phones improve access to and use of information, which reduces coordination costs among firms and increases market efficiency. Due to efficient connectivity among firms, mobile phones enhance supply-chain management, since the Internet is not widely accessible in developing countries. Mobile phone-related services, such as transfer of money between communities and small-scale firms, have been introduced, and the industry has become an income-generating project that creates jobs in rural and urban communities. The sectors targeted by the GOU as a means of reviving the Ugandan economy improved between 1985 and 2014. Consequently, Uganda started to experience increased economic growth, employment creation and poverty reduction.

2.10 Economic Growth, Employment and Poverty After the Adoption of Economic Reforms

Following the reforms introduced soon after the overthrow of Amin in 1979, Uganda started to experience positive economic trends. This section examines trends in economic growth, employment and poverty reduction.

2.10.1 Trends in Uganda’s Economic Growth, 1985–2015

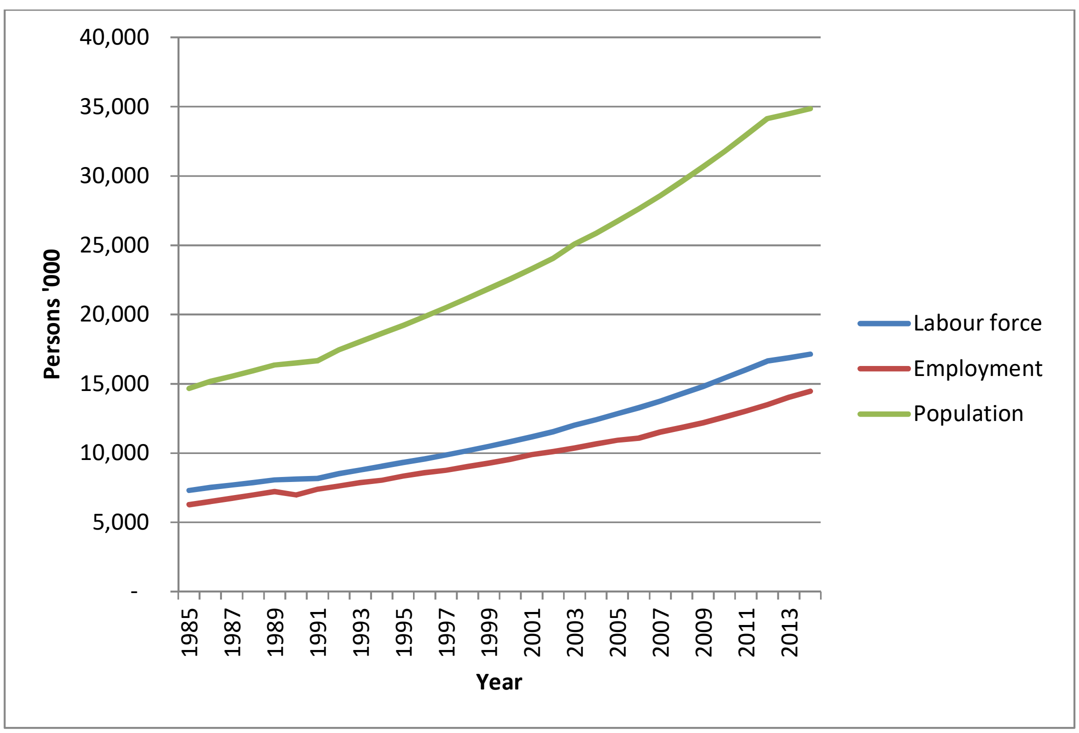
Since adopting economic reforms in the early 1980s, Uganda started to experience high levels of economic growth. GDP at 2005 constant market price increased from USD 2,708.22

million in 1985 to USD 16,406.24 million in 2014. During the same period, capital stock increased from USD 12,879 million to USD 81,447 million, representing annual capital accumulation of USD 35,269.95 million, growing at 6.59% per annum. Meanwhile annual headline inflation rates reduced from 157.66% to 4.3% during the same period, indicating that Uganda has striven for macroeconomic stability. However, inflation denoted by CPI reduced from 154% in 1985 to 49.10 in 1998, but by 2014 had increased again to 216.05% per annum respectively.

2.10.2 Employment Trends in Uganda, 1985–2014

Employment in Uganda is divided into rural and urban, the employed and self-employed, which is how the World Bank and UBOS calculate unemployment. The employed work in sectors such as: government civil service, civil society organisations, manufacturing companies and commerce. The self-employed are mainly in the rural sector, especially agriculture, comprising about 84.4% of the total population. These two sectors (Labour force$[LF]$ and employment) also increased[12] between 1985 and 2014.

Figure 2.16: Trends in LF and employment, 1985–2014



Source: World Bank database; UBOS (1985-2014); author's calculations.

[12] For further reference on employment trends, please refer Appendix 2.7

Data indicates that Uganda's LF increased from about 6.6 million in 1985 to 15.3 million in 2014. Meanwhile, employment increased from 6.22 million to 14.46 during the same period. In this regard LF is growing faster than employment, since the gap between the LF and employment increased steadily from 1991, indicating increasing unemployment. For example, in 2014 unemployment among youths was more than 64% (Magelah & Ntambirweki-Karugonjo 2014).

2.10.3 Poverty Perspectives in Uganda, 1985–2014

Before colonialism began in 1894, Uganda was entirely agrarian, with no functioning formal economy. The British Government started to transform the nation into a formal economy. The colonial years can be regarded as laying the foundation for formal economic transformation. Despite these achievements, income inequality was quite high before Independence, because Europeans and Asians dominated the economy.

Table 2.2: Income tax assessment, 1963

Status and Main Trade Group	Numbers		
	Asian	**European**	**African**
Individuals	2,445	118	51
Companies, clubs, trusts	1,129	154	87
Employees	3,667	4,086	700
Income tax payers	7,241	4,358	838

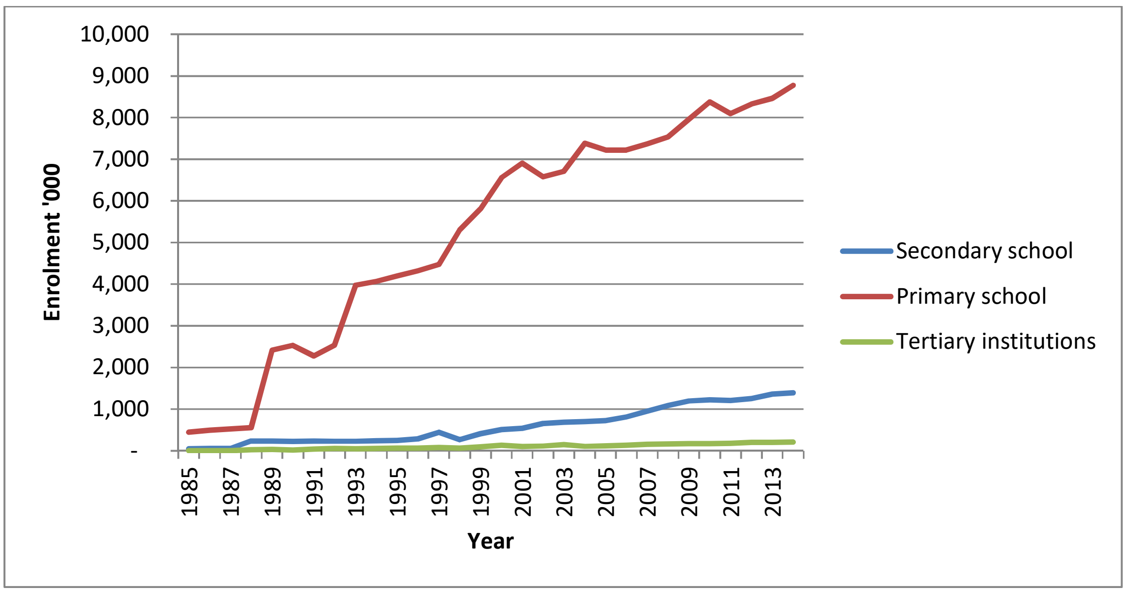
Source: Ramchandani (1973); East African Income Tax Department Uganda Unit (1963)

Although Uganda became politically independent in 1962, non-Ugandans dominated the economy. As such, an immediate concern of the first government in 1962 was to build on the foundations of the colonial government, to reduce poverty. The government was also concerned with reducing income inequality. However, because of Uganda's descent into political and economic turmoil, the earlier gains of the British Government were eroded. In 1980, World Bank Poverty Indicators revealed that 64.7% of Ugandans were living on less than USD 1.25 per day (Connors 2011; World Bank 2009). Fortunately, following Amin's overthrow in 1979, the GOU adopted economic reforms to reduce poverty. In particular, they earmarked human capital development as one of the pillars for economic growth, employment and poverty reduction.

2.10.3.1 Trends in the Growth of Human Capital

Because of the need to reduce poverty, human capital development through primary, secondary and tertiary was identified as a tool for economic growth, employment and poverty reduction. To achieve this, in 1997, the government introduced Universal Primary Education (UPE), followed by Universal Secondary School Education (USSE) in 2007 (MFPED & UNFPA 2015).

Figure 2.17: Growth of human capital in Uganda, 1985–2014



Source: UBOS; Ministry of Education and Sports (1985-2014); author's own calculations.

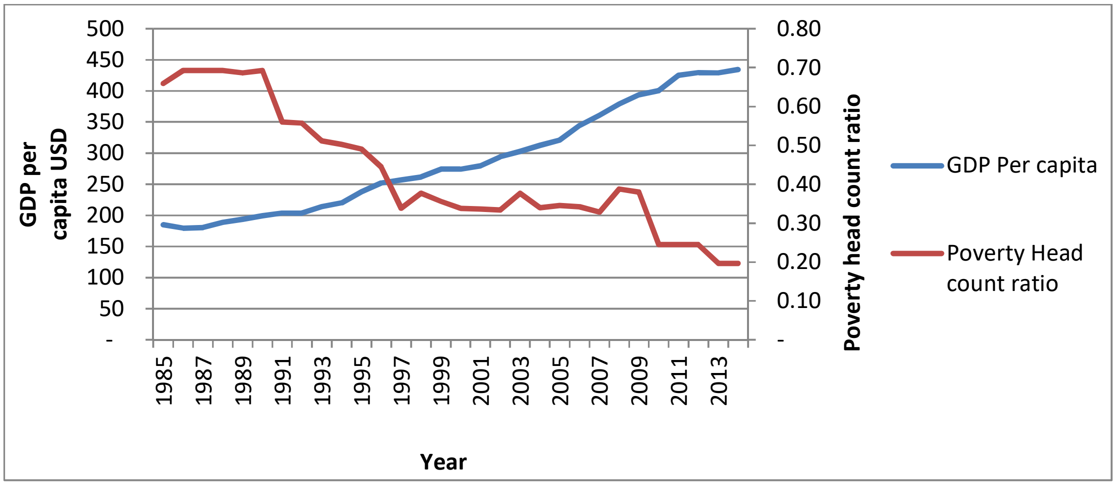
Note: Enrolment in tertiary institutions is projected for the year 2014.

Trend indicates that primary school enrolment increased from 450,064 in 1985 to 8.77 million in 2014. During the same period, secondary school enrolment increased from 50,855 to 1.39 million students. Enrolment in tertiary institutions increased from 4,675 to 210,761 during the same period. Although enrolments have increased, some observations are worth mentioning. First, the gap between primary and secondary enrolment is wide, meaning that school dropout levels between primary and secondary levels is high. The ratio of secondary school enrolment to primary school enrolment only increased from 0.10 to 0.14, indicating a high school dropout rate. Second, the ratio of students not continuing with any career course continues to decline, meaning that most of Uganda's employment sector is either semi-skilled or unskilled.

2.10.3.2 Trends in Poverty, 1985–2014

The welfare of Ugandans started to improve between 1985 and 2014. Poverty has declined, while GDP per capita has increased, as illustrated in the figure below.

Figure 2.18: Trends in poverty reduction and GDP percapita



Source: UBOS; WDI (1985-2014).

Poverty head count[13] has reduced, meaning that poverty reduced from 65.9% in 1985 to 19.7% in 2014. GDP per capita increased from USD 185 to USD 434 during the same period. Despite the impressive improvement in the economy, in 2010, out of a total population of 34 million, over 15 million were classified as insecure non-poor, representing 43.3% of the total population (MFPED 2014). Meanwhile, the Gini coefficient indicates that income inequality increased from o.36 in 1992 to 0.40 in 2014. Poverty is still a key concern for the government.

2.11 Conclusion

Uganda was a British Protectorate between 1894 and 1962. During the 1884 Berlin Conference, Africa was referred to as a dark continent that needed Christianity, economic development and civilisation. The Berlin Conference instructed colonial masters to take political charge of the colonies under their influence, and to economically develop them. Britain started developing Uganda, which had an agrarian economy. To economically develop Uganda, a dual economic system was adopted. At Independence in 1962, the

[13] For further reference refer to Appendix 2.8

Ugandan economy was young but on the verge of developing. The new government mobilized financial resources and began building on the foundations laid by the British. Uganda started experiencing promising economic growth trends, but after 1966, following the overthrow of President Mutesa by Obote, the country fell into economic instability. The situation was exacerbated by Amin's nationalisation of foreign investments in 1972. As a result of international sanctions, Uganda descended into political and economic instability until Amin's overthrow in 1979.

After the overthrow of Amin, the government that took over started to rebuild the economy with initiatives. The initiatives were supported by donor agencies such as the IMF and the World Bank. Donor agencies with economic package encouraged the government to adopt economic reforms. First, the economic package was wide-ranging, comprising of macroeconomic reforms to stabilise inflation, which had skyrocketed to 216% per annum in 1979. Second, donors encouraged the government to adopt sound fiscal policy reforms by implementing efficient GE mechanisms. Fiscal policy measures were intended to enable the government to rebuild the dilapidated physical infrastructure and provide social services. Third, the government adopted openness as a tool for economic liberalisation in strategic sectors such as ICT, investment and international trade, to increase FDI and tourism.

Since the reforms, trends in international trade indicate that total trade has increased from USD 1011.79 million in 1985 to USD 12,907.97 million in 2014. However, the TOT have continuously declined since 1985, from USD -45 million to USD -2,469 million. This could partly be attributed to an increasing need for the intermediate goods required in the growing manufacturing sector. Trends indicate that production has shifted from traditional cash-crops, such as coffee, cotton, tobacco and tea to new products, such as fish, flowers, manufactured goods and services. Further, tourism expenditure increased from USD 2.37 million in 1985 to USD 1,039 in 2014. Telephones are also an indicator of the growth of ICT. The number of telephones per 100 persons increased from 0.36 in 1985 to 59.36 in 2014. Finally, this chapter mentioned that openness was intended to promote international trade and investment, especially foreign investment. Since the objective of this study is to measure the impact of FDI on Uganda's economic growth, employment and poverty reduction, the next chapter explores foreign investment in Uganda.

Chapter 3: FDI and Investment Regulations in Uganda

3.1 Introduction

This chapter begins by providing a brief background on the origins of FDI inflows into Uganda, followed by an examination of inflows into two broad phases—before and after Independence in 1962. Later, the chapter examines FDI regulations in Uganda.

3.2 Background to FDI Inflows into Uganda

FDIs started in East Africa when the Sultan of Oman ruled the entire coast of East Africa, as early 1400. In the case of Uganda, foreign investments started in 1845 when the first known non-African merchant, Ahmed Bin Ibrahim, visited Kabaka[14] Ssuna II Kalema of Buganda Kingdom who reigned between 1832 and 1856 (Ebangit 1973). Ibrahim brought donations of cotton cloth and wire to Kabaka of Buganda. With the presence of Arabs and Asian merchants in the East African interior, trade and investment increased and Islam spread, leading to the establishment of trading centres and settlements. Merchants loaded long caravans of slaves with precious commodities such as gold and ivory, which were exchanged for manufactured goods, including cloth from India. Cowry shells[15] were used as currency (Burger 2003; Odunbaku 2012). The influence of the Sultan of Oman grew, and following the successful visit of Ibrahim, the Buganda Kingdom in the interior of East Africa was opened to the outside world. It later became known as the nation of Uganda, encompassing other tribes. Therefore, the arrival of the Arab merchants marked the beginning of FDI inflows into Uganda.

Later, in 1862, John Speke and James Grant visited the King of Buganda in search for the River Nile. At this time, Uganda was opened up to Europe. In 1874, Henry Morton Stanley made follow-up visits to the King of Buganda (Lwanga-Lunyigo 1987). Following Stanley's visit, the Kabaka wrote a letter to the Queen of England expressing the need to be a 'friend to the white man' (Lunyigo-Lwanga 1987)[16]. The British Government, missionaries and merchants received the Kabaka's letter with gratitude. On 15 November 1875, the letter was

[14] In Luganda, the local language, Kabaka refers to the king of Buganda, the most powerful kingdom in Uganda.
[15] Originating from China and India, cowry shells were a primitive form of currency used around the world, especially in Asia and Africa.
[16] The Kabaka of Buganda wished to have a close friend or ally so as to fend off his enemies, so he expressed a desire for a friend.

published in the London Daily Telegraph. As a result, missionaries, merchants and administrators started coming to Uganda, which later became a British Protectorate in 1894. Uganda's status as a British Protectorate marked the beginning of foreign investment from Europe. FDI inflows can be categorised as falling into three phases: colonialism, 1894–1962; after Independence, 1962–1991; and during the reform years, 1991–2013.

3.3 FDI Inflows into Uganda Before Independence, 1894–1962

Before colonialism, Uganda's economy was informal and agrarian. Following the 1884 Berlin Conference called by German Chancellor Bismarck explained in Chapter Two, Section 2.3 Major European colonial powers[17] were free to establish colonies in Africa and establish effective administration. In particular, they were instructed to abolish the slave trade and spread Christianity, and also called upon to economically develop colonies under their sphere of influence. In this section, FDI inflows are examined as two broad sectors: economic and establishment of commercialisation, and economic diversification.

3.3.1 Foreign Investments: Economic and Establishment of Commercialisation

FDI inflows are categorised as economic and commercialisation establishment during the early years of colonialism. This kind of FDI is classified in this study as humanitarian-induced, transport and communication, agriculture, international trade and financial services.

3.3.1.1 Humanitarian-Induced FDI

The British Government found missionaries to be the best group to settle in Uganda first. To the British Government and merchants, after instruction, missionaries would serve as better agents for the transformation of agrarian communities. Missionaries were to put an end to the slave trade, spread Christianity, civilise Ugandans through education by teaching them to adopt Western lifestyles and to transform agrarian communities.

As Uganda was an agrarian society, teaching communities Western lifestyles through basic human needs such as clothing, food and shelter was the immediate task of the missionaries. This is what I refer to as humanitarian-induced FDI. The missionaries were also tasked with training Ugandans in health services and to teach them a Western-style education, starting with arithmetic, English and writing.

[17] The major colonial powers who occupied Africa were Belgium, France, Germany, Great Britain, Italy and Portugal.

In 1877, Church Missionary Society (CMS) missionaries from England arrived in Buganda. In 1879, the Mill Hill Fathers (Roman Catholic Missionaries) from France also arrived (Lwanga-Lunyiigo 1987). These arrivals marked the beginning of humanitarian FDI inflows from Europe into Uganda. The missionaries arrived with caravans comprising of basic needs plus arms and ammunition. Unlike the first explorers to Uganda, the missionaries' arrival was permanent, as settlements were established that changed Buganda's political, social, religious and economic outlook.

Missionaries established schools and health centres in Uganda. Soon after declaring Uganda a British Protectorate, the CMS established Mengo Secondary School in 1895 and Mengo Hospital in 1897 (Khadidja 2014; Summers 1991). As humanitarian investments continued, IBEAC's immediate task was to transform and commercialise the agrarian economy. Building on the missionaries' efforts, foreign investments increased. The key sectors that attracted foreign investments were transport and communications, agriculture, trade and commercial services, mining, energy and import substitution manufacturing. Due to increasing demands, transport and communication were priorities, to ease movement from Mombasa to Uganda.

3.3.1.2 FDI Inflows in the Transport and Communications Services Sector

Transport and communications services were a priority for FDI because there was neither a direct route nor security en-route from Mombasa to Uganda. Also, many Europeans had interests in Uganda, including administrators, merchants, agriculturists, follow-up explorers, humanitarians and missionaries. As more outsiders arrived in Uganda, transport costs increased because payment had to be made to guides who took individuals and caravans through the jungles. IBEAC started the construction of the Uganda Railway (UR) from Mombasa in 1896. In 1901, the UR reached Port Florence (later renamed Kisumu) on the shores of Lake Victoria. This was a significant milestone for two reasons. . First, Port Florence was midway, as Uganda stretched as far as Nairobi in the east and covered the Kenya Highlands, and as far as Lake Albert in the west (Ingham 1957). Second, Port Florence was part of strategic Lake Victoria Nyanza as part of Eastern Province of Uganda (His Majesty's Stationery Office 1929, p. 15)[18] as indicated under Appendix 3.1. The main objective for the British colonization of Uganda was to enable the colonial government to

[18] The final boundaries of Uganda and Kenya were drawn in 1926. The fertile Kenya Highlands, Nairobi and Port Florence were part of the Eastern Province of Uganda.

achieve strategic and security goals as mentioned in Section 2.3. In particular, the objectives was to safeguard Rive Nile whose origin was Lake Victoria as well as Egypt, the Suez Canal and India. As such since rail had reached Lake Victoria, Port Florence the Nile was now secured from foreign aggressors in particular Germany and France. The British Government's objective had been achieved.

Although the arrival of the UR at Port Florence eased transport problems for the colonial administrators, the distance from Port Florence to Bulange-Kampala, the headquarters of Buganda, is over 314 kilometres. As there were no other means of transport, the transport problem had been eased but not solved. Transport costs were still high and unmanageable due to the need to transport bulky unprocessed export raw materials to Mombasa en-route to London. The British Government committed more resources. In 1910, the Busoga railway construction extension commenced, officially opening in 1912. By 1956, the railway reached as far as Kasese in western Uganda and Lira in the north. The railway opened Uganda's interior and linked the country to the Kenyan Protectorate and Indian Ocean, as well as Tanganyika and Zanzibar, currently Tanzania. Establishing transport and communications infrastructure became the anchor for foreign investment inflows. Sectors such as agriculture, trade and commercial services, finance, mining and manufacturing started to emerge, driven by foreign investments.

3.3.1.3 FDI Inflows in the Agriculture Sector

As Uganda had an agrarian economy during colonial times, poverty was high and Ugandans were unable to pay taxes to Buganda Kingdom (Nayenga 1981). Alongside the development of transport and communication, agriculture was another critical sector that required urgent attention. Agriculture was already undertaken, so transforming Uganda through agriculture was seen as an easy task. The soil was fertile and the tropical climate was favourable. By commercialising agriculture, communities would be empowered economically and could pay taxes to the kingdom and the colonial administration. By promoting agriculture, the implementation of a dual economic system would be easy. Foreign investors, missionaries and communities would all be engaged in the transformation of the country. Uganda's economic structure was categorised as subsistence and plantation agriculture farming. Ugandans took up subsistence farming, starting with cotton as the cash crop. Food crops such as banana, potatoes and millet were encouraged, to feed households.

As Ugandans took up subsistence farming, foreign investors were invited to invest in commercial plantation agriculture. This was mainly because Ugandan neither had the requisite financial resources to establish huge farms, nor the skills for plantation farming. Cash crops such as coffee, tea and tobacco were recommended for European agriculture farming. To implement commercial plantation farming, in 1902 the Uganda Order of Council was established (Kasozi 2008). This officially laid the foundations for British political and economic sovereignty, allowing the creation of institutions of government. Institutions such as the Department of Agriculture were established, with the power to allocate land specifically for large plantation farming.

After the First World War ended in 1918, European settlers were shocked with the dramatic decline of coffee on the world market, while tobacco did not attract investors (Nayenga 1981). With declining prices and a hostile environment, plantation farmers abandoned coffee growing. Consequently, the colonial administration restructured agriculture (Nayenga 1981). First, the colonial administration recommended that Ugandans start growing coffee, as Robusta coffee had been growing wild because it flourishes in lowland conditions. It was introduced in the Lake Victoria basin, in the central regions of Buganda and Busoga. Arabica coffee, which requires cooler conditions, was introduced to the slopes of Mount Elgon in Bugisu and West Nile. Tobacco, which did not attract investors, was introduced in western Uganda, especially Bunyoro and West Nile. Asians[19] took up sugarcane growing. In 1923, Muljibhai Madhivani and Nanji Kalidas Mehta started the largest sugarcane plantations, in Kakira and Lugazi, respectively. Other agricultural products that attracted foreign investment during colonial rule include groundnuts, sesame and sunflower.

The agriculture sector became firmly established, and the colonial administration undertook measures to attract investors to other sectors. This was first, intended to support agriculture, which had become the backbone of Uganda’s economy. Second, it was to enable the country attain high levels of economic growth through FDI and subsistence farming. FDI facilitated the extraction of natural resources, to provide raw materials for industries in Europe.

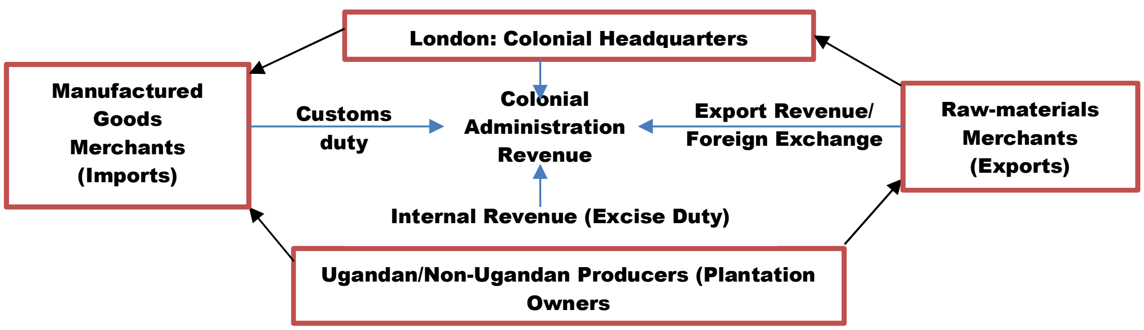
3.3.1.4 International Trade

The main objective of Ibrahim’s aforementioned visit to the Kabaka of Buganda was to extend Omani trading links into the interior. Following the successful expedition, trade

[19] ‘Asians’ refers to merchants from China, India, Sri Lanka, Saudi Arabia and Oman.

between Buganda Kingdom and Oman started. Arabs supplied cloth and firearms for ivory and cowry shells, carried by long caravans of slaves. As trade increased, Arabs started to establish trading centres and settlements. By the time the British declared Uganda a Protectorate, informal trade had been established. Since Arabs had introduced consumer goods like cloth, a consumer market had been established (Lwanga-Lunyigo 1987). Recognising Uganda's market and the role of international trade, the colonial administrators invited European merchants to import raw materials and export manufactured products to Uganda from Europe.

Figure 3.1: The flow of foreign investments in the trade and services sector during colonialism



As trade in manufactured goods increased in Europe, production of raw materials in Uganda, such as cotton and coffee, also increased, as did foreign exchange. Consequently, Buganda Kingdom could collect poll tax, while the colonial administration raised export and customs revenue. As Europeans took up international trade, Asians became intermediaries, buying agricultural produce and selling consumer goods to Ugandans as wholesalers (Briggs 2009). At the end of the marketing chain were Ugandan traders, who acted as retailers and sold consumer goods to other Ugandans. Asians dominated internal trade and their businesses were established across the country.

3.3.1.5 Financial Services

To promote investment and international trade, foreign investors needed strong financial support from banks. The financial services sectors came into being, driven by foreign investments.

Table 3.1: Establishment of banks in Uganda, 1906–1962

	Name of Bank	Origin and Purpose
1906	National Bank of India*	To serve Punjabi business interests
1912	Standard Chartered Bank	London
1927	Barclays Banks	London
1950	Uganda Credit and Savings Bank (UCSB)	Uganda Colonial Administration; opened for Ugandans
1953	Bank of Baroda	To serve Gujarati business interests
1954	The Nederland Bank (Algemene Bank Nederland N. V.)	Mainly concerned with financing export trade from funds borrowed from its head office in Amsterdam

Source: (Bategeka & Okumu 2010); Gershenberg (1972)

Notes: *Changed to Grindlays Bank, then Standard Bank and now Stanbic Bank.

Banks were established along racial lines: Indian and European. Indian banks were to serve the interests of Asians, while banks from Europe were to serve the interests of Europeans and Americans (Gershenberg 1972). Ugandans were excluded from the banking services, except as through employment as porters, as they lacked the expert knowledge even to be hired as clerks. As no banks served the interests of Ugandans, in 1950 the UCSB was established by the colonial government. UCSB was established to enable Ugandans to access credit finance to promote agriculture, small business development and cooperatives (Morris 1978). After Independence, the UCSB became the Uganda Commercial Bank.

3.3.2 FDI and Economic Diversification, 1946–1962

The colonial government was largely preoccupied with extracting raw materials from Uganda, especially cotton, which was under high demand in England. As Uganda was a Protectorate, the British Government never wanted to commit huge financial resources to administration or development in Uganda (Obwona 1996). IBEAC received small grants for administration. The colonial administration was concerned with the need to create markets for manufactured consumer goods in London. European investors would provide foreign exchange and pay taxes on exports from Uganda, and in turn bolster the small grants from the British Government. As long as exports and imports raised tax revenue so that the Protectorate could be self-sufficient, the British Government remained satisfied.

However, after the Second World War, the British Treasury dollar and gold reserves were nearly depleted, due to huge expenses (Gershenberg 1972). To revamp the British economy, the British Government adopted two interrelated approaches based on an export-led strategy: first, increase production in the industrial and primary commodities, and export to hard currency economies; second, earn and save each dollar so as to rebuild the dry treasury. To operationalise the 'earn-save-a-dollar approach', the British Government looked to colonies with abundant mineral and industrial resources, such as Uganda. To colonies such as Uganda, this was the dawn for the economic diversification which was implemented by establishing the Uganda Development Corporation (UDC).

Before establishing UDC, Governor Hall appointed Dr E. B. Worthington in 1946 to review the 1941 Uganda Development Plan (Gershenberg, 1972). As a result, the Worthington Development Plan (WDP) was completed and launched in December 1946 covering ten years for the period 1947-1957. The plan was first, aimed at increasing economic government expenditure and public investments in sectors including industry, mining, as well as public works and agricultural extension. Secondly, following the WDP, the Uganda Development Corporation Act was enacted in 1952, which paved the way for the colonial government to establish the UDC. The purpose of UDC was primarily economic development from two perspectives. Firstly, UDC served as a one-stop centre for foreign investors and through research, advice investors on profitable ventures in the country. Secondly, the corporation acted as a funding basket that would provide investment funding into lucrative colonial projects.

Through the initiative, the Treasury reserved £120 million to invest in colonies, as a means of increasing exports. To achieve this, the GOU provided £5 million initial capital, comprising 51% as shareholding. The immediate focus of UDC was energy, mining and quarrying, industrial development, agriculture development and hospitality. This was the birth of Uganda's economic diversification.

3.3.2.1 Mining and Quarrying

Mining in Uganda was expected to begin as early as 1902, soon after the establishment of the Uganda Mining Regulations. However, due to the heavy finance capital required for mining, it was not until after the end of the Second World War that mining started in Uganda. After the War and following the WDP, the Owen Falls Dam was completed in 1954, to supply power to heavy industries. Through the WDP, the UDC became a funding basket. As a result, copper mining at Kilembe Mines commenced in 1946 (O'Connor 1965). Other minerals also attracted foreign investment, including limestone, wolfram, beryl, tin and phosphates. Limestone was important because of the high demand for cement in physical infrastructure and housing construction. Phosphates were also important because the colonial government expected fertilisers to increase agriculture output and productivity.

3.3.2.2 Import Substitution Manufacturing

Import substitution manufacturing was established for three primary purposes (Obwona, M & Egesa 2004). First, import substitution was intended to produce local consumer goods that were in high demand, such as sugar, soap and textiles. Second, the policy was also intended to reduce transport costs for bulk products such as bricks, which make imports uncompetitive. Finally, it was intended to improve the balance of payments and TOT for Uganda, and ease pressure on the overburdened British pound in the long-run. With direct funding provided by the UDC, either in partnership or as a single undertaking, by 1962, Uganda’s industrial sector had started to take shape. Within just 10 years, a number of import substitution industries had been established, covering the production of commodities such as sugar, cement, textiles, soap, oils and beverages (Stoutjesdijk 1967).

3.3.2.3 Agriculture Product Processing and Value Addition

The processing of agricultural raw materials was necessary because some agricultural products were perishable and bulky, requiring weight reduction (Stoutjesdijk 1967). Exports would increase through agro-processing value addition, while imports would reduce. First, Robusta coffee was hulled and Arabica coffee decaffeinated and loaded into bags, then exported through Mombasa to overseas markets. Second, cotton ginneries were established and covered nearly all cotton-growing parts of the country, to increase cotton lint exports. During ginning, the bulk of seeds were preserved for planting, oil processing and making cattle seed cake for European farmers’ dairy farms. Third, tea and tobacco were perishable agricultural products, so factories were established close to estates to increase exports. Other value addition agricultural products through agro-processing that were considered by the colonial government included food and wood products.

To support the growing agro-processing and manufacturing, the colonial government undertook other initiatives by training Ugandans in various skills. They hoped that these new skills would promote smallholder peasantry, agricultural productivity and quality (Hall 1952). As a result, schools and colleges were opened at various levels across the country. Support industries, such as motor and plant repairing centres (in form of garages) were also established. As agriculture covered the entire nation, agro-processing industries were numerous[20] and scattered in the rural areas, close to major producing centres.

3.4 FDI Inflows After Independence, 1962–2013

At Independence in 1962, UDC had created a platform through which foreign investments could flow into the country. As a result, the establishment of UDC changed the country's economic structure from total dependence on agriculture to a diversified economy through manufacturing. This section discusses FDI inflows as FDI nationalisation (1962–1979), and later, FDI and economic reforms in Uganda (1979–2014).

3.4.1 Nationalisation of Foreign Investments in Uganda, 1962–1979

To transform the country from an agrarian into a formal economy, a dual economy was encouraged. Though Uganda's economy started to improve at Independence; in 1964, Ugandans in employment excluding peasant farming was less than 3 per cent (Stoutjesdijk 1967). Moreover, non-Ugandans owned most of the investments. In this regard, the new government after independence considered that the economy was dominated by foreign investments. There was a need for economic indigenisation, culminating in FDI nationalisation. Therefore, FDI inflows are further divided into two phases: FDI nationalisation (1962–1971), and FDI nationalisation and economic instability (1971–1979).

3.4.1.1 Phase One: FDI Nationalisation, 1962–1971

Following the economic achievements of colonialism, the new government at Independence had two main tasks. First, it was to lead the nation to prosperity through diversification. Second, it was to exercise political and economic power, since the nation was no longer in the hands of Britain. Third, it was to strengthen the initiatives started by UDC before Independence. Since Ugandans were poor and foreigners dominated the economy, it was necessary to empower communities and indigenise the economy. To achieve this, in 1963 the government passed the Uganda Industrial Act. This called on local investors to participate in industrial development as foreign investors were called on to increase their participation in the economy.

[20] According to Stoutjesdijk, by Independence the establishments included: 145 ginneries, 78 coffee hullers, 360 food and beverage processing industries, 254 wood processing establishments, 233 metal and engineering establishments, 148 motor and plant repairing establishments, two sugar establishments and two tea establishments.

Though the Act was intended to diversify the economy and empower Ugandans, the level of FDI was not as high as anticipated and local investors were still low. To increase FDI inflows, the 1964 FIPA was passed with four main elements. First, foreign investors were guarantees in regard to ownership rights, and legal protection against provided with safety compulsory acquisition by the state. Second, to increase the participation of Ugandans in the economy, UCSB was restructured, forming the Uganda Commercial Bank (UCB) in 1965 (Gershenberg 1972). UCB was meant to symbolise Uganda as an independent nation. Third, foreign investors were provided the right to repatriate capital, interest and dividends earned from foreign investments. Fourth, as a sovereign state, FIPA served as a source of finance for government projects and enable farmers and entrepreneurs to access loans for investment.

However, while the new government was beginning to reap the economic rewards of industrialisation, the country was unravelling politically. After independence, unresolved political issues that arose during the drafting of the 1962 Independence Constitution plagued the new government. Before colonialism Buganda was an independent kingdom with organised political and governance structures headed by the Kabaka (Green 2010; Tamukedde 1987). When Uganda became a British protectorate, Buganda was no-longer an independent state but an integral part of Uganda. Considering Buganda's superiority first, at Independence, Buganda was granted federal status (though not equivalent to 1900 powers of the Kabaka) but the rest of Uganda was not. Second, two directly opposing parties formed the new government: Kabaka Yekka (KY) and the African National Congress (ANC). Sir Edward Mutesa, the Kabaka (King) of Buganda from the south, led KY. He was a conservative and a believer in federalism and monarchism. Dr Apollo Milton Obote headed the ANC from the north, a republican with socialist orientations. As an alliance, they formed the UPC. Third, as a result of the alliance and Buganda's superiority the Kabaka became the President and Obote the Prime Minister of Independent Uganda. Nevertheless, the powers of the President and Prime Minister were not clearly defined by the Constitution. Fourth, the army, police and prison service personnel were dominated by service-people from the north. As a result, rivalry for power started to emerge, and in 1966, Prime Minister Obote overthrew the Kabaka as explained in Chapter Two, Section 2.4. Following the coup, Obote became the Executive President, the Kabaka was exiled to London, kingdoms were abolished and Uganda was declared a Republic.

As Obote was a nationalist, the immediate task was to design avenues through which the economy would be indigenised. Since economic indigenisation was not forthcoming, calls for it intensified. Consequently, in 1968 the government introduced the Common Man's Charter $[CMC]$ (Aasland 1974). This was a move to the left aimed at achieving equality between Ugandans and the foreigners who dominated the economy. Implementing the CMC required the nationalisation of foreign investments. This marked the climax of FDI nationalisation Phase One. Two political sides emerged. The GOU wanted to attain equality between foreigners and Ugandans. The British Government and foreign investors opposed the GOU. The British Government considered the move to the left as a betrayal. Foreign investors—largely Europeans and Asians—who owned the commercial and industrial sectors considered the CMC to be a step towards the nationalisation of their property. The GOU was walking a tightrope.

Despite these issues, the GOU made the famous 1970 Nakivubo Pronouncement (Obwona 1998). This was a milestone, and operationalised the CMC. Mistrust continued and through a military coup supported by Britain and Israel, Amin overthrew Obote's government on 25 January 1971 (Aasland 1974; Obwona 1998). Many within Uganda and the international community supported the coup. The British Government and foreign investors could not allow the GOU's move to the left to succeed. Internally, some tribes whose kingdoms had been abolished saw an opportunity to restore their glory. Baganda celebrated the coup as the Kabaka was in exile in London. To the Baganda, Amin was to restore kingdoms and bring back the exiled Kabaka. However, some neighbouring countries, such as Tanzania, a member of the East African Community (EAC), never supported the coup. Obote took political asylum in Tanzania. The coup accelerated Uganda's nationalisation of foreign investments and economic instability.

3.4.1.2 Phase Two: Foreign Investments, Nationalisation and Economic Instability

The military leadership began with overwhelming local and international support. However, the celebrations were short-lived. The kingdoms were never restored. Also, Uganda under Amin was not an easy ally of Britain (Patel 1972). FDI nationalisation remained unfinished. As previously mentioned first, poverty among Ugandans was still high as the majority were practicing peasantry farming. Second, non-Ugandans dominated the economy as well as formal employment. To this it was necessary for a nationalistic leader to adopt nationalism, but approaches differed as for Obote the Common Man's Charter explained in Section 3.4.1.1 was the solution.

Regarding Amin as the calls to indigenise the economy intensified, and in 1972 the Economic War Declaration (EWD) was made (Schultheis 1975). All businesses and investments of Asians of British origin were nationalised, and the army ordered Asians to leave the country within 90 days. This was the climax of the second phase of FDI nationalisation. The British Government and foreign investors started to count their losses at this time, even though they had originally supported Amin's overthrow of Obote. Calls to reverse the EWD only intensified Amin's expulsion of Asians, and eventually all foreign-owned firms were nationalised. In response, the international community imposed sanctions on Uganda.

While the international community was grappling with appropriate measures to take against Uganda for expelling Asians, the GOU was devising ways of filling the gap left by their departure. Most businesses and industries were nationalised and put under the management of the UDC. In order to consolidate management the Asians' firms, GOU consolidated earlier decrees into the Properties and Businesses (Acquisition) Decree 11/1975. Following the decree, the GOU Departed Asians Property Custodian Board (DAPCB) was established to administer property under the Ministry of Finance supervision (M'Poko 1989). The primary objective of DAPCB decree was to manage and allocate firms to prospective Uganda local entrepreneurs. To this extent, Ugandans, especially those who took over the property that had belonged to Asians, celebrated. To Amin, by local Ugandans managing firms formally owned by Asians, Uganda's economy has achieved economic indigenization.

Uganda's gains were short-lived. DAC allocated businesses largely to friends of the regime and their close relatives with little entrepreneurial skills. The previous Asian owners possessed business skills that the new managers did not, so many businesses collapsed. Second following the international sanctions, all borders were closed. It became difficult to import intermediate goods, causing almost all industries to close. To exacerbate the problems, while Amin's Declaration of Economic War had targeted Asians, nearly all foreign investors left the country. Further, Obote was exiled to Tanzania, and a result, the EAC collapsed in 1977 due to bickering of the three member states (Uganda, Kenya and Tanzania). With the collapsed industries and closed borders, nearly all essential commodities disappeared. Reality dawned on Ugandans including the regime that mistakes had been done by the country's political heads. First, it was not right for Obote to have overthrown the first democratically elected government. Second, ruling by decree was not a solution to Obote's actions. Third, the economic war declaration only aggravated Uganda's economic and political instability.

After the overthrow of Amin in 1979, a new era for Uganda's political and economic history began. Due to economic instability, with donor support, the new government embarked on economic reforms (Fan & Zhang 2008; Nuwagaba 2001; Sejjaaka 2004). Openness through FDI became one of the pillars that could lead to accelerated economic growth, employment creation and poverty reduction.

3.4.2 FDI Inflows During Economic Recovery and Reforms, 1979–2014

The period 1979–2014 can be regarded as the second phase of foreign investments in Uganda. This coincided with the December 1980 elections, which culminated into the second democratically elected government since Independence. Due to civil wars that erupted in 1981, FDI inflows can be explained through a two periods of transition: 1979–1991 and 1991–2014.

3.4.2.1 Economic Reforms and FDI Inflows, 1979–1991

Cognizant of the desperate situation the country was in, a revamp of domestic and foreign investment was inevitable. Early governments adopted a dual approach to foreign investments. First, the GOU started to appeal to foreign investors to establish new industries in Uganda. The second approach was to appeal to expelled Asians to return to Uganda, repossess and rehabilitate their businesses and industries that had been taken. The latter approach seemed to be more effective. Consumer goods industries that had closed could easily be rehabilitated, and due to a scarcity of commodities there was a ready market for consumer goods. In 1983 the Expropriated Properties Act was passed replacing the 1975 Properties and Businesses (Acquisition) Decree. As a result, the Custodian Board Properties (CBP) was established to manage industries that were not under UDC management. This provided the MFPED with guidelines through which expropriated properties and businesses could be returned to the former owners. The Act firstly, guaranteed the safe repossession of property to former Asian owners. Secondly, the Act, provided avenues for joint venture participation between the GOU and former Asian owners in those businesses that were considered a priority to government; for example, consumer industries. Thirdly, the Act provided a platform for joint venture participation between former Asian owners and local entrepreneurs wishing to form such a venture. Finally, the Act established provided guidelines for divestiture of any businesses and industries not claimed by an Asian owner.

Following the Act, more Asians became confident to return. Since most of the firms had been mismanaged, the government also supported returning Asians with finance to rehabilitate their firms. In response, among the early Asians to return was Nanji Kalidas Mehta, the founder of a conglomerate of cotton ginneries, a sugar plantation and Mehta Lugazi Sugar Works, returned in 1980. Through a Joint Venture Agreement between Mehta Group (founder and former owner) and the GOU, the Sugar Corporation of Uganda Ltd (SCOUL) was formed. With funding from GOU, SCOUL and donor agencies such as: the African Development Bank, the International Finance Corporation of the World Bank, the Commonwealth Development Corporation and the Arab Bank for Economic Development of Africa, the factory was rehabilitated and reopened in 1982. Also, Muljibhai Madhavani (founder of the Madhivani Group, the largest conglomerate in Uganda, comprising investments such as sugar estates and Kakira Sugar Works [KSW], tea, schools and colleges, as well as recreational centres) returned in 1985 and repossessed his property. The rehabilitation of KSW was funded by the GOU, the Madhivani Group and donors, including Africa Development Bank (ADB). In 1986, the factory reopened with 51% GOU equity.

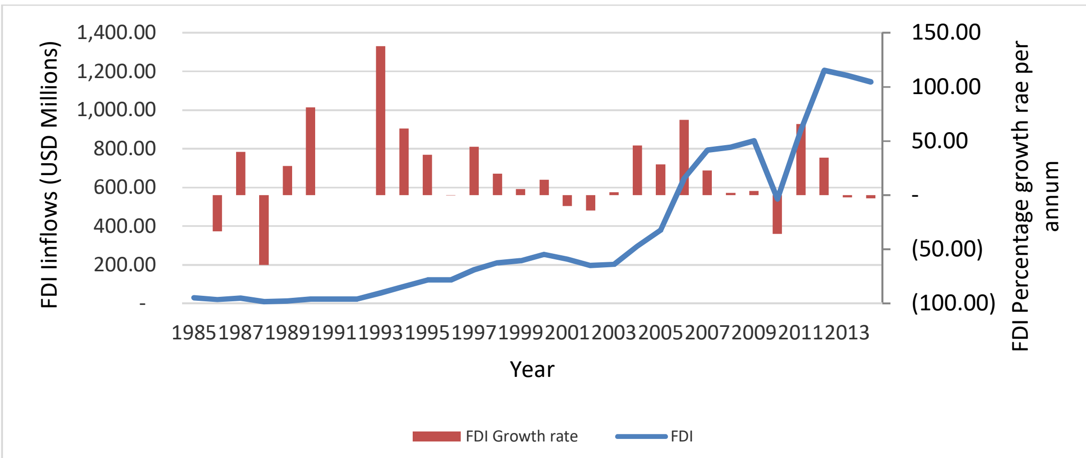
While the government was trying to generate confidence in foreign investors, Uganda became politically insecure again. In 1981, insurgency started. In 1985, the political situation worsened following a military coup that overthrew the government elected in December 1980. In 1986, the NRM overthrew the military junta, marking another phase of economic reforms and foreign investments in Uganda. Following these initiatives, World Bank (1999), BOU (2005) and Global Coalition Africa (1995) indicate that FDI inflows started to increase in Uganda from USD 30 million in 1985 but declined to USD 12.70 million in 1989. However, UIA (2005) and UWIR (2004) indicate that during the period 1989 to 2003 the average FDI inflows in Uganda was about USD 23 million.

3.4.2.2 Economic Reforms and FDI Inflows, 1991–2014

Since international sanctions were no longer being imposed upon Uganda, the NRM government continued building on the foundations of the governments that came after Amin. They asked Asians to return to Uganda, and appealed to departed donor agencies to return and support the nation’s rehabilitation. The Uganda Investment Code also established the

UIA in 1991, and this code replaced the 1964 FIPA and 1977 Foreign Investment Decree. The UIA was intended as a one-stop-centre (OSC) for the promotion and supervision of investment. To expedite investment registration, other departments and ministries—such as the Uganda Revenue Authority (URA), the Department of Immigration, the Ministry of Lands and the Uganda Registration Services Bureau (URSB)—provided the OSC with their staff. Following these initiatives, FDI inflows increased.

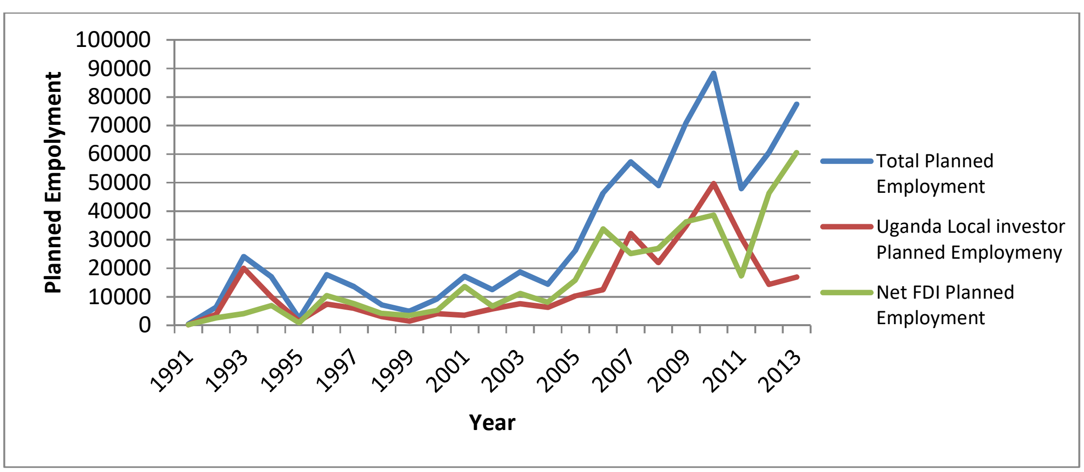
Figure 3.2: Trends in foreign investment inflows into Uganda, 1985–2014



Source: BOU; Global Coalition Africa; UBOS; UIA; UWIR; WDI (1985-2014)

FDI increased from USD 30 million in 1985 to USD 1,146.13 in 2014, representing a USD 359.08 million annual FDI inflow, growing at 20.11% per annum. Planned employment by foreign firms as also increased.

Figure 3.3: Trends in some employment indicators in Uganda



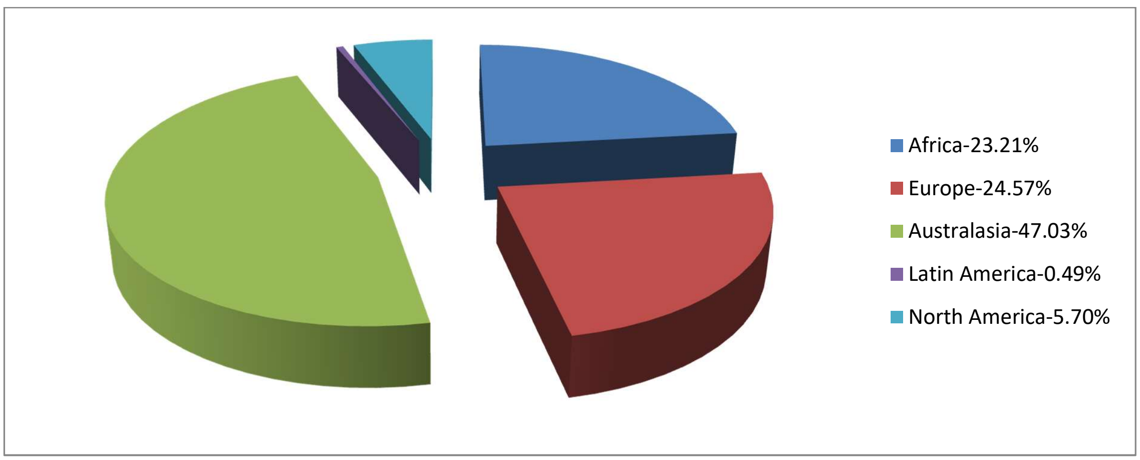
Source: UIA database 1991-2013

The employment indicators reveal that Uganda's civil service, which includes teachers, increased from 274,047 in 1985 to 292,535 in 2014. Also, FDI planned employment[21] increased from 557 employees in 1985 to 69,091, while local investment in employment increased from 208 to 16,961 employees during the same period. Further, the structure of FDI inflows regarding origin, mode-of-entry and sectoral distribution has changed.

3.4.2.2.1 The Origin of FDI Inflows into Uganda

During colonialism and before the reforms, FDI mainly came from Europe and Asia, especially Britain and India. However, due to openness, the pattern of FDI inflow has changed.

Figure 3.4: Regional percentage share of FDI projects established in Uganda 1991-2013



Source: UIA database 1991-2013

As indicated under Appendix 3.3, between 1991 and 2014, about 5562 projects were established in Uganda. These projects originated from over 160 countries representing about 62% of WTO member countries. About 1,435 established projects originated from Australasia. The highest number of projects came from India (755), followed by China (364) and Pakistan (108). The second highest investment region is Europe, with 719 established projects from 30 countries, including Russia. Among the European Union (EU) member countries, only nine[22] do not have companies with established projects in Uganda. Britain is the leading country, with 359 companies, while Germany has 48 and Denmark 45. Regarding North America, of the 174 established projects, 94 originate from the United States (US), 75

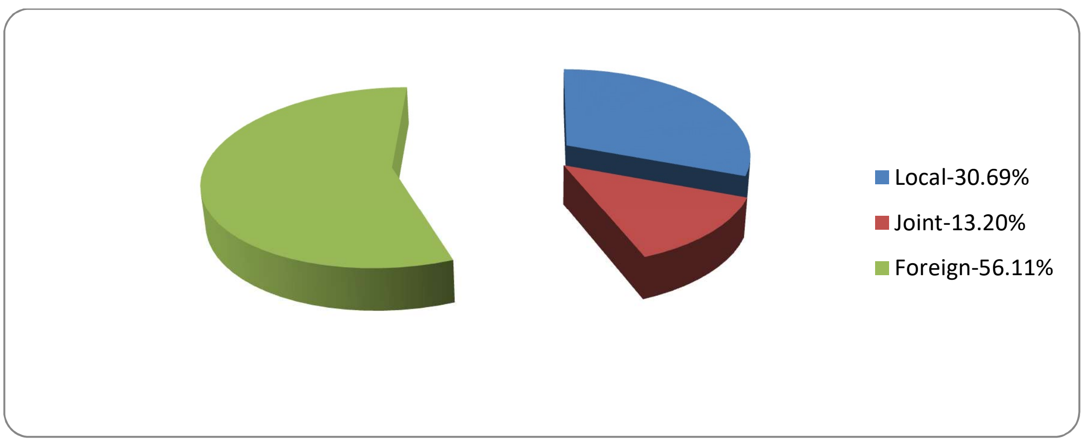
[21] Refer to Appendix 3.2
[22] Those that did not have any established projects in Uganda in 2013 include Bulgaria, Croatia, Estonia, Finland, Hungary, Latvia, Romania, Slovakia and Spain.

from Canada and five from Bermuda. Africa contributes the third highest number of established projects (708), originating from 29 countries (53.7% of African countries). In terms of regional share, of the 19 Common Market of East and Southern Africa (COMESA) member countries, 15 (79%) have companies with projects in Uganda. Kenya has the highest number, with 338 companies, followed by Eritrea (60) and Tanzania (38). Of the South Africa Development Community (SADC), nine member countries (56%) have companies with established projects in Uganda.[23] South Africa leads, with 74 companies, followed by Mauritius (21) and Zimbabwe (17).[24]

3.4.2.2.2 Distribution of FDI in Uganda

There are no mode-of-entry restrictions on foreign investment. During the early 1980s, most investors were Asian returnees who had come back to repossess and rehabilitate their businesses and industries (Obwona 1998). Some Asians never returned, while some who did decided to sell their projects either to Ugandans or form joint ventures. Since the early 1980s, the distribution of FDI has extended.

Figure 3.5: Distribution of FDI in Uganda, 2013



Source: UIA database 1991-2013 (Further details refer Appendix 3.4)

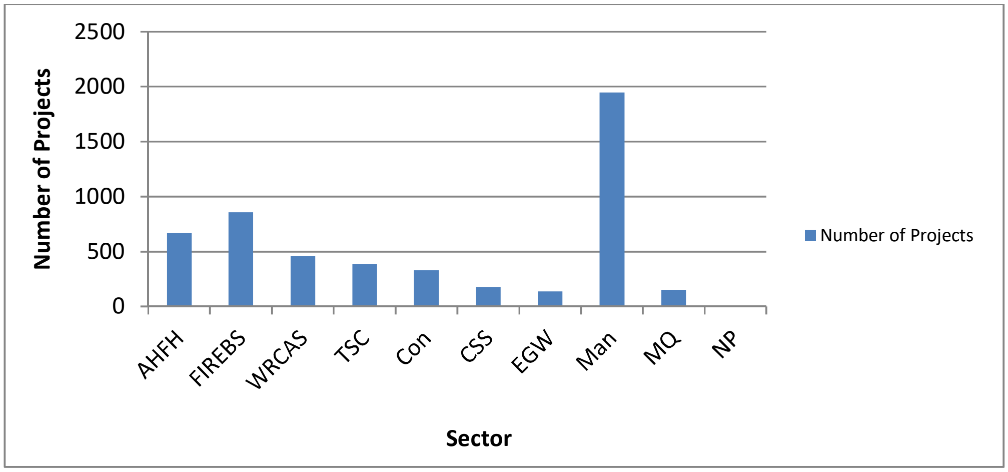
Local investments accounted for 30.7% in 2013. Joint ventures increased from 5% in 1991 to 56% in 2013. Further, in order to encourage local participation in foreign investments, the Petroleum Act 2013 required that all foreign investments should be jointly owned by Ugandan investors, at a rate of 51% ownership by a Ugandan citizen.

[23] Those that do not are Angola, Lesotho, Madagascar, Namibia, Swaziland and Zambia.
[24] Mauritius, Zimbabwe and Tanzania also belong to COMESA and SADC.

3.4.2.2.3 Sectoral Distribution of FDI Inflows into Uganda, 1991–2013

Foreign investments in Uganda are grouped by UIA into nine sectors.

Figure 3.6: Sectoral distribution of projects, 1991–2014



Source: UIA database (Further details refer Appendix 3.5)

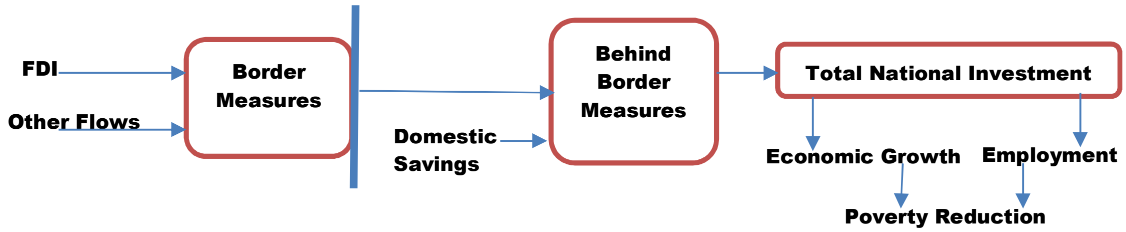
Note: AHFF = agriculture, hunt, forestry and fish; FIREBS = finance, insurance; real estate and business services; WRCS = wholesale, retail, catering and communication services; CON = construction; CSS = community and social services; EGS = electricity, gas and and accommodation services; TSC = transport, storage water, Man = manufacturing, MQ = mining and quarrying, NS = not specified.

Sectoral distribution of registered foreign investments indicates a shift from investment in agriculture to other sectors, after the reforms. The manufacturing sector has attracted the highest number of foreign investments, composed of import substitution consumer industries such as sugar, tea, bread and soap. New sectors have also opened up, ranging from real estate, hotels and catering to community social services, such as schools and hospitals. Donors encouraged Uganda to establish regulations for a pro-investment environment, and as a result, Uganda has been found to be a better destination for investment. However, a review of registered major projects UNCTAD and International Chamber of Commerce (2001), indicate that most FDI projects are located in Kampala.

3.5 Investment Regulations in Uganda

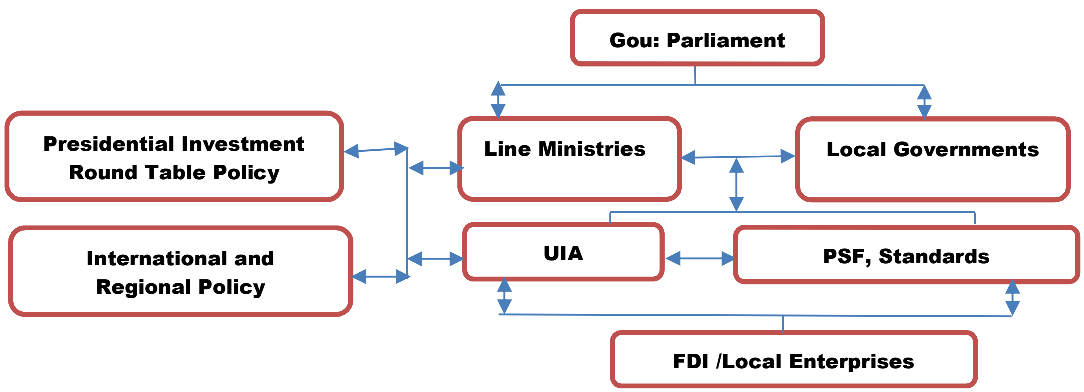
The Constitution of the Republic of Uganda is the supreme legislation. According to the Constitution, regulation can be categorized “border” and “behind-the-border” measures aimed at eliminating obstacles to investment. These measures are summarised by Figure 3.7.

Figure 3.7: Summary of FDI regulations



Border measures refer to the regulations of FDI project entry into Uganda. Behind-the-border includes domestic measures that regulate the operation of investment in Uganda. These regulations were part of the 1980s ERP package, introduced after the overthrow of Amin. The Parliament of Uganda is the supreme arm of government responsible for making regulations. To make policies, the Parliament of Uganda works through line ministries and line ministries work in collaboration with international agencies, the private sector and decentralised local government, to create a pro-investment environment. Investment in Uganda operates through a coordinated institutional framework.

Figure 3.8: FDI regulatory and operation framework in Uganda



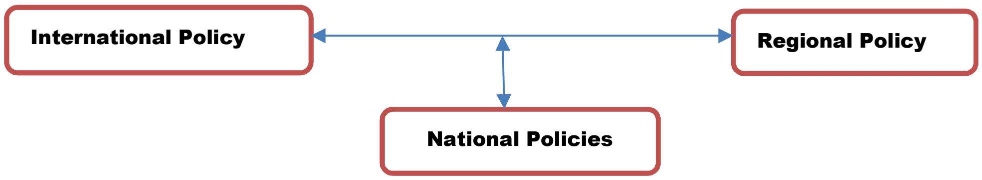
Notes: GOU: Government of Uganda; UIA: Uganda Investment Authority; PSF: Private Sector Foundation

UIA works in collaboration with line ministries[25] to regulate investment in Uganda. Due to the importance of FDI to economic growth, employment and poverty reduction in Uganda, a Presidential Investment Round Table has been established. At the investment level, FDI and local enterprises work in consultation with private-sector interest groups.

[25] The key ministries include the Ministry of Finance, Planning and Economic Development; the Ministry of Trade, Industry and Cooperatives; the Ministry of Local Government and the Ministry of Agriculture, Animal Industry and Fisheries.

Uganda is a member of the United Nations and affiliated agencies, and is a signatory to regional trade agreements (RTAs), bilateral agreements and investment treaties. FDI regulations in Uganda are subject to international and regional obligations.

Figure 3.9: The relationship between national, regional and international regulations



Regulations in Uganda are influenced by international and regional policy agreements. Figure 3.9 explains the manner in which regional and international regulations influence each other. In turn, such policies are harmonized and domesticated, while taking care of national interests and objectives. As a result, FDI regulations in Uganda are related to non-discrimination, transparency, dispute settlement, property rights, financial standards and taxation regulations.

3.5.1 Non-Discrimination

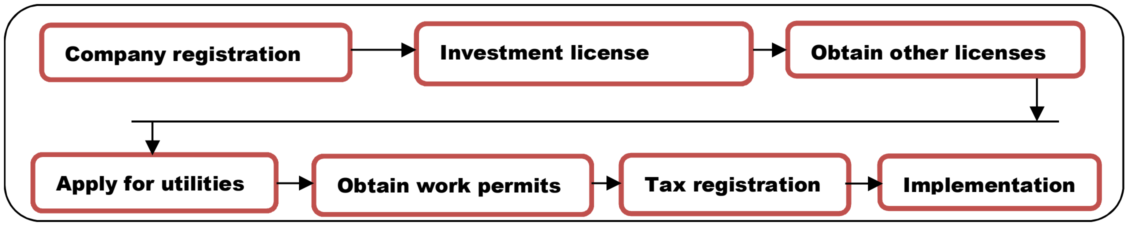
As a member of the WTO and RTAs such as EAC and COMESA Uganda does not discriminate among investors. Uganda has established regulations that conform to the WTO's Most Favoured Nation (MFN) and National Treatment (NT) requirements.

3.5.1.1 Most Favoured Nation regulations

The MFN clause is enshrined in most trade and investment agreements. Under the WTO agreements, the MFN clause obliges countries not to discriminate between their trading and investment partners. MFN is enshrined in Uganda's border regulations regarding entry and the establishment of business in Uganda. There is no discrimination among Uganda's investment and trading partners. All foreign visitors, including tourists, must pay entry visa fees of about USD 50 for a single-entry visa, based on the principle of reciprocity (although RTA entry visa regulations exempt residents from COMESA and EAC countries from paying for entry visa fees).

All sectors of Uganda's economy are liberalised, implying that foreign investors are free to establish firms in a sector of their choice. About 98 countries, representing 62% of the 161 WTO member countries, have established FDI projects in Uganda with relative ease. All UIA registered firms go through a step-by-step process to establish projects.

Figure 3.10: Necessary steps to start an FDI project in Uganda



Source: UIA 2015

Step One: Company Registration

After entering the country, investors register their firms as companies with the URSB, under the Ministry of Justice. Regulations governing company registration are contained in the Uganda Company Act 2009. The Act requires that companies obtain a certificate of Memorandum and Articles of Association, and a Certificate of Incorporation, based on the Companies Act (Cap 110).

Step Two: Obtaining Investment Licence

The UIA is the agency responsible for issuing investment licences. To obtain an investment licence, all FDI is subject to a minimum investment threshold of USD 100,000 planned investment as evidence, before a licence will be issued. As an OSC for investments after obtaining a licence, investors then have access to other licences and services.

Step Three: Obtaining Other Licences

Investments differ in size and extent depending on national interests and objectives such as environment, employment and land. Although all sectors are liberalised, legislation differs depending on the sector. As such, some investors are required to obtain secondary licences.

Step Four: Application for Utilities

Utilities such as water and electricity are critical to investment. Applications for utilities become necessary as a way of enabling investors to access services.

Step Five: Obtaining Work Permits

Foreign workers are required to get work permits based on the Uganda Employment Act (2006) and the Uganda Workers Compensation Act (2000). Residents from EAC member states are exempt, because protocol establishing the East African common market provides freedom for movement of goods and services, capital, labour, persons, financial integration and the right for the establishment of residence. MFN FDI regulations vary depending on multilateralism and RTAs to which Uganda subscribes.

Step Six: Tax Registration

This is the final stage that foreign and local investors registered by UIA. All companies register their businesses for VAT identification numbers and tax identification numbers for staff. These regulations are included in the 2012 Domestic Tax Laws, the most important of which are Income Tax Regulations and Statutory Instruments, VAT and Statutory Instruments, the Gaming and Pool Betting (Control and Taxation) Act (1996), Double Taxation Treaties, the EAC (2010) Double Taxation Agreement (EAC-DTA) and the EAC (2004) Customs Management Act (EACMA).

3.5.1.2 National Treatment regulations

NT regulations are behind-the-border investment regulations for investors in Uganda. To enable Uganda to become a favourable destination for investors, regulations governing investment treat all investors equally. Basically, NT covers the FDI climate environment regulations. UIA (2014) indicates that Uganda implements pro-investment regulations concerning transparency, dispute settlement, financial management protection property rights, competition and standards, labour and employment regulations, investment promotion and community social responsibility.

3.5.2 Transparency

Transparency obligations require that host nations implement predictable, transparent and binding investment regulations (Hoekman & Kostecki 2005; Tietje & Ecorys 2014; UNCTAD 2007; WTO 1994). To guarantee transparency, first Uganda consults with member countries while proposing any changes in the investment regime. Second, member countries are notified of changes related to investment, and such regulations are published in official media, such as The Uganda Gazette. Third, UIA has been established as an OSC for investment-offering services to all investors in the country, without discrimination. Fourth, before implementing any measures, consultations are made at all levels through various stakeholder meetings at international, regional and national levels. The private sector and interest groups (both public and private) have the opportunity to comment on draft legislation and regulations. Also, feedback mechanisms have been put in place, while the private sector is given the opportunity to channel their views in regard to regulations that affect investment.

3.5.3 Dispute-Settlement Mechanism

The WTO and the International Centre for the Settlement of Investment Disputes (ICSID) provide mechanisms for protecting foreign investments (Castel-Fodor 2013; Pryles, Waincymer & Davies 2004; WTO 1994). The GOU, through the 1995 Constitution regulations for settling commercial and investment disputes, have been established through the judicial system. To achieve this objective, in 1996 Uganda Commercial Court as a division of the High Court of Uganda was established, to govern and settle commercial related disputes. Two systems have been established to settle commercial cases: the alternative dispute resolution (ADR) mechanism and litigation. The Uganda judicial system prefers that parties try to utilise ADR to settle disputes. In the case of arbitration, Uganda is a party to the New York Convention of 1958, which allows the recognition and enforcement of foreign arbitral awards. As such, efficient and cost-effective services for adjudicating commercial disputes have been introduced.

3.5.4 Property Rights

The Constitution of Uganda allows the private ownership of property. Foreign investors are allowed to establish projects in any sector, and own property as a wholly owned enterprises (WOEs) or joint ventures. The main regulations concerning property ownership concern land, intellectual property and expropriation and compensation regulations.

3.5.4.1 Land

Foreign investors can establish WOEs or joint ventures, allowing land ownership depending on the mode-of-entry. UIA helps foreign investors own land of any size, depending on the project they wish to establish. Regarding joint ventures, the Companies Act 2012 serves as a guide through which foreign investors can own property, as a partnership based on the Articles of Association and Memorandum of Understanding signed by the parties. Following the 1900 Buganda Agreement, signed by the King of Buganda and the Queen of England, there are five land tenure systems through which foreign investors can own land in Uganda:

customary, mailo land[26], freehold and leasehold (Bomuhangi, Doss & Meinzen-Dick 2012; Busingye 2002; Doss, Meinzen-Dick & Bomuhangi 2014 Land Amendment Act 2010; Mukwaya 1953).

3.5.4.1.1 Customary Tenure

The customary land tenure system is the most common land tenure system, covering more than 80% of land in Uganda. The customary land tenure system is governed by the customs, rules and regulations of the particular community. There are two customary land systems: communal and individual, family or clan customary land system. The communal land system refers to land ownership where the household is the primary owner of the land, including extended family members. Land is community property that is accessible to all, with no restrictions. Such land includes farmland, animal pasture, grazing and hunting land, as well as burial grounds (Bomuhangi, Doss & Meinzen-Dick 2012). Communal land is mostly utilised by pastoralist communities in Northern Uganda, especially the Karamajong pastoralists, and in some parts of the cattle corridor in West Uganda. In these areas, communities have the freedom to use land in any form. Under the communal system, no family or community member has specific land ownership rights. The control and ownership of land prevails under the family, clan or the community, but rights are conferred on users. Considering the governance of land under the communal land system, foreign investors are likely not to acquire such land, since there are no bonafide owners.

Individual/family or clan customary tenure is a system where land ownership is marked as belonging to an individual, family or clan, not a community. However, male elders are the custodians of customary land in most communities and determine the distribution of land. This is based on the assumption that females acquire land when they marry into a family. Though land ownership is usually individualised, this is not always the case, although generally acceptable. Before the sale of land, clan members and family must be consulted. Foreign investors can buy land as long as family and clan members give consent. Acquiring land under the customary land tenure system becomes difficult in situations in which the head of the family cannot be easily identified. Financial institutions, such as banks, do not accept customary land as collateral. Nevertheless, through proper procedure, foreign investors can buy such land. For example, Kaliro Sugar Works is located on formerly customary land.

[26]Local Luganda language ‘Mailo’ means Mile in English. The mailo system is square mile as basic traditional measure of reasonable land, hence the derivation of mailo, which is also equivalent to 640 acres.

3.5.4.1.2 Mailo Land Tenure

According to the 1900 Buganda Agreement, all land in Buganda was divided into two: crown land, which was under the control of the colonial government, and mailo land. The term mailo land was adopted to describe a land tenure system that came into effect in 1900 when the kingdom of Buganda signed an agreement with the British colonial administration to which Buganda was an integral as previously explained in Section 3.4.1.1. According the system, mailo land is further categorised as first mailo describing land belonging to individuals in Buganda. The second category is the official mailo land meaning the land belonging to the Kabaka of Buganda, administered by the Buganda Kingdom Land Board.

Part of the privately owned mailo land was given as a reward to colonial agents who supported Buganda Kingdom. It was granted to individuals and missionaries throughout Uganda, where the first schools were built. Due to population increase, people have settled on most of the mailo land, either legally or illegally. The 1995 Constitution divided the private mailo land into two groups: that occupied by landlords and that occupied by tenants. Landlords were recognised by the Constitution as bonafide owners, while people who had settled on the land were tenants. According to the Constitution, tenants can use the land provided they pay rent to the landlord. However, the Constitution complicated land ownership and utilisation for investments. First, tenants partially own the land, so cannot be evicted in case the land is needed for development. Second, landlords cannot easily utilise their land if occupied by tenants, or even sell it to a developer, as the Constitution protects tenants from eviction. Foreign investors may not find it easy to own mailo land as two parties must agree on the same: tenants and landlords.

3.5.4.1.3 Freehold Tenure

Freehold land tenure is a system where land is registered and owned permanently through a title deed. Freeholders are landowners given complete rights to use the land in any form deemed suitable—including use, sale, lease, transfer or mortgage—according to the Land Act regulations. Freeholders are limited to certain categories of people, such as kings, notables and chiefs and large-scale agricultural estate developers. Before Independence, the colonial government also gave freehold land titles to special interest groups and institutions such as religious organisations, missionaries, educational institutions and other big corporate bodies

(Pedersen et al. 2012). Freehold land was established by agreement between the Kingdoms and the British Government, creating Crown land.

3.5.4.1.4 Leasehold Tenure

Leasehold is a land system where land is acquired from public land belonging to the GOU or a local authority. Developers obtain access to such land through lease contracts specified for a period, usually five, 45 or 99 years Pedersen (Pedersen et al. 2012). Owners of freehold land, mailo land, the Crown or the Uganda Land Commission, grant leaseholds to investors. To be granted leasehold, tenants pay an annual rent or service under specified terms and conditions.

3.5.4.1.5 Public Land Tenure

The public land tenure system refers to land that is designated for public use, such as public buildings, roads, wetlands and game parks. Use of public land is usually restricted to the specific public purpose for which it was intended.

3.5.4.2 Intellectual Property Rights

Uganda is a member of the WTO and the World Intellectual Property Organization (WIPO). As such, Uganda has enacted legislation to protect intellectual property. Patents are governed by the Patents Statute of 1991, which provides for the protection of inventions, defined as products or processes that are either new or have an innovative component, and are industrially applicable. A patent owner has the exclusive right to exploit his/her invention for 15 years, and may have recourse to the courts for damages, injunctions or other measures if the right is infringed. The Statute bars holders of patent licences from engaging in anti-competitive practices.

3.5.5 Financial Regulations

In Uganda, financial regulations have been designed to regulate the operation of financial institutions such as banks, brokers and insurance firms, as well as investment companies. These regulations are first intended to create a level playing field for protecting investors, markets and consumers, to create financial stability. Second, financial regulations are intended to contribute to the economic performance of an economy by setting minimum standards for facilitating capital flows and investment, as well as mobilising savings Herring

(Herring & Santomero 2000). Uganda's financial regulations include expropriation and compensation, conversion and transfer policies, income tax, bankruptcy regulations and regulations to curb corruption.

3.5.5.1 Expropriation and Compensation

As a member of the Multilateral Investment Guarantee Agency (MIGA), Uganda has designed expropriation and compensation regulations for investors. The expulsion of Asians in 1972 scared investors, and required expropriation and compensation regulations for investors. Further, since 1966, Uganda has experienced several civil wars and coups. As such, Uganda became a high-risk country for investment. As a developing country, Uganda was obliged to join MIGA to provide guarantees for the safety of foreign investors.

To implement MIGA requirements, in 1983 the GOU established the Expropriated Properties Act. This deters the GOU from taking possession of or acquiring private property, except in accordance with the Constitution of Uganda. If this were to happen, the regulations stipulate that investors would be compensated for any losses. Where an enterprise is compulsorily taken possession of or acquired, such enterprises have to be compensated according to their market value, and the GOU must compensate the enterprise within a period not exceeding 12 months from the date of possession or acquisition.

3.5.5.2 Currency Conversion and Transfer Policies

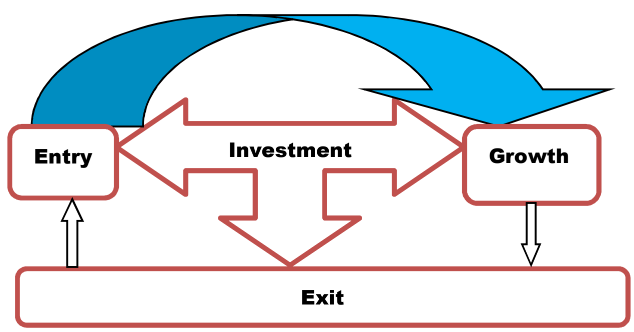
In 1997, following the adoption of liberalisation policies, the GOU removed all capital-account controls and placed no restrictions on capital transfers into or out of Uganda UIA (UIA 2014; UNCTAD & International Chamber of Commerce 2001). In a liberal economic environment, there are no restrictions on imports, exports or investment, except under special circumstances related to GATS. However, to regulate and maintain stability, conversion and transfer policies are based on the Bank of Uganda (BOU) Act 1993 and the Financial Institutions Act 2004. BOU is required to maintain monetary stability and supervise, regulate, control and discipline all financial institutions. To effectively ensure financial stability, a number of financial regulations must be introduced, including the Mobile Money Guidelines 2013, Foreign Exchange (Foreign Exchange Bureaus and Money Remittance) Regulations 2006 and the Foreign Exchange Act 2004. These provide guidelines, including the manner in which funds should be transferred.

Due to increasing fraud and money laundering, further regulations related to financial transactions have been introduced, such as the Financial Institutions (Anti-Money Laundering) Regulations 2010 and GOU the Anti-Money Laundering Act 2013. These require that during the remittance of finances, the sender, receiver and financial institution should have knowledge of the customers. Foreign investors are free to transfer and convert currencies suitable to the particular transaction. However, UIA (2014) regulations indicate that though investors are free to convert and transfer money, there are exceptions regarding particular foreign investments that receive incentives. The limitations indicate that FDI related to government incentives must get permission from the UIA, and transfers must be consistent with the purpose for which the repatriation is intended, upon the issuance of a certificate of approval for repatriation.

3.5.5.3 Insolvency Regulations

Investments and businesses are prone to risk, characterised by losses and profit. In the case of losses, firms cannot meet financial goals, which create a spiral of losses to debtors. As a result, the GOU-enacted insolvency regulations under the 2011 Insolvency Act, to protect debtors and creditors. Entrepreneurship and investment are bound in a triad relationship of entry, growth and exit, as indicated by Figure 3.11.

Figure 3.11: The relationship between business entry, growth and exit

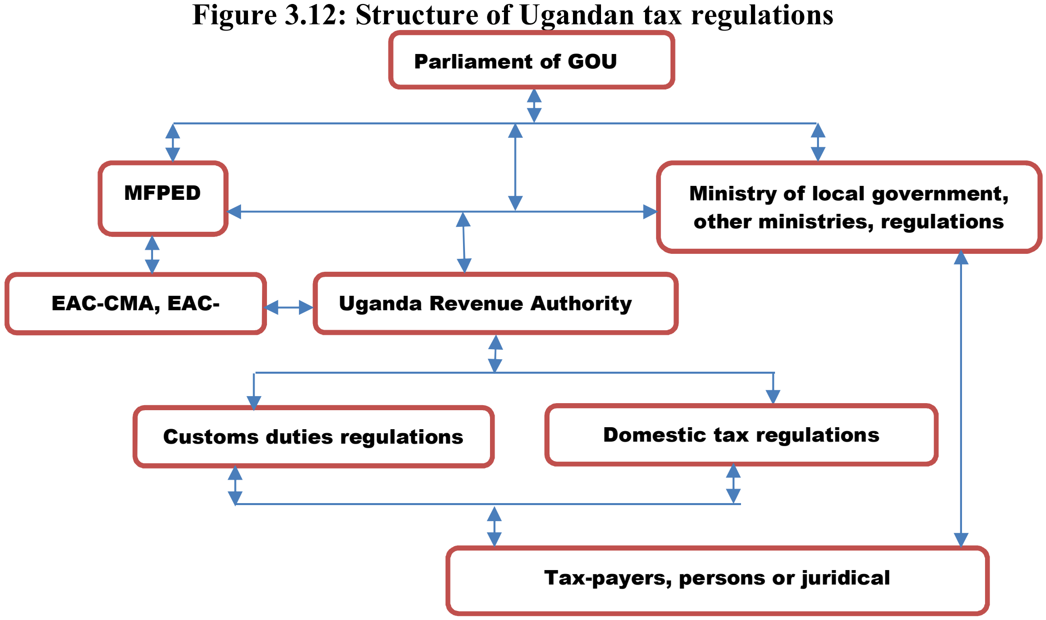


The Insolvency Act is an important tool that provides guidelines for firms to exit in case of difficulties during operations. This preserves and increases value for investment and business, as creditor risk is minimised. Insolvency regulations not only benefit creditors and debtors, but the entire economy. First, as the economy grows, jobs also increase, leading to a vibrant economy. In turn, employees benefit through salaries and/wages, while government benefits through taxation. Second, when creditors in the form of suppliers increase so-does production and components, and the product value chain system. Third, insolvency regulations lead to increased credit lending by banks, as debt recovery becomes manageable. Finally, stakeholders, especially shareholders, benefit through profit since malpractices such as fraud and debt non-recovery are minimised. Also, investment regulations are included in legislation such as Companies Act regulations, employee regulations, legal procedures and non-tariff measures related to investment and competition.

3.5.5.4 Taxation Regulations

The URA, established in 1991 under Article 152 of the Constitution, is the agency responsible for tax collection. The URA advises the MFPED on all matters concerning tax administration, and collects taxes in Uganda. Figure 3.12 indicates that the Parliament of the body responsible for regulating businesses and Uganda. To this end, the Parliament regulates the business environment through various taxes. Also, the taxes imposed are a source of government revenue, a base for infrastructure development and service delivery in the country. In addition, the figure indicates the role of URA, MFPED and line ministries in tax regulation in the country.

Figure 3.12: Structure of Ugandan tax regulations



As Uganda is a member of the EAC, all taxes collected are based on the 2004 EACMA and EAC-DTA. Also, local governments collect taxes based on the Local Governments Act 1997. All investments are subject to other regulations, to meet Ugandan and sanitary and phytosanitary regulations. Taxes collected in direct and indirect ways are categorised as customs duty and domestic taxes, and are subscribed to by all firms.

3.5.6 Customs Duties

Customs duties are indirect taxes levied on goods traded internationally, either in the form of imports or exports, listed in the Uganda tariff schedule. Following the EAC-CMA, a Common External Tariff (CET) has been established as a legal framework for collecting tariffs on goods traded internationally. The CET firstly provides for duty-free and quota-free movement for all goods traded among the five EAC member states (Uganda, Kenya, Tanzania, Rwanda and Burundi). The CET was established with three tax bands: 0% for raw materials, 10% for intermediate goods or semi-processed goods and 25% for finished goods. The CET was established considering other RTAs, such as COMESA, to which all other EAC countries are members, except Tanzania. However, due to the multiple memberships of EAC, COMESA and SADC member states, a tripartite agreement is under negotiation, to harmonise trade and investment between the three interrelated blocs.

URA classifies customs duties into four broad categories: import duty, VAT, withholding tax (WHT) and trade regulations. According to the EAC-CMA, customs duty on a commodity is a combination[27] of import duty, VAT and WHT. All three customs duty categories are applied to all commodities imported to Uganda collectively, and the related regulations pertaining to a particular commodity. Import duty is either *ad valorem* or specifically applied on a commodity imported to Uganda. VAT is an indirect tax paid by a taxable person[28] on local goods and services consumed or imported into Uganda. VAT is based on the 1996 VAT Act.[29] It is charged on the value added on a product or service at different stages of the production or supply of goods and services. VAT covers two main categories of supplies: imported goods and services, and taxable supply of goods and services produced by a taxable person in Uganda. WHT is a tax withheld by a government agent on a transaction conducted by a taxable person. Imports regulations indicate that persons who import goods into Uganda pay WHT at 6%, with exemptions on plants, machinery and raw materials imported by manufacturers.

[27] Customs duty on a commodity = [(value of commodity x import duty) + VAT + WHT]
[28] The VAT Act defines a taxable person as an individual, partnership, company, trust, GOU, public or local authority, such as a district or town council.
[29] Amended in 2000.

3.5.6.1 Domestic Tax

The Domestic Tax Laws $[DTL]$ (2012) contain provisions that indicate that Uganda's domestic taxes are comprised of three broad categories: income tax, VAT and gaming and pool betting.

3.5.6.1.1 Income Tax

According to the DTL 2012, income tax is levied on a person's taxable income (resident individual persons or juristic),[30] company, partnership, trustee, government and sub-divisions of government (such as local government). Therefore, income tax is charged on income earned in three main forms as business, employment and property, administered under the Income Tax Act (1997) Cap 340, with four major categories. First, corporate and income tax, which is a direct tax levied on profits made by companies and institutions such as trusts and registered cooperative societies. All firms are expected to pay corporate and income tax, as long as profits have been made in a given fiscal year. The second income tax is pay as you earn (PAYE). This is a direct tax levied on employment incomes in the form of salary and emoluments, commissions and gratuities. The organisation or firm that employs an individual, whether local or foreign, collects PAYE tax. The third form of income tax is property tax, a direct tax levied on rental, immovable property income such as land, residential and commercial property. The Act defines property income as dividends, interest, natural resource payments, rents, royalties and any payments received by a person from the provision, use or exploitation of property. Finally, WHT is a direct advance income tax paid by a taxpayer on goods and services provided (Magson 2014). WHT is both a border tax in the form of customs duty, and a behind-the-border tax, as a domestic income tax. As a domestic tax, WHT is a tax levied on employment income, international payments, payments on contacts made by local international non-resident contractors or professionals, and payments on payments on dividends. URA has put in place a mechanism for WHT collection through agents, who are required to collect and remit the tax at the end of every month, on

[30] The Income Tax Act defines a resident individual as a person who has a permanent home in Uganda; or who is present in Uganda for a period of 183 days or more in any 12 month period that commences or ends during the year of income; or during the year of income and in each of the two preceding years of income, for periods averaging 122 days in each such year of income. Also, income tax on employment is collected from employees or officials of the GOU posted abroad during the year of income on emoluments or benefits in kind, such as gifts. A resident company is one which: (a) is incorporated in Uganda under the laws of Uganda; (b) is managed or controlled in Uganda at any time during the year of income; or (c) undertakes a majority of its operations in Uganda during the year of income. A resident partnership is one in which any of the partners was a resident in Uganda during the year of income. The year of income means a period of 12 months, ending on June 30, and includes a substituted year of income and a transitional year of income.

behalf of the tax body. WHT is deducted at source by an official upon making a payment to a supplier, and is not a final tax, except for international payments made by resident persons to non-resident persons.

3.5.6.1.2 Value Added Tax

VAT is also both a border and a behind-the-border domestic tax. As a domestic tax, VAT is chargeable on both local and imported taxable goods and services within Uganda. Supply of goods includes payments on agreements made after the sale or purchase of property, such as buildings and cars. VAT on the supply of services includes taxes paid or performance of services for another person (e.g., accounting, legal, architectural designing, professional services, consultants, brokers and agents). Such VAT may include taxes paid on services provided on halls and theatres.

3.5.6.1.3 Excise Duty

Excise duty is also a border and a behind-the-border domestic tax levied on specific locally manufactured goods and services. Excise duty is a form of luxury tax that is applied either specifically or *ad valorem* on the consumption of: specified goods and services, and the supply of specified locally manufactured goods and provision of specified services in Uganda.

3.5.6.1.4 Stamp Duty

Stamp duty is paid to legalise documents in Uganda, and is payable on special instruments, either *ad valorem* or specific (Magson 2014). The documents that require such special instruments include instruments executed by financial institutions such as banks, insurance firms, hire purchase companies and bonded warehouses, the Registrar General's Office, Commissioners of Oaths and Administrator General.

3.5.6.2 Double Taxation Regulations

Double taxation is a situation in which a single transaction or income source is subject to two or more taxing authorities. Taxpayers are legally liable to pay tax to each tax authority to which they are subject during the same transaction. Double taxation increases the cost of production and makes a nation's commodities uncompetitive. To reduce the cost of doing business, the GOU has signed a number of Double Taxation Agreements (DTAs), namely the

2010 EAC Agreement for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion, and DTA bilateral agreements with the UK, India and South Africa.

3.5.7 Standards and Environment Protection

Uganda has established standards and performance requirements to protect consumers and promote investment in the country. It did not establish mandatory standards performance requirements in the 1991 FDI Investment Code. However, the common requirements are:

i. WOEs are required to establish projects with minimum investment capital worth $100,000, in a period of three years. The minimum investment capital includes initial sunk costs, such as cost of land, construction and purchase of building if required, hiring personnel, equipment and machinery. BOU financial regulations require a higher minimum capital for foreign-owned banks and insurance companies than for domestic firms.

ii. All projects that threaten the environment—such as the establishment of industry, mining and oil exploration—are required to undergo an environmental impact assessment, as required by the National Environment Management Authority.

iii. FDI project are not subject to local content technology transfer requirements. However, investors are encouraged to use local materials that may be available.

iv. To maintain standards, the Uganda National Bureau of Standards (UNBS), established by the 1983 Act of Parliament, is a government agency responsible for standards. The Act mandates that UNBS formulate national standards specifications for traded and produced commodities in the country. UNBS provides standards, measurements and conformity assessment as a means of promoting the standardisation in trade, industry, health, safety and social welfare. To enforce standards for imports in 2015, the Import Inspection and Clearance Regulations were established. These were established to minimise the import of counterfeit goods.

3.5.8 Labour , Employment and Corporate Social Responsibility

Uganda is a member of the International Labour Organization (ILO). The 2006 Employment Act and The Workers Compensation Act 2000 outline labour rights. In particular, employers are required to contribute 10% of an employee's gross salary to the National Social Security Fund. The regulations provide guidelines for the hiring and firing of staff, as well as providing terminal benefits to retiring staff. The Act also allows employees to form trade unions. These regulations require that local and foreign employees receive emoluments and compensation whenever as well as complying with work safety regulations.

Finally, in Uganda, firms are required to take into account their impact on the environment and on communities. To this end, firms are encouraged to engage in Corporate Social Responsibility (CRS) approaches, to create a long-run, pro-business relationship with communities. CRS requirements in Uganda, by law, go beyond the interests of the firm and include the relationships with local and global stakeholders.

3.5.9 Investment Promotion

To promote investment in Uganda, UIA was established as an OSC for investment, responsible for advocacy, national image building and investment facilitation. Together with private-sector organisations, UIA organises trade fairs as a means of promoting products and services produced in Uganda. Investment promotion is aimed at establishing overarching strategies that create a pro-investment environment, including facilitation for local and foreign investors. The GOU has adopted a package of fiscal incentives that promote investment. For example, in 2014, through MFPED, the GOU introduced a wide range of incentives, such as 50% off capital allowances for plants and machinery as well as annual VAT, deductions, exemptions and deferments. They also provided a 30% corporate tax rate in the subsequent years of investment, and provides a 10 year tax holiday for investors engaged in export-oriented for agro-processing.

Special incentives have been created to promote four sectors considered a priority to Uganda: tourism, agro-processing, ICT and mining. Industrial parks have been established in major towns of Uganda, such as where investors are offered 49-year land leases and connection to utilities (water and electricity) and roads. With the investment promotion strategies and earlier regulations, FDI inflows have increased in Uganda and there has been economic growth, job creation and poverty reduction.

3.6 Concluding Remarks

The origins of FDI in Uganda can be traced from 1845, following Ibrahim's visit to the Kabaka of Buganda. After that time, Arabs established trading links with Ugandans. Later, following the British colonisation of Uganda in 1894, FDI inflows from Europe began. First, missionaries brought humanitarian induced FDI into Uganda, in the form of education and health services. Second, to economically develop Uganda, a dual economic system was adopted. As early as 1900, Ugandans took up smallholder peasant agriculture. Meanwhile, Europeans were invited to invest in plantation agriculture. This policy marked the beginning of European commercial FDI inflows into Uganda, building on the foundation built by Arab traders. As agriculture became established, other sectors (such as mining, energy and manufacturing) started to take shape.

After Independence in 1962, the GOU built on the foundations of the British by attracting FDI, foreign aid and mobilising domestic tax revenue, to accelerate economic growth, create jobs and reduce poverty. In 1963, the Uganda Industrial Act was enacted, followed by the 1964 FIPA. The economy of Uganda started to grow steadily, but these initiatives were disrupted in 1971 by the overthrow of President Obote through a military coup, led by Amin. Asians of British origin were expelled from Uganda, and the international community imposed sanctions on Uganda as a result. Consequently, FDI inflows stopped and the country experienced political and economic instability until Amin was overthrown in 1979.

After Amin's overthrow, economic reforms were introduced, and openness was adopted to promote trade and investment. Asians were encouraged to return, to repossess their property and investment. In 1991, the FDI Investment Code and UIA were established. Since the reforms, FDI has increased tremendously, from USD 30 million 1985 to USD 1,146.13 million in 2014.

Despite these improvements, economic development, employment and poverty reduction are still concerns of the GOU. Knowledge of the impact of FDI on economic growth, employment and poverty in Uganda is limited. However, before the impact of FDI can be measured, there is a need to understand the theories behind FDI inflows and its associated economic importance.

Chapter 4: FDI: Theories and Economic Importance

4.1 Introduction

The previous chapter examined FDI in flows into Uganda before and after Independence. This chapter examines the theories behind FDI inflows. It starts by defining the key concepts of this study, followed by a brief outline of the historical background to FDI inflows. Later, the chapter discusses FDI theories in two broad sections: market-based theories and international political economy theories. Finally, a brief overview of the economic importance of FDI is provided.

4.2 Definitions

To explain the theories of FDI, this chapter begins by defining some key terms.

4.2.1 Portfolio Investment

Portfolio investment can be defined as a commercial transaction involving securities, with no lasting relationship and effective management control over the enterprise (OECD 2008; UNCTAD 2009b). Securities are either negotiable or non-negotiable investment instruments comprising of equity and debt securities, and investment fund shares or units. Debt securities are financial instruments serving as evidence of a debt, including bonds and notes, stocks and other money markets. Interest is the main type of income, but issuers dealing in debt securities are required to pay a minimum principal and interest to the owner. Equity securities are also shares (listed and unlisted), with claims on the residual values of corporations after the claims of all creditors have been met (IMF 2008). Dividends are a type of income for equity securities. Investment fund shares or units are investments that require investors to pool funds in the form of financial and non-financial assets.

Portfolio investment can be international or domestic. International (Foreign) Portfolio Investment (IPI) is cross-border investment in which a foreign investor acquires a stake in another country in the form of stocks, bonds and other assets, with no long-lasting relationship and a managerial role (Alfaro 2014). However, there are other types of IPI, where investors do not have a lasting relationship and have no influence on management.

Such capital flows include financial derivatives and other residual investments, such as short and long credits, loans currency deposits, trade credits and insurance.

4.2.2 Foreign Direct Investment

FDI can be defined as a lasting interest investment made by a resident enterprise in one economy (direct investor) in an enterprise (direct investment enterprise) that is resident in an economy other than that of the direct investor (UNTAD 2009).The lasting interest indicates the existence of a long-run relationship between the direct investor and the direct investment enterprise. The lasting interest also reflects the high degree of influence on the management of the enterprise. According to the UIA 1991 Code, Page 6 a foreign direct investor is:

> A person who is not a citizen of Uganda or a foreign company, in which more than 50 percent of the shares are held by a person who is not a citizen of Uganda; and a partnership in which the majority of partners are not citizens of Uganda.

The definitions of IPI and FDI highlight the differences between the two capital flows. First, FDI involves cross-border movement of equity owned by the investors in the enterprise. IPI involves buying shares or securities in the enterprise. Second, FDI enables investors to access the resources of other enterprises and other sources, such as borrowing from portfolio investments and loans. These privileges are not available in portfolio investments. Finally, FDI investors have a lasting interest and relationship, often directly managing the enterprise. In portfolio investments, short-run instruments are a significant component. Due to the long-lasting interest and relationship, FDI liquidation is not easy, but portfolio investments are liquidated when the investors lose confidence in the enterprise operations.

Considering the definitions, theories explain the motivating factors behind capital flows among nations. FDI theories explain the foreign investors' way of thinking, behaviour and actions. Consequently, there is an interconnection between motivation factors and ways of thinking, decision-making, behaviour and actions. As such, it is necessary to begin by exploring the origins of FDI, to deepen understandings of FDI theories.

4.3 The Origin of FDI Theories

The origin of FDI theories can be traced from a mercantilist notion of capital accumulation. Mercantilists before 1800 believed that the wealth of a nation depended on the treasure accumulated, measured by the amount of gold and silver owned by a nation (Carbaugh 2004).

To achieve this, mercantilists and governments embarked on exploration. As indicated in the figure below, exploration and colonisation was a six-stage process in search of wealth (De Vorsey 1987; Gascoigne 2000).

Figure 4.1: Main elements of the exploration process

FDI flows started with exploration of the globe. There were with three main objectives of exploration. First, due to a shortage of land and natural resources, push and demand economic factors required that Europe extended its power to distant lands, to acquire resources and markets. Second, demand factors were individual and political in nature, with the desire to gain status through territory and wealth accumulation in the form of colonies. Finally, the need for religious and humanitarian organisations to spread Christianity and 'civilise' other areas intensified exploration. These demand factors were followed by a selection of areas for exploration. Journeys of exploration were undertaken, and after returning home the explorer reported his findings, described the areas visited and made recommendations. State officials, merchants and missionaries evaluated the report to determine the fulfilment of the demand factors as a basis for colonisation and development, marking the beginning of FDI flows into such regions.

Through exploration, European superpowers started to occupy distant territories. Christopher Columbus' successful exploration, under the auspices of King Ferdinand of Spain, began European settlement in North America Sage (Sage 2010). China, the richest country in the world by the ninth century annexed as much territory as possible on its frontier. Vasco Da Gama's explorations under the King of Portugal's auspices led to the occupation of India and the East African coast (Scammell 2000). This was after Vasco Da Gama's discovery that the Sultan of Omani had established an empire covering the East African coast with booming trade in natural resources, spices, cloth slaves. Since European imperialism had grown, responding to Vasco Da Gama's report, concerning the presence of abundant resources and trade that could benefit Europe, streams of European merchants started arriving on the East African coast. Due to growth of the industrial revolution first, the European merchants' need for land and raw materials as well as investing surplus capital acquiring colonies became the solution (Yelda 1991). Second, European powers believed that strong national pride could only be attained by acquiring colonies. As a result, following the 1884 Berlin Conference, a country such as Uganda became a British colony, marking the beginning of European FDI in Uganda.

Mercantilists believed that the acquisition of territories increased trade surplus through exports and subsidies, but minimised imports by imposing tariffs and quotas. As such, countries were to export as much as possible in order to acquire wealth, as opposed to imports, which drained a country of its wealth. Though the mercantilist model was not sustainable as it implied unilateral and asymmetric relationships, it explains the origins of FDI.

4.3.1 From International Trade Theories to FDI Theories

International trade theories were later explained by Adam Smith's (1776) 'theory of absolute advantage' and David Ricardo's 'comparative advantage theory'. Similar to the mercantilists' theories, these early theories did not include the role of FDI in production. Building on this foundation, the factor endowment theory—commonly referred to as the Hecksher-Ohlin (H-O) theory--started to show that a nation's trade would occur based on three factors (Carbaugh 2004). First, demand conditions are determined by tastes and preferences. Second, factor endowment facilitates competitiveness, based on cheap available factor inputs. Finally, technology is a factor input facilitating production. Countries specialise in factor endowment commodities and import comparative disadvantage goods. Similar to other earlier theories, FDI was not explained but the H-O theory provided a foundation for the Portfolio Investment Theory (PIT) and later FDI theories.

4.3.1.1 The Portfolio Investment Theory to FDI Theories

The PIT started as a perfect market-based theory (Gamal 2008). Building on international trade theories, the PIT was first proposed by (Markowitz 1952). According to Markowtiz, portfolio selection was based on the law of large numbers, where the actual yield of the portfolio is almost the same as the expected yield. Therefore, investors should diversify and maximise expected returns by investing in securities that provide maximum expected return. Later, Tobin (1958) developed the Portfolio Theory of Money according to four assumptions. First, all investors are risk-averse. Second, investors select stocks based on two subjective parameters useful to the investor. Third, the values of the two parameters enable investors to rank portfolios, providing maximum utility. Fourth, investors' portfolio decisions are made based on specific periods.

Tobin developed the Separation Theory by proposing that portfolios are interest-bearing assets, but some are high-risk while others are low-risk. His theories did not explain the role-played by FDI, however. In1957, Mundell developed the Capital Movements Theory.

4.3.2 Capital Movements Theory

Building on the foundations of international trade theories, Mundell (1957) developed the influential Capital Movements Theory, which first attempted to explain FDI. Following the early PIT, Mundell developed a basic model as an extension of the H-O Theory, to explain trade and capital movements. According to Mundell, due to tariffs, capital flows from a high-tariff to a low-tariff country, assuming that the two countries, products and factors of production are identical in both countries (Denisia 2010). As such, capital flows reduce imports, and capital movements and trade are substitutes. Mundell's model did not explain the role of FDI as a factor input. Capital movements and trade are not substitutes. Despite the shortcomings, Mundell's Capital Movements Theory became a focal point of FDI theories. Following Mundell's theory, Hymer's theory, referred to as the Industrial Organisation Theory (IOT) was proposed distinguishing FDI from FPI.

4.3.3 The Industrial Organisation Theory

Hymer (1960) developed the IOT based on three basic theories. First, IOT is based on Bain (1956) who proposed the Imperfect Market Paradigm. According to Bain, imperfect markets exist with few competitors, and high entry barriers are expected to provide higher returns.[31] However, Bain did not explain FDI in his Imperfect Markets Paradigm. Second, Hymer developed the IOT considering Tobin's PIT, discussed earlier. Third, Hymer considered the 1957 Mundell Model of Capital Movements Theory, which also does not explain FDI.

Following the three theories, Hymer (1960) developed the IOT based on the nature and operations of local firms and foreign investments. He observed that domestic firms have advantages over foreign firms as they have knowledge about their local economic

[31] Bain defined entry barriers as a set of technologies or product conditions that allow incumbent firms to earn economic profits in the long term. He identified three sets of conditions: economies of scale, product differentiation and absolute cost advantages of established firms.

environment, legal systems, language and culture. Hymer noted that two conditions were possible that enable foreign firms to become viable in a foreign country. First, foreign firms must possess some advantages over local firms, and second, the market must be imperfect. Upon this background, Hymer then drew two key differences between FDI and portfolio investments. FDI, as opposed to portfolio investments, involve assets that enable the home-to-host-country capital flows, as a means of maximising returns based on a firm's skills and abilities. Due to the existence of assets in FDI, foreign investors are then motivated to seek control of the enterprise abroad. Also, portfolio investments depend on interest rates meanwhile FDI on returns. Hymer derived two conclusions: that interest rates can explain Portfolio Investment but not FDI, and that FDI is capital movement between countries associated with multi-national enterprises (MNEs).

Despite explaining FDI for the first time, IOT has been criticised. First, IOT does not explain why firms with ownership-specific advantages—such as superior technology—may not invest at home and export as advocated by mercantilists. Second, the theory does not explain the basis for choosing a particular country, for example Uganda. Despite the criticisms of IOT, it provided a difference between portfolio investments and FDI for the first time. Since Hymer (1960), a number of FDI theories have been developed. In this study, FDI is examined through two broad perspectives: market-based theories and international political economy-based theories.

4.4 Market-Based Theories

The market-based theories examined here are broadly categorised as FDI perfect and imperfect market-based theories. The FDI perfect market-based theories discussed are Capital and Market Size Theories. Other theories are imperfect market-based theories.

4.4.1 FDI Capital Theory

The Capital Theory, also called the Rate of Return theory, was first proposed by MacDougall (1958) and later Kemp (1964), based on assumptions of a perfectly competitive market[32] (Choudhury & Nayak 2014; Latorre 2008). This theory suggests that capital flows from a low-rate to a high-rate return country (Gamal 2008). FDI moves from capital-abundant economies, where returns are low, to capital-scare countries, where returns are high. Thus,

[32] Assuming a two-country model, and prices of capital being equal to its marginal productivity.

foreign investors are attracted to invest when the marginal return is equal to or greater than the marginal cost.

The FDI Capital Theory can explain the phenomena behind import substitution industries established in developing countries such as Uganda. Due to the high demand for consumer goods such as sugar, soap safety matches and clothing, developing countries attracted FDI in the early 1960s. Demand already existed because imports were the only source of commodities to developing countries. Due to a lack of essential commodities, FDI projects were established to take the advantage of the high returns that existed as early investors in the market. Further, horizontal integration is related to high-return expectation (Caves 1982), because MNEs are driven by the availability of technology, which leads to low marginal costs and anticipated high returns.

However, empirical studies, such as those by Agarwal (1980) and Bandera and White (1968) do not support the FDI Capital Theory. First, human capital plays a significant role in equalising rates of return on capital in developing countries. Second, return is inadequate as a precondition for explaining FDI inflows. Third, capital does not necessarily flow from high-income to low-income countries, but rather from developed to developed countries, following Linder's Theory of Overlapping Demand. FDI inflows are higher in developed countries than developing countries. Despite these criticisms, the Capital Theory explains the flow of FDI into Africa. During the 1884 Berlin Conference, Africa was regarded as an agrarian continent that required civilisation and development. Therefore, FDI inflows started to come to countries such as Uganda.

4.4.2 Market Size Theory

The FDI Market Size Theory can be attributed to Bandera and White (1968) and later to scholars such as Asiedu (2006) and Mughal and Akram (2011). These scholars indicate that efficiency seeking FDI is motivated by the size of the market, measured by a firm's sales or GDP. This is because even if prices do not increase but markets expand, assuming other factors constant the enterprise's returns expand. As GDP grows, so does GDP per capita and welfare. Countries such as China, India and Pakistan attract high proportions of FDI largely because of high population, despite lower GDP per capita.

However, if FDI inflows were based on market size, then small island countries (such as Cape Verde) would not be attracting FDI. Cape Verde's land area is only 4,044 square kilometres, and the population was only 491,875 in 2010. However, GDP there has risen from USD 175 in 1975 to USD 3183 in 2008, while FDI stocks increased from USD 4 million to USD 1576 million in 2013 (Africa Development Bank 2012; UNCTAD 2014). As such, the market size theory can explain FDI inflows for some countries, such as China, but not small island countries. Therefore, perfect market FDI-based theories are largely macroeconomic, yet microeconomic theories are equally important. If FDI was based on perfect competition assumptions, such as equal access to knowledge and no barriers to trade, then foreign investments would not exist (Calvet 1981; Kindleberger 1969). Additionally, perfect completion theories do not consider political factors, so FDI theories could be explained better by imperfect competition FDI theories.

4.4.3 FDI Stage Model Theories

For the purposes of this study, due to the characteristics of the Product Life Cycle Theory and the Internationalisation Theory, these two theories are grouped as stage model theories. This is because the two theories indicate that firms transit through specific procedures, steps and stages before establishing a subsidiary abroad (Gustafsson & Zasada 2011; Masum & Fernandez 2008; Steffens 2002).

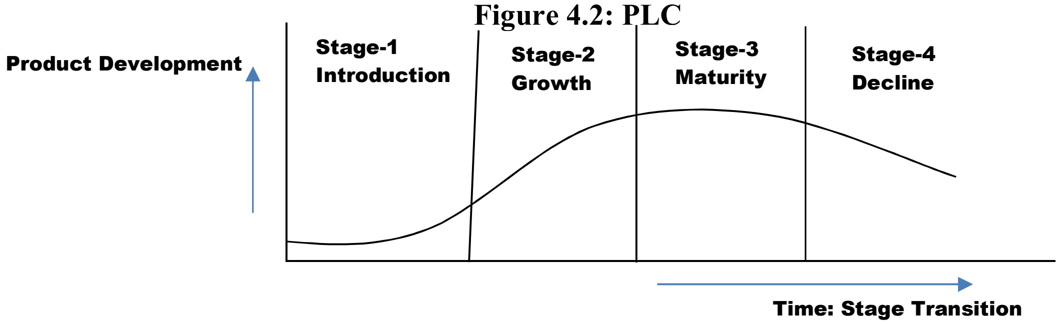
4.4.3.1 Product Life Cycle (PLC) Theory

The PLC Theory was introduced by Joel Dean who in (1950), proposed that biological processes can be applied in sociology, but never fully explained the concept (Polli & Cook 1969). Later first, Herbert Spencer introduced the concept of 'survival of the fittest' in 1851 after his analysis of the operations of firms in a free market system, but it did not explain FDI. Second, Charles Darwin in his 1859 *The Origin of Species* suggested that there is natural selection, and that is why some species survive and others die. Based on these concepts, the law of imitation further explained FDI. Following the law of imitation (with three phases related to acceptance of ideas, products and desires) and the technology gap, Vernon (1966) PLC Theory explained FDI based on three stages: slow advance in the beginning followed by rapid and uniform progress, and finally progress continues but slowly slackens until it finally stops.

Vernon combined more concepts to explain PLC as a better explanation for FDI. The Diffusion of Innovation theory indicates that when new products are introduced, development in all countries does not occur simultaneously. The technological gap concept indicates that technical know-how can be available in one nation and not elsewhere, due to differences in factor endowment. Also, the lack of technology in some countries provides a competitive advantage in the short-run, but not in the long-run, resulting in the technological gap trade (Dodd Parrish, Cassill & Oxenham 2014). Since technology is available in nations at different times, two time lags exist: reaction lag and imitation lag. Following these theories and a study conducted on products from the US, Vernon proposed the PLC, based on four assumptions. First, shape assumption: the PLC sales pattern makes an 'S'-shaped curve. Second, stages assumption: the slope of the 'S' curve is comprised of four stages in chronology: introduction, growth, maturity and decline. Third causality assumption: production depends on a demand pattern. Thus, the supply-side market structure and conditions are composed of a number of competitors. However, intensity of competition is driven by changes in demand, which is different for each stage. Finally, strategy assumption: each stage requires that competitors adopt different strategies.

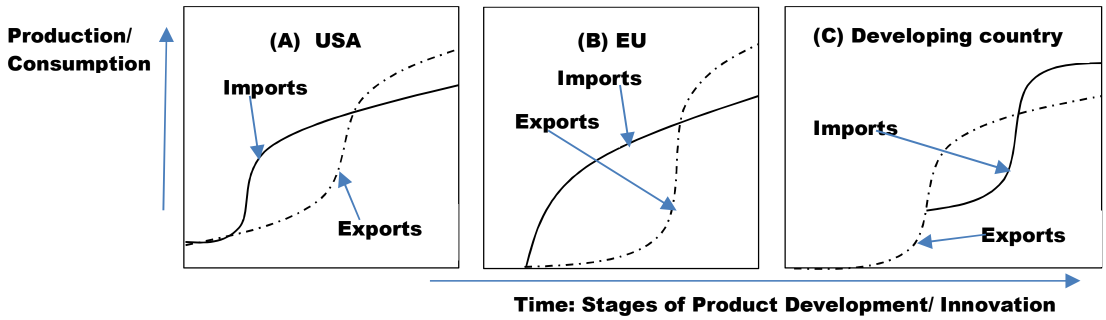
Following the technological gap model, Vernon's PLC Theory outlined four stages. Based on the technology time lag that causes the imitation process, Vernon's PLC model explained that the standardisation process is important to products. Vernon observed that the standardisation process transcends through four stages, which explain FDI.

Figure 4.2: PLC



The introduction stage involves the creation of a new product, which also includes product testing. During this stage, there are no competitors as the product is new. During the second stage, production increases as demand for the product increases. Competitors then enter the market, which leads to maturity as the peak stage for the product. Increased competition leads to the production of differentiated, standardised products, until decline in the fourth stage. As the product enters the fourth stage, research and design intensifies, leading to the creation of a new generation product. For example, the computer industry evolved from flat-screen computers to the iPad. Following these stages of production and movement of goods across borders, the FDI international trade link developed the PLC Theory. This illustrates that production and demand patterns of exports moved from the US to other developed nations first, and later to developing countries.

Figure 4.3: The FDI PLC Theory



Source: Vernon (1966)

Based on the stages of PLC, Vernon observed that as the United States of America (USA) is a highly industrialised nation with superior technology, new products are first developed there. Following the Linder Hypothesis of Overlapping Demand, new products will first be consumed in the USA and later exported to the EU with similar demand patterns. As completion increases during the growth and maturity stages, the cost of production increases. In turn, producers in the USA shift production to the EU, and thus the FDI inflows to Europe. As imports and production increases in the EU, the market floods and innovation intensifies again. Similar to the initial stages in the USA, the EU pattern also shifts to maturity, in which exports to developing countries begin. During growth and maturity, competition within the EU intensifies, forcing production to shift to developing countries such as South Africa and Kenya, and later to least-developed countries, like Uganda. Vernon extended Ricardo's comparative cost advantage theory since production shifts from high to low-cost production centres. Thus, Vernon indicated the effects of innovation, economies of scale and market imperfection to trade and production as a basis for FDI inflows. The PLC Theory indicates that competition enables FDI to flow from highly industrialised nations to the rest of the world in a sequential pattern. Strong competition in innovating countries shifts production to countries with a low cost of production. The PLC Theory has also been extended to explain international trade patterns (Wells 1968).

Though the PLC Theory can explain FDI, a number of shortcomings have been highlighted in empirical studies by Kojima (1973), Kojima and Ozawa (1985) and Yamin (1991). First, the PLC Theory explains import substitution, which was popular in the early 1960s. Second, the PLC Theory ignores the role of international integration driven by technology. As integration increases, the relevance of the PLC for explaining FDI diminishes. This is because with globalisation and rapid technological advancement, integration of FDI inflows cannot leap-frog or become a stage-by-stage incremental process. Despite the shortcomings, other theories have developed, such as the Internationalisation Theory.

4.4.3.2 The Internationalisation Theory

Internationalisation can be defined as a firm's movement of its operations beyond the boundaries of the home country Dima (2010). The internationalisation process involves gradual acquisition, integration and use of knowledge about foreign markets and operations, and then slowly, incrementally increasing commitments to foreign markets (Johanson & Vahlne 1977). The Internationalisation Theory originated from Coase (1937), who proposed that transaction costs are fundamental to a firm's success. Following such early theories, Johanson and Wiedersheim-Paul (1975) developed the Internationalisation Theory, based on two main observations of four Swedish firms. Earlier studies did not include competition as an entry barrier, due to psychical distance, nor did they consider domestic firms, especially SMEs. During the study, assumptions were made. First, the enterprise first develops in the home country and subsidiaries are introduced based on a series of incremental decisions. Second, imperfect competition due to lack of knowledge is an obstacle to internationalisation. Through incremental decision making and learning from foreign markets obstacles are overcome. Third, perceived risk[33] reduces investments in the market, but internationalisation is stimulated by the need to control sales, while existing demand in a foreign market increases international operations. Consequently, firms begin by exporting to neighbouring countries or countries with comparatively similar in business practice. Finally, the enterprise starts selling abroad via independent agents, implying smaller resource commitments that hinder the establishment of a sales subsidiary.

These assumptions mean that enterprises internationalise as stepwise jumps establish chains. As Vahlne and Nordström (1993), page 530 states:

> Some reports indicate an increased tendency on the part of firms to leap-frog low-commitment modes or to jump immediately to psychically distant markets. Consequently, it is now and then asserted that the theory should be changed. Most suggestions imply that a

[33] Lack of knowledge about foreign markets increases the propensity to avoid uncertainty.

number of explanatory variables such as, for example, industry, home, and host country characteristics as well as product characteristics, should be added.

MNEs tendency to leapfrog commitments is similar to frogs as amphibians whose habitat is sea but also leap to land when conditions are favourable. However, when conditions are harsh on land frogs have three options. First, frogs hibernate to stay alive. Second frogs can leap back to the sea. Third frogs leap to the surrounding areas with favourable living conditions. Home countries are the best environment for MNEs but when conditions are favourable abroad, subsidiaries are established. However, when conditions are unfavourable; for example, in Uganda as explained in Chapter Three MNEs left the nation by either relocating home or to third countries. A few remained silent with no production. However, when conditions became favourable again in the 1980s, MNEs returned to the country. In this respect, the living conditions of amphibians can explain FDI inflows in the case of developing nations such as Uganda.

As stated, three factors are important for internationalisation: industry, home and host-country conditions. The home and host-country conditions contribute to leap-frogging, implying low-commitments due to psychically distant markets. Consequently, a national enterprise internationalises in four sequential stages. This is illustrated by Figure 4.4:

Figure 4.4: Sequential internationalisation process

The vertical axis represents resource commitment, indicating that with time, psychic distance reduces. In this way, resource commitment, experience and knowledge[34] of the market increases with time. During Stage 1, due to uncertainty, firms start to internationalise by experimenting in the foreign market through limited exports. After success, firm resource commitment increases involvement in the foreign market, where operation is implemented through independent agents. After succeeding in the first two stages, during Stage 3 the firm

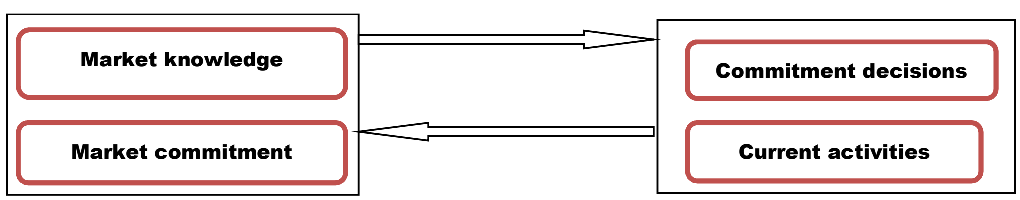
[34] Demand and supply, competitors, distribution, payment conditions, money transferability and other conditions vary between countries and at different times. In particular, experiential knowledge is emphasised when the activities are less structured and defined.

can establish a sales subsidiary, because information and experience implies that psychic distance will have reduced. Finally, the firm commits more resources, implying that FDI has transcended through an establishment chain or step-by-step, similar to leap-frogging. This study was further developed by Johanson and Vahlne (1977) through the popularly referred to as the Uppsala Model, having originated from Uppsala University in Sweden.

4.4.3.3 The Uppsala Model Illustration of FDI Inflows

Following the behavioural aspects of decision making by firms, the Uppsala Model is centred on four concepts: market knowledge, market, decisions and current activities. The internationalisation process of a firm is based on two aspects: state and change factors. The state factors are represented on the left-hand side, representing market knowledge and market commitment. The change factors are on the right, representing commitment decisions and current activities, which depend on the state aspects of the firm. Market knowledge indicates a firm's awareness of the opportunities and challenges of internationalising. Market knowledge represents proactive factors, as proposed by (Masum & Fernandez 2008),. Depending on the knowledge of a given market, the firm is able to identify the opportunities and challenges that exist. With market knowledge, management teams can weigh the extent to which their internal capacity can be utilised to exploit their competitive advantage in a foreign market. Market knowledge and market commitment represent resource commitment.

Figure 4.5: Uppsala Model internationalisation mechanism



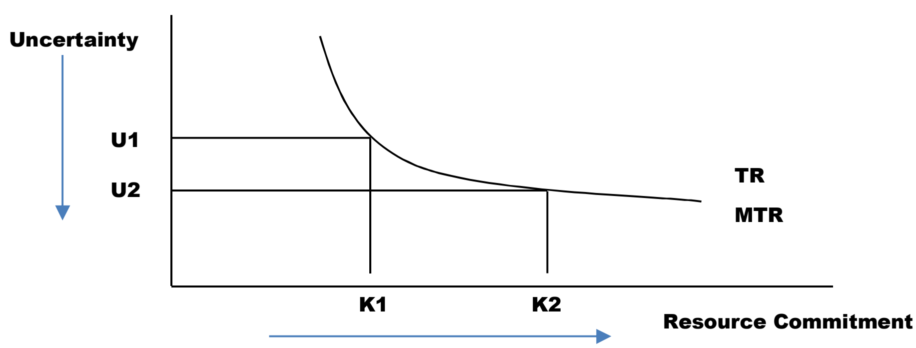
Source: Johanson and Vahlne (1977)

Market commitment is composed of two factors: the number of resources committed and the degree of commitment (Johanson & Vahlne 2009). The number of resources committed is the total investment capacity the firm is likely to incur in the proposed foreign market; for example, the expenses of establishing an overseas venture on employees and marketing. The degree of commitment refers to the extent to which management decisions can be influenced to commit resources in a foreign venture. When a foreign venture involves the utilisation of more specialised resources then the degree of commitment is high. This involves the need to transfer resources to a foreign market due to lack of a suitable alternative; for example, transferring an expert engineer to a foreign market to begin a subsidiary.

Commitment decisions refer to management's perception about a firm's involvement in a foreign nation as an opportunity to expand operations abroad through experience. When a firm increases its involvement in a foreign market, experience increases by identifying constraints and opportunities. Commitment decisions are reactive factors, either passively or actively, by responding to competition (Masum & Fernandez 2008). Commitment decisions are faster when firms have a unique technology or specialised marketing knowledge offering a competitive edge. Therefore, the degree of market commitment is higher. Further reactive factors are management commitment decisions originating from economic effects, or uncertainties in a given market, such as economies of scale, which enable firms to internationalise. The degree of resource commitment is high, but when knowledge is low, uncertainties are high, thus reducing management commitment decisions.

Considering the relationship between market knowledge, commitment and decision as conditions for internalisation, two observations are worth mentioning. First, due to lack of knowledge, MNEs are reluctant to invest abroad because of the risks involved (Alserud & Tykesson 2011). Risks are a function of uncertainty and resource commitment, meaning that as knowledge increases, uncertainty reduces and resource commitment increases.

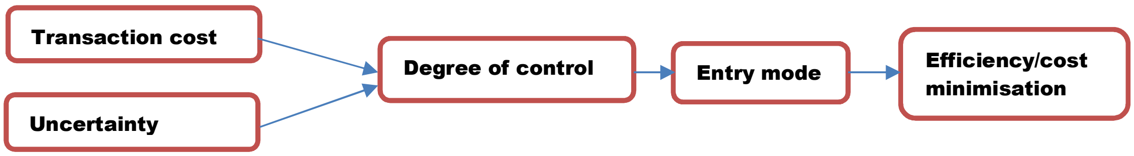
Figure 4.6: Risk model illustration of a firm's internationalisation process



Source: Based on Alserud and Tykesson (2011)

As uncertainty decreases from U1 to U2, so does risk, but resource commitment increases from K1 to K2. This is because knowledge of the market increases. Internalisation of firms is related to uncertainty, entry mode decisions and transaction costs. The Internationalisation Theory entry mode is linked to transaction cost, uncertainty and degree of control.

Figure 4.7: Internationalisation and entry modes relationship



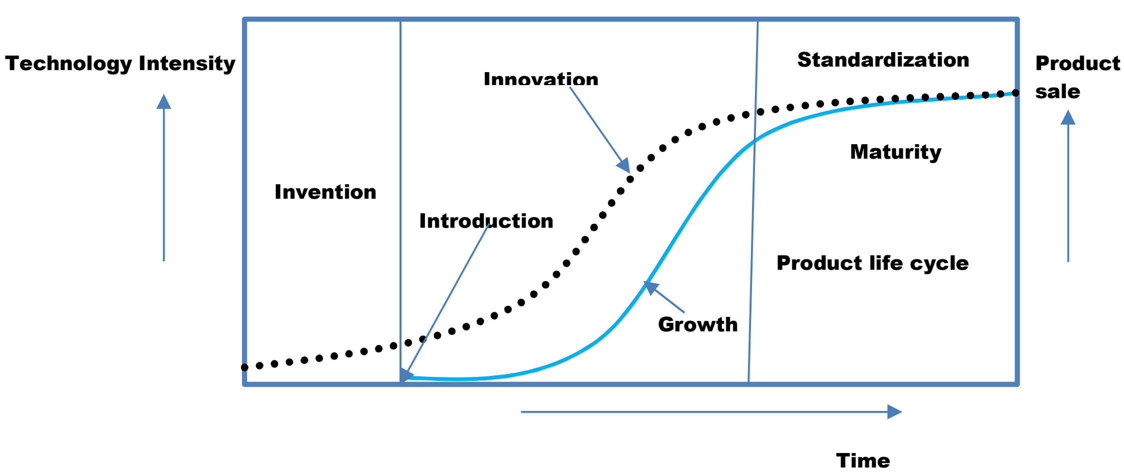
Source: Based on Anderson, E and Gatignon (1986)

During the first stage, knowledge is low while uncertainty is high, causing low resource commitment and degree of control. Ultimately, a firm adopts indirect methods of internationalisation such as exporting. As knowledge increases, certainty decreases and resource commitment and degree of control increases. In this way, the Internationalisation Theory demonstrates that through an incremental and gradual process, firms invest abroad, as indicated by the four Swedish firms. However, the Internationalisation Theory is subject to similar criticism as the PLC Theory.

4.4.4 Appropriability Theory

Appropriability is the excludability of a technology or asset from other firms as a means of providing a reward to the innovator through protection organisations, such as the WIPO. The Appropriability Theory was developed by Magee (1977). According to Magee, MNEs use FDI to earn high returns from their superior technology and skills. The Appropriability Theory includes five stages: new product discovery, product development, creation of the production function, market creation, and appropriability.

Figure 4.8: Project and Technology life cycle and trade relationship



Source: Magee (1977)

The Appropriability Theory indicates that the invention of a new product takes time. MNEs with unique technology, skills and knowledge take advantage of lack of access to such assets and invest abroad, especially in developing countries. To this end, the theory means that innovation starts in a developed country and when the product is standardised, MNEs shift production to developing countries. In this way, FDI is explained. However, the Appropriability Theory is an extension of the Industrial Organisation, PLC and Internationalisation Theories. As an extension of the IOT, the theory indicates that MNEs invest abroad in search of the high returns available in developing countries. Thus, capital moves from high to low-income countries. Second, the PLC and Internationalisation Theory are stage theories that explain FDI based on technology cycle. Despite the criticisms, the Appropriability theory laid foundations for other theories, such as the Internalisation Theory.

4.4.5 Internalisation Theory

Internalisation is the ability for an enterprise to operate internationally through its governance structure and common ownership (Shenkar & Luo 2008). The Internalisation Theory was developed by Buckley and Casson (1976), based on the H-O Theory, which provided the theoretical basis for Coarse (1937) to propose the Theory of the Firm. Based on these theories, the Internalisation Theory explains that a firm cannot control external factors affecting operations, but management can manage the internal transactions of the firm. Due to market failure, five types of market imperfections exist that enable MNEs to internalise and operate both locally and internationally. First, The existence of long time lags between initiation and completion of the production process, which in turn causes failure to satisfy future markets. Second, sometimes firms can possess intermediate products and thus take advantage to gain market power, which enables them to practice discriminatory pricing in different markets. Third, the buyer and seller's lack of knowledge of the value, nature and quality of the product encourages forward integration by controlling the supply and sale of factor inputs, such as superior tangible and intangible technologies. Fourth, government intervention can be a source of transfer pricing through fiscal policies such as tariffs, restrictions on capital movements and discrepancies in taxation, causing imperfections. Finally, monopoly power can enable MNEs to control various markets through cross-subsidisation, predatory pricing and transfer pricing.

These factors facilitate market imperfection, causing firms to develop specific advantages that explain FDI inflows based on four factors. First, firms can possess industry-specific advantages related to the nature of their product and external market structure. Second, region-specific advantages can enable a firm to exploit resources in various region markets; for example, by linking Johannesburg in South Africa to regional markets in East Africa. Third, MNEs internationalise due to nation-specific factors regarding fiscal policies, which include various incentives. Finally, firm-specific advantages increase competitiveness, so increases international economies of scale and scope as well as global competitiveness. Through internalisation, vertical and horizontal integration and transaction cost explain FDI inflows across the globe.

4.4.5.1 Vertical and Horizontal Integration as Basis for FDI Flows

Buckley and Casson (1976) and Hennart (1982) widened the Internalisation Theory to indicate that MNEs can adopt both vertical and horizontal integration operations across the globe. Thus, within the hierarchical units of the firm, based on governance and management decisions, MNEs configure their production, distribution networks, consumption of materials and components, to operate efficiently. As such, centres are located across the globe; for example, American manufacturer of household items, Rubbermaid, sources materials in Thailand, manufactures in China and ships its products back to the USA, to supply other markets in Europe.

Rugman (2012) indicates that in situations where markets fail, MNEs utilise internal markets to efficiently distribute products globally. GVCs enable firms to produce in a nation through investments located in multiple countries. Manufacturing activities are located in low-cost countries due to a nation's tariff and exchange rate, labour cost and fiscal policies. Thus, a nation's factor and resource endowment, governance and fiscal policy are important factors that facilitate FDI.

4.4.5.2 Transaction Cost Theory as a Basis for FDI

Teece (1982) explained that transaction costs that include all costs related to a firm's operations are the basis for FDI flows through lower costs, as a means of gaining higher revenues. Buckley (1988) indicated that FDI exists through the Internalisation (Transaction) Theory because firms choose low-cost nations to establish enterprises, and because firms can continue to internalise by lowering costs up to the point where the benefits of further internalisation are outweighed by the costs.

Although the Internalisation Theory can explain FDI, several pitfalls have been identified. First, Agarwal (1980) and Shin (1983) observed that the Internalisation Theory is ambiguous in explaining the motive behind internalisation and the failure to explain FDI in the short-run. Second, the Internalisation Theory and Appropriability Theory are similar, as both indicate that ownership-specific advantages enable MNEs to invest abroad. The two theories are transaction cost-based theories and market seeking. Although the theories have been criticised, they did lay the foundations for Dunning's Eclectic Theory platform.

4.4.6 The Eclectic Theory

The Eclectic Theory was first introduced by Dunning (1977) as the Eclectic Paradigm, to explain FDI. Dunning argued that FDI cannot be explained by a single factor but rather a combination of various economic phenomena to explain one economic theory. The name 'Eclectic Theory' was derived from the inclusion of a number of theoretical approaches into the one theory (Andersen, Ahmad & Chan 2014). The Eclectic Theory incorporates three theories referred to as OLI: O represents ownership, L localisation and I Internationalisation Theories.

4.4.6.1 Ownership

Ownership advantages have their origins in the ownership advantages introduced by (Penrose 1959). Dunning (1977) introduced the ownership advantages to explain FDI based on the hypothesis that it was only superior productivity that made US firms more successful than British firms. This is possible at three different levels: firm-specific (micro level), industry level and macro-level (Alfaro 2014; Denisia 2010). Firm-specific level advantages, such as managerial effectiveness, organisation structure, resources and assets[35] enable a firm to outperform local firms. These advantages are the origin of monopoly, offering MNEs superiority over local firms in terms of efficient low-cost production methods. Industry-level advantages in regard to economies of scale can provide advantages over production abroad, due to internal resources that other firms may not access. Due to mass production, the cost of production is low and a firm becomes competitive. Similarly, at a macro-level, ownership-specific advantages can enable a firm to access resource endowment and markets that can only be possible by extending operations beyond the home country borders.

[35] Such as patents, technology and managerial or organisational know-how.

4.4.6.2 Location

The localisation advantages explained by Vernon (1966, 1974) provided a framework for Dunning's proposal that location-specific advantages account for foreign investments. Location advantages are country-specific conditions offered by different countries where firms locate enterprises (Denisia 2010). Such location advantages include the economic benefits of quantitative and qualitative low-cost factors of production, such as raw materials, transport, labour, local infrastructure and utilities. Country-specific advantages include the political environment, which includes the regulatory framework and taxation and fiscal policy. Thus, countries like Uganda establish policies offering incentives (such as land, buildings and tax holidays) and a pro-investment environment. These political privileges enable firms to operate efficiently and to out-compete local firms and imports. The location theory indicates that a firm can utilise its ownership advantages to invest abroad, as a means of exploiting opportunities that exist, such as government incentives. Finally, local advantages can take the form of social and geographical environmental conditions.

4.4.7 FDI Development Theories

This study explains FDI development theories based on Kojima's Japan Model and the Ozawa Economic Development FDI Theory.

4.4.7.1 Kojima's Japan FDI Model

Kojima (1978) explained the rise of FDI using a macroeconomic approach based on factor endowment. To explain FDI, Kojima distinguished three different motives for MNEs for investing abroad: resource, labour and market. Kojima categorised FDI as trade-oriented and originating from Japan, while anti-trade for FDI from the USA. Following the H-O and Rybczynski theory of comparative advantage, Kojima developed five propositions as the motivations for FDI. Firstly, natural resource-seeking FDI was classified as trade-oriented. Due to comparative disadvantages in the home country, MNEs invest in comparative advantage goods in host countries. The home country increases imports of its comparative disadvantage, causing growth in vertical specialisation between manufactured products and primary products. Secondly, labour-oriented FDI was also considered trade-oriented. As wages increase in industrialised countries, developing countries gain a comparative advantage in labour-based industries. As such, it becomes beneficial and rational for a developed country to locate its traditional labour-intensive industries in low-wage countries where labour is cheap. Labour-oriented investment is export-oriented and not import substitution. Exports increase in developed countries and third countries, especially in low labour-cost countries located in developing countries. Thirdly, market-oriented FDI can also be trade-oriented. This because when FDI is induced by tariffs in the host country, trade-oriented FDI arises. The heavy tariffs on final goods lead to the substitution of exports of such final products for the export of intermediate goods and components necessary for the production of final goods in the home country. In the host country, such FDI becomes import substitution, but not in the sense of negative international investment. Thus, trade is stimulated between the two countries as well as third countries. Also, if import substitution grows towards export orientation then this category of FDI is labour-oriented, and thus a trade-promotion investment. Fourth, anti-trade FDI occurs in market-oriented FDI, by the American oligopolistic FDI. Finally, internationalisation of production and marketing through vertical or horizontal-integration FDI. In this case, anti-trade FDI arises when MNE investment in the host country becomes oligopolistic.

Based on the five propositions, Kojima indicated that Japanese FDI is trade-oriented because Japanese MNEs invest abroad by transferring their resources of comparative disadvantage to host countries with comparative advantage in similar industries. In this way, MNEs lead to international reorganisation in labour and trade, causing investment. In this way, Japan possesses a comparative disadvantage in labour to developing countries. Thus, labour-based textile industries in Japan face a labour-comparative disadvantage. Japanese MNEs benefit by investing abroad, causing structural adjustment and opening markets in developing countries.

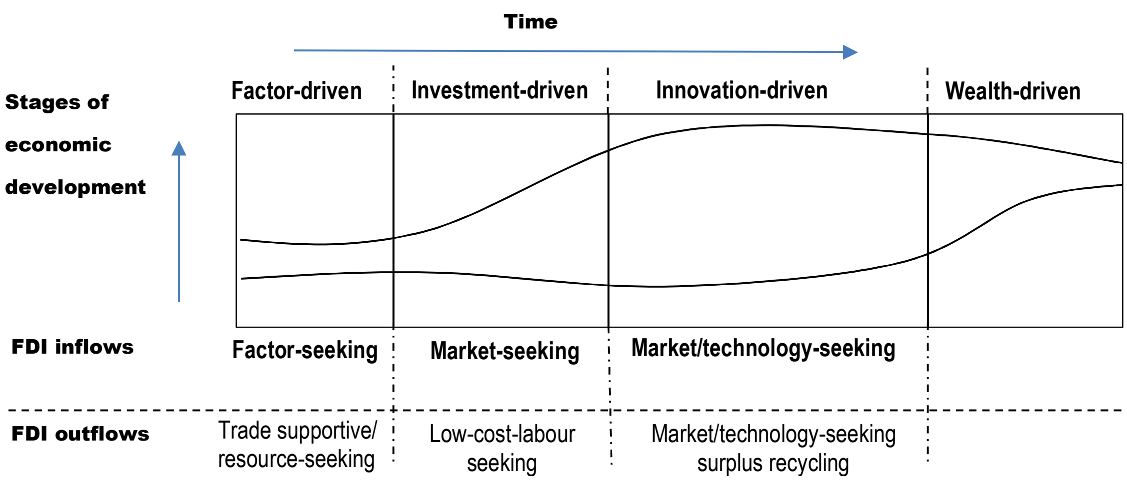
4.4.7.2 The Ozawa Economic Development FDI Theory

The Economic Development FDI Theory was developed by Ozawa (1992) based on earlier theories. Based on the H-O Theory of comparative advantage, Kojima (1975) and Kojima and Ozawa (1985) explained that countries first, gain from trade when produce and exports are commodities of their comparative advantage, and when imports are goods of comparative disadvantage. Second, firms gain *even more* from increased trade when comparative disadvantage of intangible assets are transferred to host nations with comparative advantage in those intangible assets.

Following the Eclectic, PLC and Porter's Competitive Advantage Theory, Ozawa (1992) indicated that first, the supply and demand conditions between countries are not similar due to different supply-side factor endowment and technology, and demand side-consumer tastes. Second, firms such as academic and research institutions create technology and possess intangible assets. Such institutions generate and market technology and skills. Third, economies are not homogeneous, but rather possess a hierarchy at global and regional levels. For example, the USA is a leader at a global level, and Germany, Britain and France are leaders at a regional level in the EU. In terms of industrial development, some are leaders while others are followers, with differing comparative advantage. Fourth, Nations possess natural and compatible stages of development that can be upgraded in a structural sequential manner as developed nations' stages of industrial development. Fifth, Structural adjustment is a movement from inward looking import substitution to export-led trade and investment, and governments play a significant role.

Considering these characteristics, a nation's competitiveness and level economic development are similar. A nation's structural characteristics indicate four stages of development: factor-driven, investment-driven, innovation-driven and wealth-driven.

Figure 4.9: The relationship between stages of economic development and FDI



Source: Based on Ozawa (1972)

Factor-Driven Stage: First Stage of Development

The nation's economy is dependent on natural resources and labour. Economic activities are labour-intensive in order to employ the most abundant resource. Least-developed countries belong to this first stage of development where economic growth is driven by factors of production such as raw-materials and labour. As a result, resource and labour-seeking foreign investors often target least developed countries such as Uganda to take advantage of low labour costs and the abundant raw materials of the host country. This stage is also associated with trade in primary products and labour-intensive goods. FDI inflows into least-developed countries dominate, while there are either no or minimal FDI outflows.

Investment-driven FDI: Second Development Stage

This stage is characterised by intermediate and capital goods, such as heavy machinery and chemicals used in the manufacture of final products. It is also composed of the infrastructural building goods used in housing, public works construction and communications.

Innovation-driven: Third Development Stage

This stage is similar to the second stage of economic growth. Most developing countries are in this category. More FDI continues to enter the country but the cost of labour and standard of living increases over time, and FDI outflows start to occur. Innovation-driven FDI is the third stage. As Kojima and Ozawa (1985) state, FDI inflows are motivated by market and technology factors. Countries in transition include China, Russia, Brazil and South Africa.

Wealth-Driven: Fourth Development Stage

This is the highest level of development for most developed countries, and is characterised with drift, recessions and decline. Adopting the PLC Theory, the stages of development are distinguished by the changing factor endowment proportions in the nation's three major factors used in industrial activity: physical capital, human capital and resources capital, both natural raw materials and labour. According to Ozawa's theory, economic growth occurs through a changing and upgrading pattern, trends and structure of a country's factors and technological endowments. As physical and human capital grows, so does gross national product. A nation's particular stage in competitive development is related to its level of export competitiveness.

The transition from labour-driven to investment-driven stage requires that the nation's domestic investors gain the capacity to begin investing abroad. Investors engage in outward investments in lower-wage countries in labour-intensive manufacturing and resource extraction. Similarly, investors in the country transitioning from factor-driven to investment-driven begin to attract inward investments in capital and intermediate goods industries. Thus, the nation's comparative advantage will change. Likewise, the transition from the investment-driven to the innovation-driven stage indicates that a nation's comparative advantage will have changed. The transition to innovation-driven FDI begins with the attraction of FDI inward investments in technology-intensive industries, while outward investments are composed of intermediate goods industries.

4.4.8 Competition Theories

Competition theories explaining FDI can be attributed to Schumpeter's (1942) ideas about monopoly, oligopoly and monopolistic competition. According to Schumpeter, firms exploit opportunities after creating profitable competitive positions that other firms cannot exploit, through discovery and innovation. Schumpeter (1942) further indicated that:

> The beneficial competition of the classic type seems likely to be replaced by predatory or cutthroat competition or simply by struggles for control in the financial sphere. These things are so many sources of social waste, and there are many others such as the costs of advertising campaigns, the suppression of new methods of production (buying up of patents in order not to use them), page 80.

Following Schumpter's propositions, FDI is explained based on monopolistic or oligopolistic competition, causing MNEs to exploit markets and opportunities not available at home.

4.4.8.1 Monopolistic Competition Theory

The monopolistic competition theory that explains FDI was first introduced by Kindleberger (1969) and Hymer (1976) as a follow-up to the IOT. In 1976, the Kindleberger-Hymer Theory used monopolistic or oligopolistic power to explain the FDI, based on three questions. Why do firms invest abroad? Now do MNEs out-compete local firms yet bear initial sunk costs in foreign countries, such as communication and coordination costs? And, why do MNEs retain control and ownership? Based on these questions, Kindleberger-Hymer noted that FDI existed because of two incentives that attract MNEs to invest abroad. First, incentives related to monopolistic or oligopolistic advantages offered by governments in host countries. Second, FDI thrives in developing countries due to lack of competition. Kindleberger-Hymer concluded that MNEs cannot operate under conditions of perfect competition, but that imperfect completion is the source of FDI. The impact of competition was categorised depending on the source: First, an imperfect market provides incentives to invest abroad due to lack of access to technology, capital and skills. Further, a different brand name can be adopted, as well as different marketing techniques and product differentiation. Thus the existence of market imperfection. Second, factor endowment based on factors of production that cause exclusivity to patented technology skills and know-how among others. In turn, monopolistic competition among firms thrives based on product differentiation. Third, market failure imperfections are by internal and external economies of scale. Finally, governmental policies where host governments such as Uganda provide incentives to foreign investments. Meanwhile, through high tariffs on imports, FDI becomes the only avenue to enter such markets by establishing a subsidiary abroad.

4.4.8.2 Oligopoly Theory

As discussed earlier, horizontal and vertical integration are key forms through which MNEs invest abroad. To this end, Knickerbocker (1973) and Graham (1975) proposed the oligopoly theory as an explanation of FDI, because Oligopoly FDI is a horizontal integration strategy where firms try to acquire markets abroad in the same industry (Caves 1974). As a horizontal integration strategy, firms invest abroad as a reaction to imitate rival firms in two forms: follow-the-leader behaviour and cross-investments as a basis for FDI phenomena commonly referred to as first mover. First, oligopoly firms imitate competitors by following the first moving firm abroad, to gain competitive advantages in new markets. Oligopoly firms try to minimise risks by matching their rival's actions by adopting follow-the-leader investment behaviour (Caves 1974). Second, as first mover, firms try to deter competitors from taking a stake in the home market, as result a result of advantages in the foreign market by engaging in practices such as price cuts. First movers create brand loyalty among consumers; for example, Colgate, Pepsi-Cola and Coca-Cola. Thus, oligopoly investments are winners-take-all, while other competitors are denied entry into the market. Additionally, vertically oriented firms, such MNEs, which react by controlling the entire supply chain, further enhance FDI inflows. Due to the need to gain a market, Knickerbocker (1973) and Graham (1974) indicate that FDI increases because of the oligopolistic nature of MNEs.

4.4.9 Other FDI-Imperfect Market-Based Theories

4.4.9.1 The Exchange Rates Theory

The FDI Exchange Rates Theory was developed by Aliber (1970). According to Aliber, firms in strong-currency nations like the USA and Britain tend to invest abroad, while firms in weak-currency nations cannot invest abroad. Weak-currency nations are FDI recipients. For example, Uganda attracts FDI inflows from strong-currency nations because currency depreciation improves the international competitiveness of the host economy, and in turn FDI profitability (Apergis, Asteriou & Papathoma 2012; Froot & Stein 1991; Goldberg & Klein 1997; Nelson 2015). Also, the value of foreign investments and assets in host countries declines as fewer units of foreign currency are used to buy large quantities in the host country (Lin, Officer & Shen 2014; Nelson 2015). As such, more FDI is attracted to the depreciated region. Additionally, firms from strong-currency nations can easily borrow as long as they have a better reputation than local firms in weak-currency nations. Strong currency becomes revenue for foreign investors and enables foreign firms to invest abroad.

The Exchange Rate Theory may explain FDI, but a number of shortcomings have been noted. Weak currency erodes the competitiveness of local firms, and increases a firm's currency exposure. The value of a currency is a key element of a firm's future expectations about the value of the currency, having a substantial impact on capital flows (Nelson 2015). Currency depreciation expectations usually cause reluctance to invest abroad in that currency. Investors may want to sell assets denominated in the weak currency, as they lose value overtime. As such, the weak-currency theory may not hold as assets in strong-currency countries sometimes attract investors. In particular, a depreciating Euro may deter US investment in the EU, while an appreciating Euro may increase it.

4.4.9.2 The Internal Financing Theory

The internal financing theory was developed by Barlow and Wender (1955) and on the Gambler's Earnings Theory. While starting a subsidiary in a foreign country, MNEs start by investing small amounts of capital abroad. As the subsidiary grows, the future expansion is financed by reinvesting subsidiary profits from operations in the host country. The theory was further developed by Anderson (1983), who indicated that growing cash flows possess a positive relationship with investment outlays due to low-cost internal financing. Later, Froot and Stien (1991) indicated that MNEs prefer future internal financing because external financing is more expensive, due to informational imperfections in capital markets. This is due to internal financing FDI from two perspectives. First, due to restrictions of profit repatriation and movement of funds in host countries, MNEs re-invest earnings in the subsidiary. Second, developing countries do not have properly functioning financial markets. Internal financing becomes a source of capital for the growth of the subsidiary.

4.4.9.3 The Diversification Theory

The Diversification Theory can be traced from Daniel Bernoulli, who indicated in his 1738 St Petersburg Paradox that risk-averse investors diversify. Later Markowitz (1952), in his Theory of Portfolio Investment (Selection), proposed that the expected returns-variance rule implies diversification. Building on earlier theories, Bernoulli (1954), page 30 observes that:

> This is the rule that it is advisable to divide goods, which are exposed to some small danger into several proportions rather than risk then all together.

While continuing to explain the diversification, Tobin (1958), in the Separation Theorem, indicated that firms have different assets, such as bonds and equities, and investors have different preferences. Diversification is the basis for prosperity as it enables firms to avoid loses. Based on these theories, Grubel (1968) indicated that International Portfolio Diversification could be applied to FDI. Levy and Sarnat (1970) indicate that firms that diversify reduce risk and maximise returns. Further, the existence of opportunities abroad, through diversification, facilitates FDI, and market failure has enabled diversification to become an efficient choice for investment (Teece 1982).

4.4.10 FDI International Political Economy (IPE)-Based Theories

IPE refers to the global economy and political interdependence among sovereign states that affect each nation's operations, practices and policies. IPE is composed of two elements: the state and the market (Gilpin 1978). The state is based on concepts such as the existence of a territory, loyalty with exclusivity and the legitimate use of force and power. The market is based on concepts including functional integration, contracts among players and interdependence among buyers and sellers. However, the state manages production and economic systems as well as politics. According to Balaam and Dillman (2015), IPE is comprised of three interdependent dimensions or systems: political, economic and social.

The political system that uses power is comprised of actors, individuals, the state, international organisations, civil society and MNEs. These actors make decisions concerning the distribution of resources including money, products and intangible things like security and innovation. The political dimension makes rules to achieve national goals and objectives. Meanwhile, the economic system allocates scarce resources managed by various public and private institutions on a day-to-day basis within the market. Social groups first include state identities, norms and associations based on ethnicity, religion or gender. Social groups are also transnational groups (global civil society) with interests that cut across national boundaries, like the ILO. These systems create an environment that explains FDI where everyone in the world is directly or indirectly affected by the IPE (Balaam & Veseth 2008).

When political and economic conditions were not favourable to investment in Uganda in the 1970s, FDI flows became negative as explained in Chapter Two. When the political conditions became more favourable, FDI increased in Uganda from about USD 30 million in 1985 to over UAD 1, 146 million in 2014. In the 1970s, almost all investors left the country and relocated their investments to their home countries or to third countries, mainly Britain and Kenya. Sanctions meant that all foreign investment ceased.

Uganda's experience is not unique to this country. In particular, Russia's current economic and political situation is worth mentioning considering the nation's IPE conditions. Following EU-USA sanctions on Russia as well as economies in transition have suffered a number of setbacks, including FDI inflows (Connolly 2015; Kalotay 2015; UNCTAD 2015). First, FDI flows to Russia fell by about 70%, representing over USD 19 billion in 2014 (UNCTAD 2015). Second, during the same year 2014, FDI inflows fell by 51% in transition economies, representing USD 45 billion. Third UNCTAD further indicates that in Ukraine, FDI flows were negative USD 0.2 billion, though FDI flows to Kazakhstan and Azerbaijan rose. The main cause of FDI decline in transition economies has been attributed to the conflict in Ukraine and sanctions on Russia. Similarly, due to political issues in Venezuela, FDI flows fell by USD 9 billion in 2014 (UNCTAD 2015). Furthermore, the harsh macroeconomic environment largely due to inadequate pro-investment policies as a well as USA and EU sanctions, have contribute to the decline of Zimbabwe (Mbanje & Mahuku 2011; Shangahaidonhi & Gundani 2014; Sikwila 2015).

Therefore, the experiences of countries such as Uganda, Russia, Zimbabwe and Venezuela mean that IPE conditions are important for MNEs' investment. Although Uganda has recovered since 1980, the development journey was halted. This means that flow of cross-border investment through MNEs is to a large extent dependant on IPE conditions. To this end, Balaam and Veseth (2008), page 17 reiterate and summarize that:

> The institutions, arrangements and rules of the game that govern the behaviour of states and markets in the IPE can be analysed as four networks[36], structures or bargains that result in the production, exchange and distribution global wealth and power. These bargains determine different patterns of production and exchange, including the distribution of wealth and power all over the world.

As explained, as long as IPE favour a developing nation, MNEs find such as developing country as a favourable destination as explained by Uganda's experience. Indeed, though Uganda has recovered since 1980, the country's GDP and per capita income is still very low compared to other economies in Africa and Asia. In terms of economic performance, in the 1970s Uganda was on a par with countries such as Kenya, Ghana and Malaysia (IMF 2010). These countries have attained remarkable economic improvement. Malaysia is now a role model to Uganda, yet the two countries were economic peers in the 1970s. The in regard, for a developing country such as Uganda accelerated economic growth can be attained through FDI when IPE conditions are favourable. Considering the IPE systems mentioned Balaam and Dillman (2014) identified four interdependent levels: global, interstate, state/societal and individual. These IPE interdependent levels are important in explaining FDI inflows.

4.4.10.1 The Global Level

The global level is the broadest and most comprehensive level covering global factors, with actors such as the WTO, the UN and related institutions. The role played by the WTO in promoting FDI is explained by openness as a policy for trade and investment. Following the adoption of openness, as a member of the WTO, Uganda's FDI has increased enormously since 1985. This study explains the role in promoting FDI played by UNCTAD, Bilateral Investment Treaties (BITs) and World Bank institutions, such as ICSID.

4.4.10.2 UNCTAD, BITs and FDI Promotion

BITs are international agreements designed with terms and conditions that facilitate private investment by nationals and enterprises of one state in another sovereign state (Akhtar & Weiss 2013; Goyal, Goswami & Solomon 2014; UNCTAD 2009a). In this way, BITs provide guarantees for a level playing field and the enforcement of standards through a binding investor-to-state independent dispute-settlement mechanism. BITs include four basic

[36] Security; production and trade structure; finance and monetary structure; knowledge and technology structure

elements. First, Conditions for the admission of foreign investors in the host state. Second, standards of treatment of foreign investors based on the MFN and NT, which deter any form of discrimination. Third, protection against expropriation requiring that host nations provide guarantees of compensation based on international standards in case of expropriation of foreign property, as well as guarantees for free transfer and repatriation of capital and profits. Fourth, methods for resolving investment disputes.

According to UNCTAD (2009a) investment agreements are either legally binding or non-legally binding. The Memorandum of Understanding is a non-legally binding agreement intended to formalise the willingness of the contracting parties to collaborate in the specific areas agreed upon. There are three legally binding investment agreements: BITs, comprehensive Free Trade Areas (FTAs) and Double Taxation Avoidance Agreement. BITs provide provisions for investment promotion and protection. Comprehensive FTAs are aimed at promoting investments among the contracting parties. Double Taxation Avoidance Agreements protect against the effects of double taxation on goods and services. The primary objective of BITs is to protect investment and promote FDI in host nations by providing signals and guarantees for the protection of business. Conversely, sanctions scare and block foreign investors from such nations, as was case for Uganda in the 1970s.

4.4.10.3 ICSID's Role in Explaining Foreign Investments

ICSID, established in 1966, is a system for the settlement of investment disputes through conciliation and arbitration. ICSID allows jurisdiction consent that cannot be revoked unilaterally, as well as flexibility for parties to decide the host, whether in the host state or the investor's nation. If the parties cannot agree on the composition and constitution of the tribunal, the Convention can offer guidance. The guarantee against diplomatic protection constitutes an incentive for FDI.

ICSID also provides consent in the national legislation investment code of the host state. ICSID arbitration is shielded from interference by domestic courts, and political interference in the form of diplomatic protection. ICSID arbitration is self-contained and independent of national laws, though parties are free to choose the law applicable to the case. ICSID is preferred, as it does not allow the domestic courts to interfere. Provisional measures by domestic courts are allowed in the unlikely case that the parties have stipulated them in their consent agreement. Through these measures, guarantees for MNE protection are provided, in turn stimulating FDI inflows.

4.4.10.4 Interstate and Regional Level Explanation for Foreign Investments

Interstate and regional level refers to the role played by IPE in explaining FDI flows among nations through bilateral and regional economic integration. Bilateral refers to the extent to which two countries cooperate to integrate their trade and investment regimes. Interstate means RTAs entered into by more than two nations.

Bilateral and RTAs are established with the ultimate objective of reducing trade and investment barriers among the contracting parties (Blomstrom & Kokko 1997). As a result, a number of customs unions and FTAs have been established, especially since the creation of the General Agreement on Trade and Tariffs (GATT) in 1948 and the creation of the WTO in 1995. In turn, the world has witnessed the growth of FDI through GVCs (Blomstrom & Kokko 1997; Bruhn 2014; Büge 2014).

Accelerating economic growth through FDI is one of the key motivating factors leading to the creation of RTA among the contracting parties. Developing countries have established deeper RTAs[37] to reduce trade and investment barriers and enhance transparency and predictability (Buhn 2014; Buge 2014). Contractual provisions—including dispute-settlement mechanisms, protection of intellectual property and provisions related to GATT—are included in the agreements. These provisions have enhanced the growth of RTAs, and have accelerated FDI inflows and the growth of GVCS.

4.4.10.5 National Level and Government Policies Explaining Foreign Investment

The national level is comprised of national policies adopted by a government in pursuance of national objectives. Nations establish standards, regulations and laws with the objective of increasing FDI inflows. MNE ownership-specific advantages are enhanced, and are partly embedded in national policies as engines for attracting FDI (Blomström & Kokko 2003; Guimón 2013). This is because MNEs are in a position to establish subsidiaries in countries that promote trade and investment through favourable fiscal, monetary and commercial policies. As a result, FDI inflows are facilitated to flow across the world.

[37] Such as the ASEAN+6 (which includes the ASEAN nations plus China, Japan, Korea, Australia, New Zealand and India) and the EAC (Kenya, Uganda, Tanzania, Rwanda and Burundi).

A number of theories explain FDI, from Hymer's IOT to IPE theories. The main objective of this study is to measure the impact of FDI on Uganda's economic growth, employment and poverty. Before measuring the impact of FDI on these dependent variables, since the study is partly concerned with poverty in Uganda, it is necessary to first explain the economic importance of FDI to host nations.

4.5 The Economic Importance of FDI

To explain the economic importance of FDI, this study employs the host-country FDI perspective, foreign investor perspective, Dutch Disease effects, Benign and Malign Model and Host Country FDI Perspective

The host nation FDI objective is the expectation that FDI first promotes exports. To this end, in 1996 the GOU established the UEPB to implement ELGS. As such, export promotion was adopted by developing countries to access global, regional and home country markets (Sultan 2013). As a country achieves higher levels of economic growth, more jobs are created and poverty is reduced. Mercantilists were the first to develop export promotion strategies. They argued that exports lead to a favourable balance of trade, so advocated that imports should be discouraged (Carbaugh 2004). Mercantilists were criticised for not recognising the role of international trade in economic growth. Despite the criticism, developing countries such as the Asian Tigers,[38] have succeeded since the early 1970s through adopting an export-oriented industrialisation strategy based on comparative advantage (Palley 2014).

Through FDI, governments expect that imports can be produced locally through Import Substitution Strategy (ISS). The policy is aimed at improving a nation's TOT and overcoming a balance of payments problem. Import substitution, as indicated by Carbaugh (2004), is an inward-looking government initiative developed in the 1950s by developing countries such as Brazil, Argentina and Mexico. By adopting ISS, developing countries assume that dependence on imported consumer products can be reduced by establishing industries that produce such goods locally. Developing countries see that even if they have a comparative advantage in some industries, they cannot compete with industrialised nations due to trade barriers and high industrial development in these nations. Through ISS,

[38] The 'Asian Tigers' refers to Taiwan, South Korea, Hong Kong and Singapore, who experienced rapid economic growth because of export industrialization.

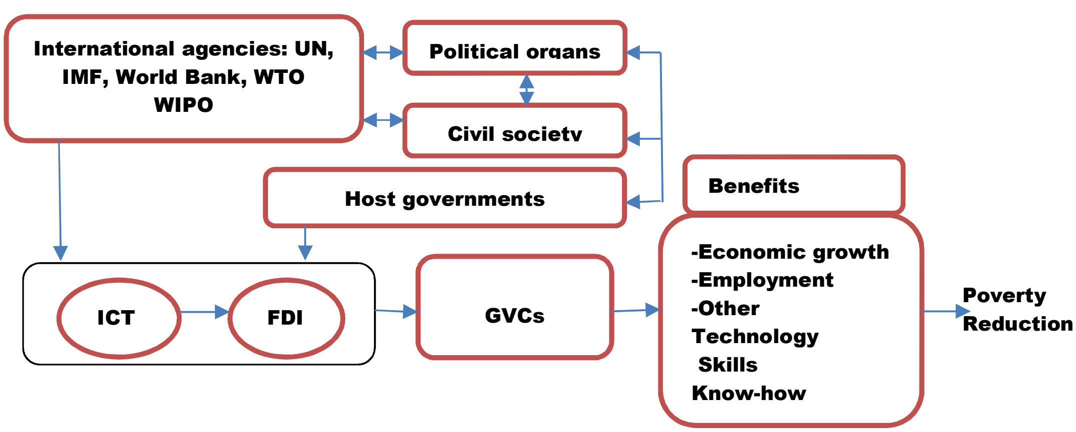
developing countries anticipate the acceleration of job creation, reduction of foreign exchange constraints, stimulation of innovation and reduction of poverty.

4.5.1 Foreign Investor Perspective

Considering the foreign investors' perspective, enterprises abroad are established for expansion as a means of profit maximisation. FDI is classified as horizontal, vertical and conglomerate FDI (Krugman & Obstfeld 2006). Expansion is achieved through innovation driven by ICT as a means of achieving efficiency, and competitiveness by reducing transition cost. As a result, FDI becomes a fundamental channel for international economic integration. Foreign enterprises have become conduits for technology transfer, skills and know-how (OECD 2007).

The forces driving advanced technology innovations are economic policies that have facilitated trade liberalisation and privatisation, including the protection of intellectual property. In this way, world economic integration is enhanced. As integration increases, governments in developing countries intensify their participation in competition, each wanting foreign investors to find their economy a good environment for foreign investment. As these forces shape the world economic order, enterprises continue to pursue economic efficiency, slicing the globe into regions of production, marketing and sources of raw materials and services. In this way, GVCs have grown via several players.

Figure 4.10: Process leading to the growth of FDI and GVCs

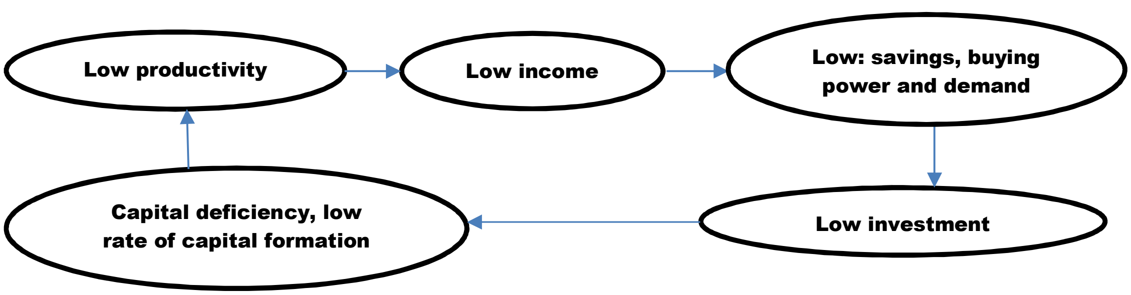


As GVCs increase, so do production and market products abroad, making it possible for the growth to be moved offshore as foreign investors move aboard. In this way, jobs are created and production increases, leading to increased economic growth and poverty reduction in the long-run.

4.5.2 The Benign Model of FDI

The Benign Model of FDI is based on the ideas of Moran (1998), who proposed that FDI is a capital tool that can be employed to break through the vicious circle of poverty (VCP) that Ragnar (1953) proposed. According to Moran, the main cause of poverty is lack of capital. This theory is linked to earlier theories, such as the Harrod-Domer Model (HMD), which posits that investment is a function of capital, output and savings. As capital increases, so does output and savings. When investment increases a nation experiences increasing economic growth, employment and poverty reduction. The Benign Model is linked to Prebisch (1951), indicating that FDI is a capital base package for developing countries to access technology, markets and management skills, and foster their industrial development. Taking the experience of the USA, the nation rapidly grew in the 20th century, largely because of human and physical capital resources from Europe, especially Britain (Sackey, Compah-Keyeke & Nsoah 2012). In line with these earlier theories, the VCP was developed.

Figure 4.11: The Vicious Circle Poverty



Source: Based on Nurske (1953) and (Rohima et al. 2013)

The VCP presents a circular relationship of conditions. Developing countries remain perpetually in poverty because of low income (Ogbuabor, Malaolu & Elias 2013; Rohima et al. 2013). According to the model, developing countries are held in a demand and supply trap that cannot be easily broken through, which this study refers to as ‘a poverty cage’. Starting on the demand side, low incomes indicate that consumers do not have enough disposable income to consume, and their ability to save is also limited. Due to low demand on the supply-side, inventory remains high since the purchasing power is low. As such, producers, including households and companies, have low profits and a low capacity to save, translating into capital deficiency and low productivity. Thus, firms return to the poverty cage.

Following the VCP, Moran (1998) developed the Benign Model to demonstrate that FDI is an appropriate tool that can be employed to penetrate the VCP. FDI erodes poverty by bridging the savings gap and increasing the capital base of a developing country, thus increasing production on the supply-side. Meanwhile, on the demand side, as production increases, demand for labour also increases and so does the wage rate. In turn, household incomes increase, as well as firms' profits.

Brooks, Fan and Sumulong (2003) identified five benefits of FDI, using a panel data study of 58 developing countries. This indicated that first, 50% of a dollar capital inflow translates into an increase in domestic investment. Second, as new foreign firms enter the market, sectoral output increases and domestic prices reduce, due to entrepreneurial capacity that is built in the host country. As local firms gain capacity through education and training, foreign and domestic firms operate more efficiently as productivity increases competition in the host country. Third, foreign firms bring assets into the host country in the form of superior technology, leading to spill-over effects in the host nation for production by local firms and GDP to increase. Fourth, FDI acts as a bridging gap for foreign exchange, creating easy access for local firms to foreign capital input, and investment increases in the long-run. Finally, foreign firms open up new marketing and distribution channels, which increase export market access. In this way, establishing the capital absorption capacity of communities as indicated by Hacke and Wood (2013); Hacke, Wood and Urquilla (2015) becomes a tool for economic growth, employment and poverty reduction though FDI.

4.5.3 The Negative Effects of FDI on a Nation

4.5.3.1 The Malign Model of FDI

The Malign Model is the alternative theory to the Benign Model (Moran 1998). This model reveals the negative effects of FDI on the economic growth of the host nation. According to Moran (1998), FDI possesses four major negative effects. First, FDI lowers domestic savings and investment through rent extraction and capital siphoning through local capital markets and local supplies of foreign exchange. Second, FDI is intended to close the insufficient investment and foreign exchange gap of developing countries. However, MNEs crowd out domestic producers. For example, domestic inputs are often substituted by foreign inputs. In turn, domestic input production is impaired. Third, FDI is expected to offer backward linkages to domestic suppliers in host countries. However, such privileges are not available in developing countries. Fourth, in most cases, industries violate environmental, health and safety standards in the countries in which they operate. In view of these effects, Moran (1998), page 2 has stated that there is:

> The possibility that FDI might lead to fundamental economic distortion and pervasive damage of development prospects of the country is ever-present.

The Stiglitz (2001) criticisms of globalization further explain the negative effects of FDI to a nation. First, as explained in chapter Two IMF and World Bank encourage developing countries to adopt economic reforms. However, MNEs acquire projects in natural resources (such as oil and mineral resources) through incentives and concessions that range from tax holidays to free land give-way. Projects are implemented at low prices and deny HIPC country such as Uganda tax revenue income for government and jobs for citizens. Host countries do not reap the full potential rewards from MNE projects. Second, to implement reforms developing nations are advised to privatise State owned enterprises (SOEs) and implement from market economy systems. However, MNEs that take-over SOEs often do not have the will for such firms to benefit the poor communities. In Uganda as explained in Chapter Two formally industrial towns such as Jinja have turned to tourism because largely all manufacturing firms formally owned by the state collapsed after privatization. Also as explained by Mold (2004), MNEs commit excessive defence of MNEs' interests. For example, the French Government pressured the Ivory Coast Government to exclude American firms while bidding in the France Telecom mobile telephone licence. Arising from these negative effects, FDI projects undermine the host government's productivity, income, job creation and institutional framework. In turn developing nations experience do no experience the anticipated accelerated economic growth. Also explained in Chapter two, in the case of Uganda, the insecure non-poor have increased as well as income inequality increases.

4.5.3.2 Dutch Disease and FDI Effects on Host Nations

The Dutch Disease refers to an appreciation of the real exchange rate as a result of increased exports and capital inflows within a country after the discovery of a booming resource, such minerals (Barder 2006; Eacho 2013). The term Dutch Disease originated from *The*

Economist, which stated that the Netherlands' manufacturing sector declined after a large natural gas discovery in 1959. Corden and Neary (1982) proposed the Dutch Disease Model to explain the decline of the manufacturing sector, regarded as the backbone of the Netherlands' economy. The model explains the relationship between the discovery and exploitation of gas and the decline of the manufacturing sector. The theory demonstrates that a new large natural resource, such as gas, causes a boom in the sector but at the same time causes the tradable sectors to become less competitive, due to an appreciation in the nation's real exchange rate. To explain the Dutch Disease Theory, Cordern and Cleary (1982), developed assumptions based on one non-tradable sector and two tradable sectors. The non-tradable sector refers the booming sector (a newly discovered natural resource) such as gas that was discovered in Holland. In case of a developing nation such as Uganda, the booming sector can be import substation firms that develop as a result of FDI which becomes the key sector of the country. Meanwhile, the tradable sector refers to the backbone of the economy (such as the manufacturing sector) in the case of developed countries and the agriculture sector for developing countries, such as Uganda. In this regard, the Dutch disease effects assumptions include. First, perfect labour mobility ensures that wages equalise among the three sectors. Second, all products produced are final consumption goods. Third, balanced trade, since output of the nation equals expenditure. Fourth, No distortion for commodity and factor prices. The price of traded goods and the booming natural resource commodity and manufacturing/agriculture commodity is determined by the world market, while the price of non-traded goods depends on the domestic market.

The flow of foreign capital, such as FDI, can cause the Dutch Disease effect in two stages: the boom stage and the post-boom stage (Brahmbhatt, Canuto & Vostroknutova 2010; Corden & Neary 1982; Javaid 2011). During booms, the nation receives more foreign capital inflows, which cause the local currency to appreciate. Local currency appreciation occurs because the determinants of the exchange rate are internal and external. Internally, exchange rate is determined by tariffs on imports, export and domestic taxes, government policies (such as exchange rate controls and subsidy regime) and technological progress. Externally, the TOT, foreign capital inflows and world interest rates can determine exchange rates. Conversely, during the post-boom stage, natural resources are exhausted, leading to a decline in FDI or foreign capital inflows. In turn, a nation becomes worse off, as traditional sources of income are destroyed. In the case of Uganda, production and exports have shifted from TEs to NTEs.

The impact of FDI on nations differs across regions and countries. Despite the variations in findings, FDI is an important for poverty reduction. FDI leads to technological transfer and is a source of physical capital that is an important base for production, employment and long-run poverty reduction. Chowdhury, Abdur and Mavrotas (2005) proposed that country-specific studies can be carried out to ascertain the impact of FDI on host countries.

4.6 Concluding Remarks

This chapter examined the theories underlying cross-border investments through FDI. First, it defined the key terms and concepts underlying the FDI phenomena, followed by an exploration of the main FDI theories. The chapter started by providing a brief background to the FDI as a tool for understanding the theories explaining foreign investments. The theories of FDI were categorised as market-based and IPE. Later, as this study concerns poverty, the economic importance of FDI was examined.

According to the findings and building on the Theory of the Firm, MNEs operate at a centre of two extremes, which work in harmony to internationalise.

Figure 4.12: MNEs operation spectrum to invest abroad

First, to invest abroad MNEs possess the internal capacity explained by the Theory of Firm and other theories, such as the stage theories and the Eclectic and Internalisation Theory. Second, while operating abroad, MNEs do not have the capacity to control the external conditions that impact the firm. However, firms may try to manage the conditions that negatively affect their operations abroad, for example; by influencing policy change, though may not have absolute control. As illustrated in the figure above, the leap-frog tendencies of MNEs explain the FDI phenomena especially in developing countries. This is demonstrated by the increased tendency for MNEs to leap-frog low-commitment modes or to jump immediately to psychically distant markets.

This study found that four conditions determine FDI flows for a developing nation such as Uganda, referred to as the *firm-home-host-international political environment* conditions. First, firm conditions mean that the firm internationalising must have the capacity to internationalise. Second, the MNE home country conditions have to be favourable to enable the firm to build the capacity to internationalise. Third, host-country conditions must be conducive as a pre-condition that enables a nation to become a good destination for MNE investment. Fourth, IPE refers to the extent to which international political economy conditions affect both the host and home countries.

Since 1966, Uganda started to experience economic and political instability. First, between 1979 and 1992, international sanctions were imposed on the country. Second, neighbouring countries, such as Tanzania, were also hostile to Uganda, despite both countries being members of the EAC. After the 1979 war, investors started to return to the country, including from Tanzania. Consequently, FDI inflows have increased. What is termed as the *Frog-leap Theory* according to literature, explains FDI inflows into developing nations such as Uganda.

Frogs can leap to environments where conditions are good. When conditions are dry and harsh, frogs hibernate, but when the climate is favourable, they begin to jump. If conditions are conducive but frightening or precarious, the frog leaps elsewhere. In Uganda between 1971 and 1979, when international sanctions were imposed, nearly all investors left the country. Similar to frogs leaping, MNEs can invest abroad under pro-investment conditions. Investors had three options when conditions are harsh: to return to the home country, invest in a third country or hibernate. Conditions must be favourable for frogs to leap in a particular direction. If frogs do not leap in a particular direction, such as Uganda, it means that conditions are harsh and communities suffer. As FDI started to increase, Uganda experienced increasing economic growth, job creation and poverty reduction. However, the FDI economic importance review indicated that in some countries, the effects of FDI are positive while in others they are negative. Therefore, there is a need to measure the impact of FDI on Uganda's economic growth, employment and poverty reduction. However, before measuring the impact of FDI on these dependent variables, it is necessary to understand how best to measure them. The next chapter looks at modelling economic growth, employment and poverty.

Chapter 5: Modelling Economic Growth, Employment and Poverty

5.1 Introduction

This chapter employs the available literature and theories that explain economic growth, employment and poverty by modelling economic growth through production, employment and poverty. The chapter begins by exploring the theories behind economic growth, focusing on the Solow-Swan Neoclassical Growth Theory, MRW Model and the NGT. These theories are based on the production function with foundations from earlier work of Harrod (1939) and Domar (1946). Other theories that could be applicable include the H-O Theory. However, the H-O Theory is mostly suited to studies concerned with capital intensity Hasan (Hasan, Mitra & Sundaram 2010). In this regard, theories based on the Harrod-Domer model (HDM) which concern and savings are employed in this chapter. The final section of this chapter explains the relationship between economic growth, employment and poverty.

5.2 Modelling Economic Growth

Modelling economic growth starts with the earlier foundations in the HDM, based on two assumptions. First, capital created by investment is the engine for a nation's economic growth and assumes a closed economy. Second, there are two factor inputs: capital and labour. Capital is scarce while labour is abundant. Investments depend on the capacity to save. Following these assumptions, the HDM has been criticised for being an incremental capital output ratio theory (Hussain 2000). First, the theory assumes a closed economy to foreign capital flows, which is not practical in this time of globalisation. Second, the model assumes no government influence, and that the capital output ratio is constant. Third, the model can be suitable for explaining development in a developed country, where firms and households have the capacity to save. Despite these criticisms, the model provided a platform on which a savings gap can be identified. The model demonstrates that for developing countries to increase economic growth, saving is a tool for future investment. Also, the model provides a basis for technology advancement as a basis for reducing the labour/capital ratio. Following the HDM, the Solow-Swan Model was created to explain economic growth.

5.2.1 The Solow-Swan Model

The Solow-Swan Model is an exogenous growth model with foundations in the HMD. This model is attributed to Solow (1956) and Swan (1956), and is popularly referred to as the Solow-Swan Model. It has been noted as a significant milestone in neoclassical economic growth theories (Dewan & Hussein 2001). The Solow-Swan Model, following the HDM, argued that labour is an important tool of production in addition to capital. Solow and Swan observed that capital and labour are not fixed but there is productivity growth due to technological progress. Thus, the Solow-Swan Model indicates that output represented by GDP depends on physical capital, labour and efficiency. To derive this relationship, the Solow-Swan Model employed the relationship between the inputs to the production process, and the resulting output described by a production function. The production function indicates the highest output that a firm can produce for every specified combination of inputs (Pindyck & Rubinfeld 2001). This is based on the assumption that there are two inputs: labour and capital. The production function can be specified as:

$$Y = Af(K, L) \qquad \textbf{(5.2.1)}$$

$\boldsymbol{Where}: Y = Output;\ A = Technical\ or\ productiuvity\ factor; K = Capital; L = Labour$

This equation indicates that in the Solow-Swan Model, the first technology efficiency—denoted A—is a residual (Ilboudo 2014; Muggeridge 2015; Petrosky-Nadeau 2008). This is because the change in the growth of output, commonly referred to as the Solow residual (A), is not explained. However, A is employed in the production function to measure the exogenous increase in TFP. Second, the Solow-Swan Model can explain the impact of physical capital (K) on economic growth, employing the production function (Barro & Sala-i-Martin 2004). This is specified as follows:

$$Y_t = A_t K_t^{\alpha} L_t^{1-\alpha} \qquad \textbf{(5.2.2)}$$

$\boldsymbol{Where}: K = Durable\ physical\ inputs\ including\ machines, buildings, computors;$

$t = Time; L = Labour\ input\ associated\ with\ huma\quad body;$

$A = Skills\ level\ or\ technology.$

Since technology and skills lead to increased output, then:

$A > 0; \alpha\ and\ 1 - \alpha\ represent\ production\ inputs\ shares\ (elasticity\ of\ output\ with$

$respect\ to\ capital, \alpha = Constan\quad lies\ between\ 0\ \ and\ 1(0 < \alpha < 1)$

In this equation, labour consists of all workers and the amount of time they work, as well as their physical strength, skills and health (Barro & Sala-i-Martin 2004). Workers can only engage in activities as long as other activities are foregone, meaning that labour is a rival input. Meanwhile, technology possesses two characteristics. First, technology improves over time; for example, ICT has changed since 1960, and in turn, workers' productivity has improved. Second, technology differs across nations; for example, developed nations are considered industrialised because of superior technology compared to developing countries. As such, in the production function, as technology improves, (A) improves and so does output, even if the capital and labour inputs remain constant. Considering this relationship, since labour is held constant while technology improves, labour-diminishing marginal productivity arises. To increase output, physical capital increases, implying that with time, the value of physical capital decreases due to depreciation. Ultimately, gross investment decreases in respect to depreciation (Barro & Sala-i-Martin 2004):

$$\dot{K}_t = I_t - \delta k_t = S.\mathrm{F}[K_t, L_t, A_t] \;\; - \delta k_t \qquad\qquad (\mathbf{5.2.3})$$

$$\boldsymbol{Where}: \dot{K} = Differentiation; I = Investment; = \; Depreciation;$$

$$S = Savings\ investedafter\ defferentiation; \delta = Depreciation;$$

$$t = Time\ parameter; However, conventionally: \dot{K}_t = \frac{\delta k_t}{\delta_t}; \boldsymbol{while}\ 0 \leq S \leq 1$$

In the production function, output-per-worker is adopted in order to indicate the effect of labour increase in respect to output as a measure of productivity (IIbouldo 2014). The production function productivity equation used for measuring productivity can be written by dividing both sides of output and physical capital by labour, expressed as:

$$y = \frac{Y}{L} = \frac{F(K, L)}{L} = \; A(\frac{K}{L})^{\alpha}(\frac{L}{L})^{1-\alpha} = \; \frac{AK^{\alpha}}{L} \qquad\qquad (\mathbf{5.2.4})$$

$$\boldsymbol{Where}: Y = Output\ per\ worker; \; Capital\ per\ worker$$

According to Barro and Sala-i-Martin (2004), based on Equation 5.2.4, the behaviour of the economy described by the neoclassical production function forms the basis for the Solow-Swan Model. The fundamental differential equation of the Solow-Swan Model can be expressed in terms of a non-linear equation, which depends on capital(k) specified:

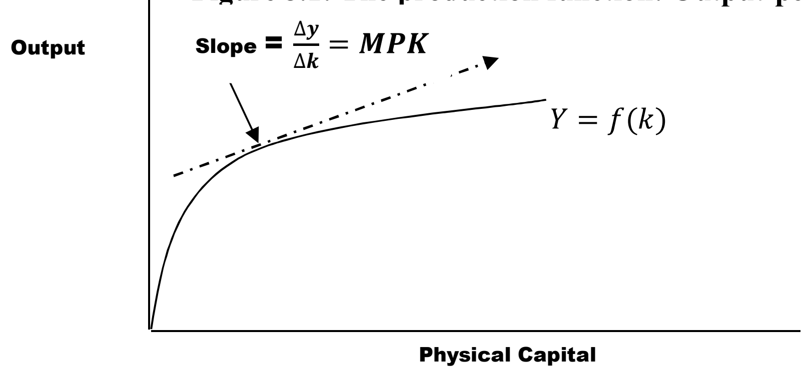
$$\dot{k} = s.f(k) - (n + \delta).k \qquad\qquad (\mathbf{5.2.5})$$

$$\boldsymbol{Where}: n = \frac{\dot{L}}{L};\ n + \delta = Deprecciation\ per\ capital - labour\ ratio; k = \frac{K}{L}$$

Following Equation 5.2.5 when the saving rate equals zero$(s = 0)$, capital per person declines. This is partly as a result of depreciation of capital at the rate δ. Capital per person also declines due to increase in population (n). Also, based on Equation 5.2.4, the production function can be adopted in the Solow-Swan Model to explain the impact of physical capital on output.

The production function illustrated by Figure 5.1 indicates the relationship between aggregate output-per-worker and capital-per-worker, which is determined by the constant returns-to-scale. The Marginal Product of Capital (MPK) is the slope indicating that employing additional units of capital leads to additional output-per-worker, *ceteris paribus*.

Figure 5.1: The production function: Output-per-worker



Source: Based on Ilbouldo (2014)

This behaviour of production in a nation gives rise to the Solow-Swan Model properties.

5.2.1.1 Properties of the Neoclassical Solow-Swan Model

The properties of the Solow-Swan Model explain economic growth based on a continuous production function, as indicated by Figure 5.1. Accordingly, output is linked to factor inputs of capital and labour, which in the long-run leads to the steady state equilibrium of the economy.

(i) Constant return to scale

The constant returns-to-scale can be specified as:

$$\alpha + (1 - \alpha) = 1 and\ \alpha < 1 \qquad (\mathbf{5.2.6})$$

Following the constant return to scale, if inputs are multiplied by a specific factor, the output grows by the same factors, indicated as:

$$F(zK, zL) = zF(K, L); \boldsymbol{Alternatively}: Outputperworker: y = \frac{Y}{L}; \boldsymbol{While}:$$
$$Capitalperworker: k = \frac{K}{L} \qquad (\mathbf{5.2.7})$$

$$\boldsymbol{Where}: F = Constant\ returns\ to\ scale; z = The\ factor\ by\ which\ the\ inputs\ are\ increased;\ \boldsymbol{While}: z > 0$$

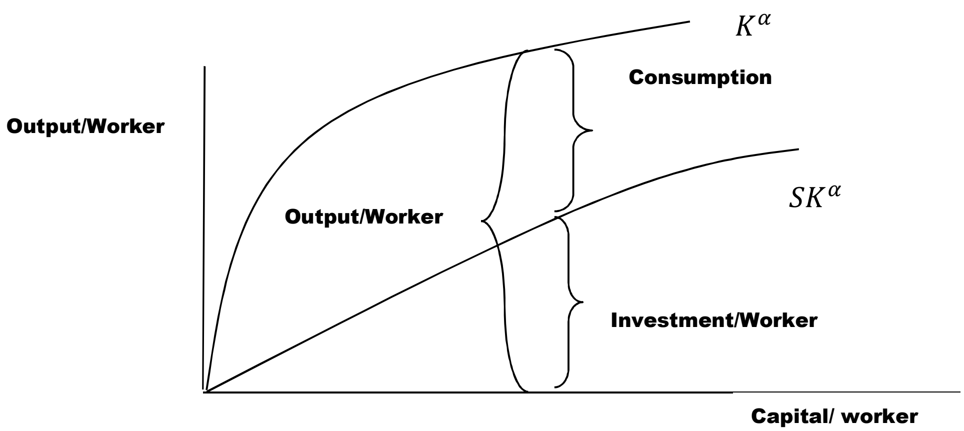
(ii) Positive and diminishing returns to factor inputs

Capital and labour factors are assumed to be positive but subject to diminishing returns. Due to the constant returns-to-scale, there is a decreasing marginal product to factor of capital:

$$\frac{\Delta Y}{\Delta K} = \alpha A_t K_t^{\alpha} L_t^{1-\alpha}; \text{ for all } K > 0; L > 0 \qquad (\mathbf{5.2.8})$$

Following Equation 5.2.7, any extra capital increase leads output-per-worker to increase, but successive increases in capital lead the marginal productivity of labour to decrease. This is largely because during production, depreciation occurs, as illustrated by Figure 5.2.

Figure 5.2: Relationship between output, consumption and investment



Following Figure 5.2, the relationship between investment, savings and output can be explained:

$$I = \frac{s}{Y} \qquad (\mathbf{5.2.9})$$

$$\boldsymbol{Where}: I = Investment;\ s = Savings;\ Y = Output$$

In order to invest, a nation must save a given fraction of output per annum. As such:

$$\Delta k = 1 - \delta \qquad \mathbf{(5.2.10)}$$

$$\boldsymbol{Where}: \Delta k = Change\ in\ capital\ per\ work; I = Investment;\ \delta = Depreciation.$$

In Figure 5.2, α denotes capital share in income, indicating the elasticity of income per capita with respect to a nation's saving rate.

(iii) Inada conditions for equilibrium production conditions

Inada conditions refer to two equilibrium conditions in variations of capital and labour, in relationship to the marginal productivity (Inada 1963). First, when capital or labour reaches 0, the MPK or labour approaches infinity. Second, as capital or labour goes to infinity, the capital or labour marginal productivity approaches infinity.

(iv) Essentiality

In regard to developing countries, this is a key property and the need for capital, so FDI arises. Essentiality means that inputs such as labour and capital $[F(0, L) = F(K, 0)]$ are strictly required during production (Inada 1963). Since the savings capacity for developing countries such as Uganda is quite low, foreign capital flows, such as FDI and tourism expenditure, are the bridge-gap for savings. It is therefore assumed that such flows lead to accelerated economic growth, job creation and poverty reduction in a nation.

5.2.1.2 The Steady State of Growth

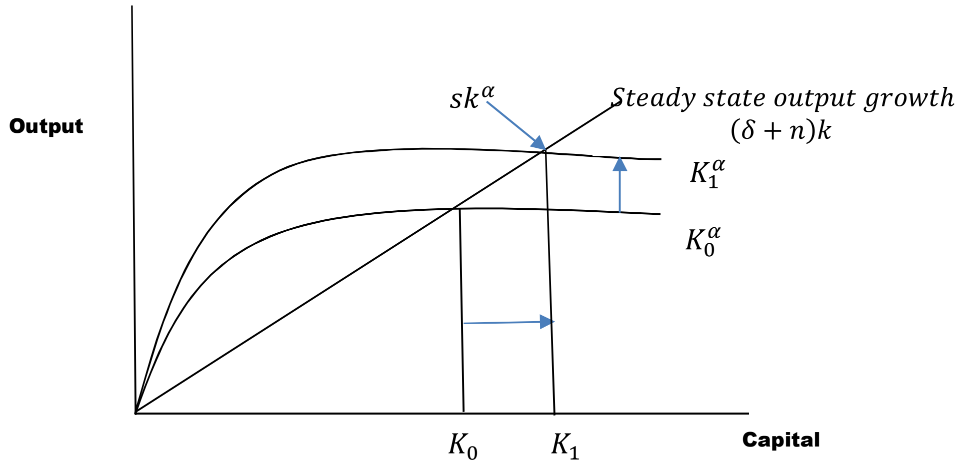
In the Solow-Swan Model, capital-worker ratio in a nation is determined by two assumptions. First, investment increases capital. Second, capital depreciates each year. Based on the production function, assuming that labour and productivity are constant, output is a function of capital. As such, a change in capital is a function of investment and depreciation, explained by a nation's savings and growth rate, as:

$$\dot{k} = sk^{\alpha} - (\delta + n).k \qquad \mathbf{(5.2.11)}$$

$$\boldsymbol{Where}: \dot{k} = Growth\ of\ capital\ per\ worker\ over\ time;\ sk^{\alpha} = Savings\ capital\ input;$$
$$\delta = Depreciation; n = Exogenous\ growth\ rate; n = Population$$

Equation 5.2.11 indicates that as capital-per-worker increases, so does output-per-worker. However, the growth of output-per-worker depends on capital inflows and growth rate, denoted by $(\delta + n).k$. First, if; $sk^{\alpha} > (\delta + n).k$ then as capital/worker increases, so does output (GDP), implying that: $y = f(k)$. Second, $sk^{\alpha} < (\delta + n).k$; means that as the capital/worker decreases, so does a nation's GDP. Finally, when, $sk^{\alpha} = (\delta + n).k$ indicates that the capital/worker ratio remains constant over time, leading to a steady state of growth, as illustrated below.

Figure 5.3: Steady state growth of national economy



Source: Based on Barro & Sala-i-Martin (2004), Acemoglu (2007) and IIbouldo (2014)

As demonstrated, the Solow-Swan Model is a tool for explaining how a developing country can improve its level of production through capital such as FDI. The model explains that as capital-per-worker increases, from K_0 to K_1, so does output-per-worker. In this regard, a nation experiences economic growth, jobs are created and poverty reduced. However, the Solow-Swan Model has been criticised as insufficient for explaining the role of capital. First, the model is based on the assumption that there are only two factors of production: capital and labour. Mankiw, Romer and Weil (1992), indicated that the Solow-Swan Model does not recognise the role played by human capital in production. Second, the Solow-Swan Model was treated as an exogenous model. Third, Kurz and Salvadori (2003) has indicated that planned saving, which is equal to investment and proportional to net income, is Keynesian saving that is not attainable. Finally, the long-run growth path means that once an economy converges, growth reaches a steady state. At this state, the level of capital-per-worker starts to decline, equalling zero $(K = 0)$. The Mankiw, Romer and Weil (MRW) Model and the New Growth Theory (NGT) were devised to explain growth in a nation.

5.2.2 Mankiw, Romer and Weil Model

As aforementioned, Solow-Swan is a micro-model explaining the role capital and labour on economic growth. In this regard, a number of variables that are important during production were omitted. As a result, later MRW (1992) augmented the original Solow-Swan Model to include human capital in addition to physical capital, labour and efficiency. Human capital in this case refers to skilled persons in an LF. Solow-Swan Model is augmented as follows:

$$Y = A_t K_t, L_t, H_t; \boldsymbol{Where}: H = Human\ capital \qquad (\mathbf{5.2.12})$$

The MRW Model is similar to the ASSM. The production function basic model is specified:

$$Y_t = A_t K_t^{\alpha} H_t^{\beta} L_t^{1-\alpha-\beta}; \qquad (\mathbf{5.2.13})$$

$$\boldsymbol{Where}: \beta = Constant;\ \alpha = \left(\frac{w}{p}\right)\left(\frac{L}{Y}\right) = \frac{wL}{pY}; \boldsymbol{While}: w = Wage\ rate;\ p = Price$$

$$\boldsymbol{Such\ that}: 0 < \alpha < 1;\ 0 < \beta < 1; 0 < \alpha < \beta < 1$$

The model is based on three assumptions. First, that physical capital, human capital and labour productivity (AL) are the factors of production. Second, that technology improves labour efficiency and constant returns-to-scale. In the equation, H^{β}represents the educational productivity parameter, implying that educational productivity is assumed to rise in direct proportion to average human capital per head (Edwards 2007). Third, following the production function, labour efficiency is defined in three different perspectives. Firstly, as output/labour units employed effectively $\left(y = \frac{Y}{AL}\right)$. Secondly, labour efficiency is capital-per-unit of labour used in production $\left(k = \frac{K}{AL}\right)$. Accordingly, two key equations arise in the MRW Model:

$$\check{K}_t = s_k y_t - (n - g - \delta) k_t \qquad (\mathbf{5.2.14})$$

$$\check{h}_t = s_h y_t - (n - g - \delta) h_t \qquad (\mathbf{5.2.15})$$

$$\boldsymbol{Where}: s_k = Income\ fraction\ invested\ in\ capital\ representing\ physical$$
$$capital\ savings; s_h = Fraction\ invested\ in\ human\ capital\ representing$$
$$human\ capital\ saving\ rate; n = Labour\ force\ growth\ rate;$$
$$g = Technology\ growth\ rate; meanwhile\ L\ and\ A\ growthrates\ are\ exogenous$$

Finally, the MRW Model assumes that human capital depreciates at the same rate as physical capital. Therefore, $\alpha + \beta < 1$ implies decreasing returns to all capital. If $\alpha + \beta = 1$, then there are constant returns-to-scale in the reproducible factors that arise. In this case, there are constant returns-to-scale during production. However, similar to the Solow-Swan Model, in the long-run, the economy converges to a state of steady growth, meaning that factor units per unit of labour become constant. This is because in the long-run, due to the diminishing marginal returns to physical capital, the host economy converges to a steady state of growth (Sardadvar 2011). The MRW Model has similar shortcomings to the Solow-Swan Model. Despite the criticism, the ASSM identifies the channels through which macroeconomic variables affect economic growth.

5.2.3 New Growth Theory

The Solow-Swan Neoclassical Growth Theory has been criticised by NGT advocates who have noted that endogenous factors are important for a nation's growth. The NGT provided an avenue through which the effects of diminishing returns to capital, causing a steady state in the Solow-Swan Model, can be counteracted (Kurz & Salvadori 2003; McCallum 1996). The NGT is attributed to Romer, PM (1986), Lucas (1988) and Rebelo (1991) who claimed that steady growth can be generated endogenously. The theory is also referred to as the Endogenous Growth Theory. It internalises technology and human capital such that, unlike physical objects, these two factor inputs are characterised by increasing returns, which drive the growth process in a nation (Cortright 2001). The NGT advocates indicate that factor inputs, such as labour and land, are non-accumulable, while all other factor inputs are accumulable, such as capital.

The NGT has foundations in the ASSM, and the starting point is Equation 5.2.12. However, the distinguishing feature of the NGT is that the model is linear where $A > 0$, meaning continuous growth. Following Romer (1986), final production can be expressed in the production function, as follows:

$$Y\left(H_{\gamma}, L, x\right) = H_{\gamma}^{\alpha} L^{\beta} \sum_{i=1}^{\infty} x_i^{1-\alpha-\beta} \qquad (\mathbf{5.2.16})$$

$$Where: H_{\gamma} = Hum \quad capital\ in\ employment\ in\ production\ sector; L = Number\ of$$
$$workers; \sum_{i=1}^{\infty} x_i^{1-\alpha-\beta} = Employment\ of\ intermeidiate\ products$$

Following Equation 5.2.19, Rebelo (1991) indicated that due to factors such as research, human capital productivity and government policy, a nation achieves continuous growth since these variables are endogenously influenced. Also, MPK is constant $\left(MP_k = \frac{dY}{dK} = A\right)$, meaning the absence of a long-run steady growth state. Kurz and Salvadori (1998) have indicated that the simplest and, for a while, most popular method for expressing NGT is by adopting the linear or AK model approach as:

$$Y = AK_{t;}; A > 0 \qquad \mathbf{(5.2.17)}$$

$$\boldsymbol{Where}: K = Composite\ of\ capital\ and\ labou\ \ inputs$$

Following this approach, NGT can be expressed:

$$Y = C^{\alpha}H^{\beta} = AK \qquad \mathbf{(5.2.18)}$$

$$K = Measure\ of\ aggregate\ capital\ consisting\ of\ (C = Physical\ capital$$

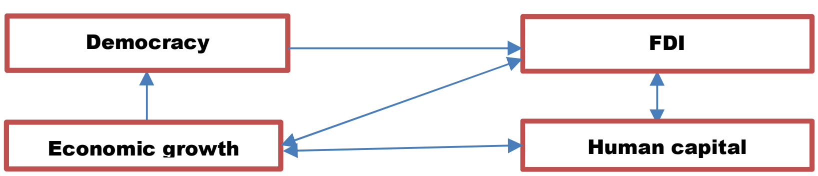
$$H = Hum\ \ \ \ capital\ \ ; A = Constant\ productivity\ parameter$$

Following Equation 5.2.17, rent of profit is exogenous, expressed:

$$A - \delta; \boldsymbol{Where}: \delta = Depreciation \qquad \mathbf{(5.2.19)}$$

Studies that employ the NGT approach treat FDI, economic growth, democracy and human capital as endogenous and mutually dependent Nieman (2012). To this end, as illustrated in the figure below, the NGT uses the relationship between some variables to overcome the shortcomings of the ASSM.

Figure 5.4: Links between democracy, economic level, FDI, and human capital



Based on the relationship among the variables indicated, the following observations are worth mentioning. First, FDI can affect economic growth endogenously but only as long as increasing returns in production are generated by externalities and spill-over effects (Aslam, Hassan & Sakar 2013). Second, long-run productivity is driven by externalities arising from human and physical capital accumulation. As such, technological progress is created by market forces as a product of economic activity, and is not a free commodity, as applied in the ASSM. Third, human capital and technology drive economic growth, and diminishing returns-to-scale are non-existent. These observations are a departure from the ASSM.

Despite the contributions that provide a solution to the steady state, the NGT has been criticised. According to Kurz and Salvadori (2003), the rate of profit (r) indicated in the NGT is equivalent the marginal productivity of capital $(r = f(k)$. The rate of profit and the steady state are determined in the relationship, implying that both theories are endogenous and exogenous models. As such, the NGT did not attempt to include increasing returns. Due to the weaknesses of the NGT, the ASSM serves better to explain the impact of FDI on economic growth, employment and poverty reduction in Uganda. This is because as long as the Solow-Swan Model is augmented, the concerns of the NGT are included too. Moreover, the NGT does not explain increasing return as important to economic growth, which is included in the ASSM. Ecemoglu (2008) indicates that the ASSM can generate sustained growth with technological progress when the original assumptions are relaxed. This study employs the ASSM to test the impact of FDI on Uganda's economic growth, employment and poverty reduction. The next step involves how to measure economic growth.

5.3 Measuring Economic Growth

There are three ways of measuring economic growth in a country. First, the income approach, which measures income generated in a nation by summing up all incomes paid by firms for factors of production. Second, the expenditure approach, which measures final expenditures on goods and services representing total paid out for use of resources such as wages, rent and profit. Third, using the production approach, economic growth is calculated as the sum of all goods and services produced by firms. Considering these approaches, this study adopts expression of GDP, which measures output in a nation in logarithmic terms. It is considered the most suitable first because a GDP per capita approach is mainly concerned with economic growth and welfare while, GDPGR is concerned with the extent to which GDP changes from the previous to the subsequent year in percentage form. Second, in the Solow-Swan Model, output (y) of nations is explained by GDP. As such, the growth in GDP can be employed as a proxy for economic growth. This approach has been employed by studies such as Antwi and Zhao 2013, Athukorala (2003), Egbo 2011 and Louzi and Abadi (2011); illustrated:

$$\boldsymbol{ln(GDPGR_t) = ln(GDP_t) - ln(GDP_{t-1})} \qquad \textbf{(5.2.20)}$$

Following this approach, the rate of growth in output indicating economic growth is measured using GDP annual time-series data expressed in logarithmic terms reflects the GDP rate of growth. Data for the period 1985–2014 was obtained from the WDI at 2005 constant market prices. Since the ASSM also concerns labour, the next section models employment.

5.4 Modelling Employment in Uganda

Employment can be defined as all persons who perform some work for wage or salary, or profit or family gain, in cash or in kind, during a specific period (ILO 2003). Based on the Uganda Employment Act (2006), employment refers to the state of being employed and gainfully earning a salary. The ILO's definition of employment creates two boundaries: economic activity and population engaged in production. Economic activity can be productive or non-productive, creating the production boundary. Productive economic activities comprise of goods and services for either sale or consumption. The relationship between productive economic activities and a nation's population emerges, creating population boundaries in a nation. The boundaries mean that some section of the population is engaged in productive economic activity while another section is non-productive and not engaged in economic activity. This creates two distinctive sections: employed and unemployed populations.

In Uganda, the minimum wage was last determined in 1984 and has been frozen since then by the government (Development Research Training 2013; Imran 2014). This means that the current minimum wage is less than USD 2 per month since in 1984 the minimum wage was Ushs 6000[39]. As such modelling employment based on minimum wage is not applicable since USD 2 per month is *de minimis* with little economic value. Therefore, modelling employment in Uganda is based on the boundaries of labour where employment depends on the conditions in the rural and urban sector, based on the Harris-Todaro Model.

5.4.1 The Harris-Todaro Model

The Harris and Todaro (1970) Model disaggregates employment for developing countries as dependent on rural-urban migration, which in turn causes unemployment in the urban sector. This is because the Harris-Todaro Model is a two-sector model that explains employment in developing countries by explaining that a nation is comprised of a rural and urban LF. To some degree, employment in urban areas can be determined by monetary expansion and fiscal policy, as well as demand for both skilled and unskilled labour (Krueger 1983).

As explained in Chapter Two, Section 2.8.1.2.2, monetary expansion is one of the main causes of inflation in Uganda due to budget deficits. As Uganda is a least-developed nation

[39] Current exchange 1 USD = Ushs 3,380

de minimis minimum wage, money expansion usually increases inflation. However, wages do not increase in similar proportion as money expansion since there is no legislation for annual increase of minimum wage. In this way, hiring labour becomes cheaper as wages remain constant while prices increase, causing rural-urban migration. Second, in the rural sector, employment is determined by the productivity of agricultural products, and price is usually available in urban centres. As price increases due to inflation, especially in urban areas, prices for agricultural products increase in urban areas. Arising from higher prices in urban areas, farmers in the rural sector find the incentive to produce. As a result, Uganda's employment model is based on the Harris-Todaro model. The model explains employment for a least developed nation such Uganda based on two sectors. In this way the model uses six equations that explain the employment structure, specified as:

$$w_a = f(L_a) \qquad \mathbf{(5.3.1)}$$

$$w_e = (\overline{w}_e) \qquad \mathbf{(5.3.2)}$$

$$L_e = g(w_e) \qquad \mathbf{(5.3.3)}$$

$$pw_e = w_a \qquad \mathbf{(5.3.4)}$$

$$p = \frac{L_e}{(L_e + L_u)} \qquad \mathbf{(5.3.5)}$$

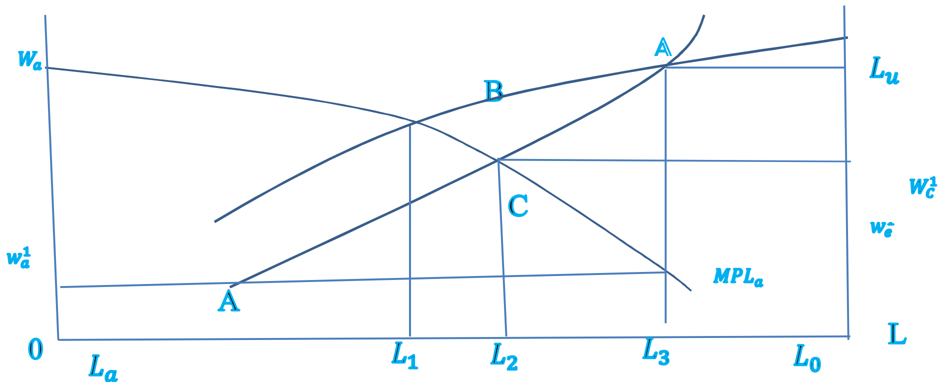
$$L_a + L_e + L_u = \overline{L} \qquad \mathbf{(5.3.6)}$$

$\boldsymbol{Where}$: $L_a = Labour\ employed\ in\ agriculture\ sector$; $L_e = Labour\ employed\ in\ the\ urban\ sect$; $L_u = Unemployed\ in\ the\ urban\ sector$; $\overline{L} = Total\ labour\ force$; $w_a = Wage\ in\ agriculture$; $w_e = Urban\ wage$; $\overline{w}_e = Minimum\ urban\ wage$; $\boldsymbol{While}$: $All\ variables\ are\ endogenous\ except\ total\ employment, urban\ wage\ and\ minimum\ wage$

Following the above equations, employment can be modelled based on a two-sector economy, illustrated by Figure 5.5, below. The figure represents the LF of a developing country as comprising of two sectors: urban and rural. The rural sector is indicated left to right, with the corresponding wage on the vertical left axis. Urban centres are represented from right to left, with the corresponding wage on the vertical right axis. Assuming the equilibrium wage in the urban sector is set at w_e^1, the normal employment in urban areas is located at L_3, while the agriculture sector wage is set at level w_a^1. When the urban wage increases to w_C^1 while the sector employs only L_3 the nation experiences rural-urban migration. This is because higher wages cause rural-urban migration equivalent to the rectangular hyperbola at B. However, unemployment increases in urban areas equivalent to

L_2 to L_3, thus reducing employment in the rural area. As such, measuring employment is based on labour in employment as Labour Force Participation (LFP) for Uganda.

Figure 5.5: Harris-Todaro employment model

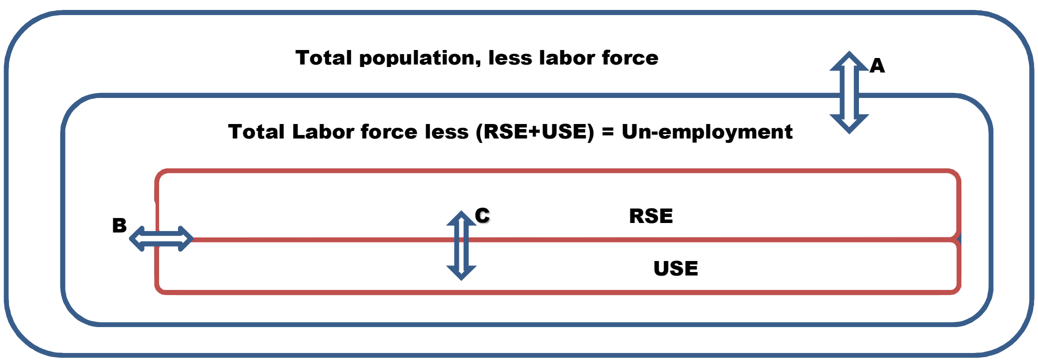


Source: Based on the Harris-Todaro Model in Krueger (1983)

5.4.2 Labour Force as a Basis for Modelling Uganda's Employment

Following the Harris-Todaro Model, Uganda's employment is illustrated below.

Figure 5.6: Summary model of employment in Uganda



Notes: RSE=Rural sector employment; USE=Urban sector migration; A = Population and labour force boundary; B=Employment and unemployment boundary; C= Rural-Urban migration;

Following Figure 5.6, the boundary marked B is employment that is measured. In the Solow-Swan Model, employment is a structure, as illustrated by Equation 5.3.7.

$$LF_t = h_t + uh_t \qquad (\mathbf{5.3.7})$$

$$\boldsymbol{Where}: LF_t = Labo \quad Force\ at\ time\ t;\ h_t = Active\ labour\ force\ (\ LF)$$

$$uh_t = Nati \quad 's\ unemployed\ LF$$

Equation 5.3.7 demonstrates that the unemployment rate is the unemployed and employed percentage ratio:

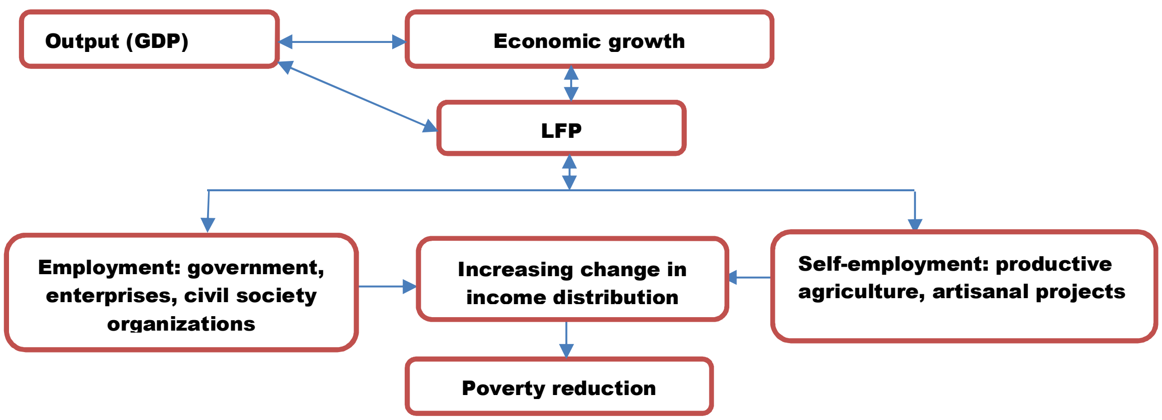
$$uh_t = \left(\frac{uh_t}{LF_t}\right) * 100 \qquad (5.3.8)$$

Also, the labour force participation rate (LFPR) can be expressed as the percentage ratio between the active LF and the total LF:

$$LFPR = \left(\frac{h_t}{L_t}\right) * 100 \qquad (\mathbf{5.3.9})$$

Therefore first, Equations 5.3.8 and 5.3.9 indicate that the higher the LFPR, the lower the unemployment rate in a nation. Second, the LFPR gives rise to a nation's labour force participation (LFP), increasing economic growth and reducing poverty.

Figure 5.7: Relationship between economic growth, LFP and poverty reduction

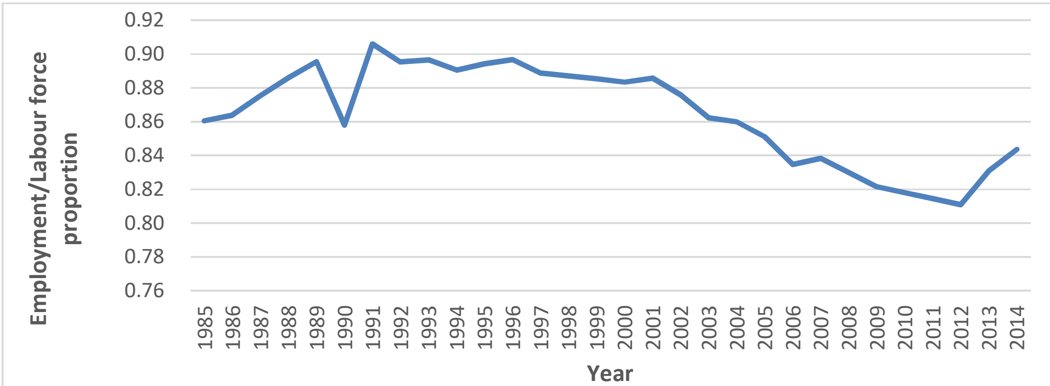


The benefit of LFP to a nation is reflected by the impact of economic growth and income on the poor in two ways. First, as the poor offer labour, extra income is earned through wages, profits for businesses and income of those engaged in productive agriculture and artisanal activities. Second, through LFP, benefits are distributed among communities causing economic growth. As a result, a nation experiences pro-poor economic growth through LFP (Azpitarte 2011; Kakwani & Pernia 2000; Ravallion 2004; Ravallion & Chen 2003).

5.4.3 Measuring Employment

Since there is no minimum wage, employment is measured based on the number of persons aged 14–64 years in gainful employment. Following the labour boundaries earlier discussed, employment is the ratio between a person's LFP and the total LF employed (LFP/total LF).

Figure 5.8: The employment–LF ratio



In the Solow-Swan Model, the importance of the LF in a nation is based on the role of labour in production, expressed as:

$$Y = L(\frac{Y}{L}) \qquad \qquad (\mathbf{5.3.10})$$

$$\boldsymbol{Where}: Y = Output; L = h = Labour\ force\ (persons\ employed)$$

The above equation demonstrates that output in a nation equals LFP and productivity. Increases in LFP increase output. Unemployment data is annually published by the World Bank database. This is the basis for explaining employment.

5.5 Modelling Poverty in Uganda

Developing countries such as Uganda are characterised by low GDP, high unemployment and poverty. As Africa had been referred to as the 'dark continent' in colonial days, many measures were adopted to transform African communities. As discussed in Chapter Two, in Uganda these measures can be traced to as early as 1900. At Independence, Uganda's future looked hopeful. However, after President Amin's rule, the economy collapsed. However, with subsequent intervention from donor agencies, such as the World Bank and IMF, Ugandans living below the poverty line has declined from 65.9% in 1985 to 19.7% in 2014.

5.5.1 Defining Poverty

Poverty is a state of deprivation of some of life's basic needs, such as food, shelter, clothing, basic education, primary health care and security (Kamanou et al. 2005). The (World Bank Institute 2005) has defined poverty as people whose expenditure is below the poverty line. Governments can develop policies to enable the poor to move out of poverty.

The severity of poverty varies between countries. The first step to determining the amount of poverty in a nation is to establish the poverty line. Since developing countries are the most poverty stricken, the World Bank has tried to establish a universal benchmark for the poverty line. The poverty line establishes the income or spending level that individuals and households require in order to purchase essential services such as food, shelter, water, education and health (Morduch 2005). The poverty is the minimum household expenditure or income required to consume basic goods and services (World Bank Institute 2005). Individuals and households below the poverty line are considered poor. The poverty line can be constructed:

$$Z_i = e(p, x, u_z) \qquad \mathbf{(5.4.1)}$$

$\boldsymbol{Where}$: $Z_i = Household\ poverty; P = Price; x = Household\ demograpghy;$

$u_z = Minimum\ household\ utility$

5.5.2 Measuring Poverty

Measures of poverty are related to demand and supply, indicated by household income and expenditure. Poverty is measured according to the poverty line. Measuring poverty is based on the normative characteristics of the poor, stated in mathematical terms as axioms. Three main axioms related to income and expenditure have been identified, to explain poverty measures such as invariance, dominance and sub-regions (Foster, Greer & Thorbecke 1984).

The invariance axiom indicates that poverty measures should not change. The dominance axiom is related to absolute poverty, indicating wellbeing and deprivation of some households. Sub-region axiom includes axioms such as the monotonicity, which indicate that all factors are constant, and when a poor individual’s income decreases, poverty measures increase. The transfer axiom is based on the Pigou-Dalton Principle (Morduch 2005). This principle, holding factors constant, means that when a unit is withdrawn from a poor individual and given to a less-poor individual, the poverty measure increases because the poor gain transfers from the less-poor. Conversely, poverty reduces when the less-poor transfer money to the more-poor. Based on the three axioms, four main measures of poverty are developed, based on the Foster-Greer-Thorbeke (FGT) approach specified:

$$P_\alpha = \frac{1}{n}\sum_{i-1}^{q}\left(\frac{z - y_i}{z}\right) \qquad \mathbf{(5.4.2)}$$

$\boldsymbol{Where}$: $z = Poverty\ line;\ y_i = Lowest\ income\ or\ other\ measure\ of\ living\ indicator;$

$n = \ Total\ population; q = Number\ of\ poor\ persons; \alpha \geq 0$ = Povery aversion parameter

The FGT approach certifies the axiomatic properties that allow easy poverty evaluation across the entire population subgroups in a coherent way. Based on the FGT, the exit time approach introduced by Kanbur (1987) and Morduch (1998) is employed to estimate the rate of growth that allows the poor to move out poverty. Targeted country-specific economic growth can be used for poverty reduction. The exit time equation is specified as follows:

$$t_i = \frac{\ln(z) - \ln(y_i)}{\ln(1+g)} \qquad (\mathbf{5.4.3})$$

$\boldsymbol{Where}$: $t_i = Exit\ time\ for\ person\ i\ with\ income$; $g = economic\ growth\ rate$; $y_i = Income\ required\ by\ persons\ below\ the\ poverty\ line\ z\ to\ move\ out\ of\ poverty$

Countries such as Uganda employ P_α developed under the FGT approach, where four basic approaches are developed to measure poverty: Watts Index, Poverty Gap Approach (PGA), Squared Poverty Gap (SQP) and Head Count Approach (HCA).

5.5.2.1 The Watts Index

The Watts Index is defined as a function of individual incomes and a poverty line. It was the first poverty measure proposed, in 1968, and is calculated by dividing the poverty line by income in a logarithm and finding the average over the poor. The index was proposed based on the transfer-sensitivity axiom, and can easily be decomposed as a population-weighted sum of the poverty indices among specific communities of regions. Transferring any income to the poor can change welfare; for example, the poor will benefit more from USD 20 than if the same amount was given to the rich. The main weakness of the Watts Index is that it is distribution sensitive. The index employs logarithmic terms in calculation, and assumes that poverty can be reduced by transferring equal support, such as money, to all persons in a region. However, transferring equal money to all people is insensitive to the wealthier households in the region.

5.5.2.2 Poverty Gap Approach

The PGA, sometimes also referred to as the Poverty Gap Index or P_1, is the second most commonly employed approach to HCA. The PGA is the average of the ratio of the poverty gap to the poverty line, expressed as a percentage of the poverty line for a country. Poverty is the average shortfall in income for the population, from the poverty line. As such, P_1measurement is employed as a measure reflecting poverty intensity in a nation. The P_1

measures the actual amount of income required to lift households from below the poverty line to the poverty line (Kanbur 1985). Policy makers utilise the P_1 index to raise resources for poverty alleviation. Using the index, the total amount of money needed to bring the poor out of extreme poverty and up to the poverty line is derived. Assuming that a country has 10 million people, a poverty line of USD 1000 per year and a Poverty Gap Index (PGI) of 5%, then an average increase of USD 50 per person per year would eliminate extreme poverty (USD 50 is 5% of USD 1000). Reducing poverty would require USD 500 million ($USD\ 50 * 10\ million\ persons$). The PGI explains poverty depth, allowing an overall assessment of regions during poverty reduction and evaluation of specific public policies, as well as initiatives introduced by the private sector.

The main weakness with the PGI is that the index is not sensitive to income redistribution within the poor units. PGI ignores the effect of inequality among the poor. The index does not capture poverty severity differences among poor households. For example, we can imagine two scenarios with a poverty line of USD 500 and two households below the poverty line. In the first case, the income of household one is USD 300 per year, while household two's is USD 100 per year. Meanwhile, assume a scenario in which the income for two households is USD 200 per annum. In these scenarios, the PGI is 60% for all households. The P_1 index remains unchanged, even when situations among the poor change. For example, when a dollar of income was taken from the poorest unit and given to a richer unit within the poverty line, the index does not change.

5.5.2.3 Squared Poverty Gap

The SQP is also referred to as the poverty severity index, or P_2 (World Bank Institute 2005). The P_2 measures poverty as the squares of the poverty gaps, relative to the poverty line based on information from household consumption or per capita income. As previously mentioned, P_1 index is insensitive to the redistribution of income among poor households. To improve the index, Foster et al. (1984) indicated that transforming the poverty gap P_1 would serve as a solution to the non-sensitivity of the index. The P_2 index is similar to P_1 because the index also weights the poor based on the poverty severity in a region or nation. The difference is that while employing P_2 the shortfalls of persons below the poverty line are squared, giving the poorer household more weight than those who are just below the poverty line by smaller units. In this way P_2 puts different weights on poverty intensity levels.

The strength of the P_2 index is based on the capacity to square the poverty gap. Resources for the poorest sections of communities can be included in the various policies of concerned stakeholders. The index satisfies the transfer axiom, though it fails to meet the requirements of the transfer-sensitivity axiom (Murdoch 1998). Despite this shortcoming, the HCA (developed by Foster, Greer and Thorbecke) is widely used by many countries including Uganda. This is because the FGT incorporates P_0 and P_1 indices to measure poverty. These approaches provide a useful approach for calculating the poverty reduction in a country. They also indicate the role of economic growth in a nation. Since the data employed is based on Uganda, poverty means persons living below the poverty line based on HCA.

5.5.2.4 Head Count Approach

HCA is the most commonly adopted method, denoted as P_0. Using the HCA, poverty is measured as the percentage of individuals whose income falls below the poverty line. However, the measure has weaknesses. First, the ratio of the head count ignores the depth of poverty, so that when the poor become poorer, the head count index does not change. The head count ratio does not take into account the severity of poverty in a nation or region. Second, using head count, there is no indicator for poverty intensity among the poor households. Third, head count is calculated based on households rather than individual persons. Some poor households may consist of more persons than a rich family, yet the measure is applied equally. Finally, since the poor are generalised, policies and interventions do not address individual characteristics of the poor.

Despite the weaknesses of the HCA, this measure is the most commonly used approach as well as the one employed in this study because the other three indices (Watts Index, P_1 and P_2) are mainly concerned with poverty severity and intensity in a region or country. These measures are more suitable in situations involving the design of policies for poverty alleviation. As such, policy makers determine the extent of intervention required to reduce poverty. Based on this measure, the required funds and time are determined to reduce poverty from one specified period to another. The HCA method is also used in this study because one of the main objectives of this study is to measure the impact of FDI on poverty in Uganda. The HCA indicates poverty by head count, reflecting the extent to which poverty increases or decreases annually. The impact for each specific period can easily be measured. The main source of data was the World Bank database, UBOS and published data.

5.5.3 Measuring Poverty Based on the Head Count Approach

The HCA calculation compares the income y_i of each household to the poverty line z using the index:

$$i = 1 \ldots M;\ \boldsymbol{Where}: M = \text{Total households in the sample} \quad \mathbf{(5.4.4)}$$

The index indicates that below the poverty line 1 is taken as the value but 0 if the income is greater:

$$1(y, z) = 1, if\ yi\ \leq z \qquad \mathbf{(5.4.5)}$$

$$1(y, z) = 0, if\ yi > z \qquad \mathbf{(5.4.6)}$$

The HCA index takes variable $1(y, z)$, as a weighted average of the number of people in each household ni by counting the number of poor persons G:

$$G = \sum_{i=1}^{M} 1\,(y, z)n \qquad \mathbf{(5.4.7)}$$

The total population in the sample can then be calculated:

$$N = \sum_{i=1}^{M} n \qquad \mathbf{(5.4.8)}$$

Therefore, the general HCA can be expressed as a ratio:

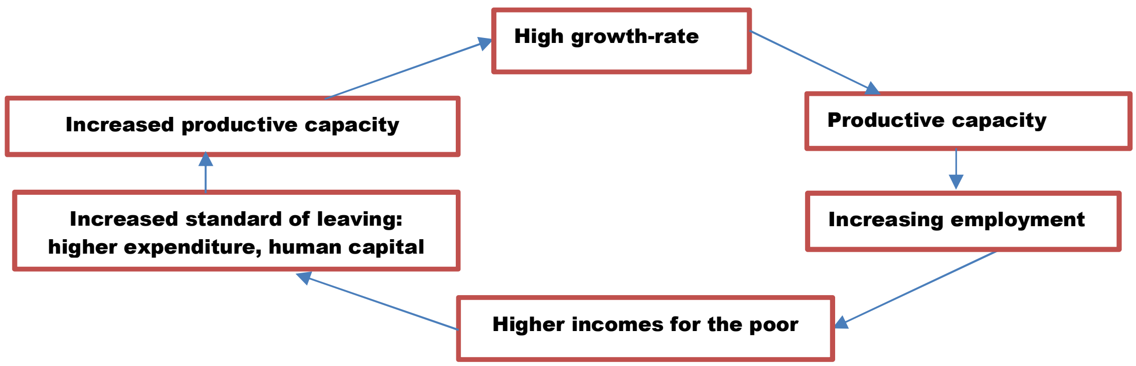
$$H = \frac{G}{N} \qquad \mathbf{(5.4.9)}$$

As indicated, HCA is indicated by dividing the number of poor people by the total population, expressed as a ratio or percentage.

5.5.4 The Relationship Between Economic Growth, Employment and Poverty

Based on ASSM TFP, labour is the main link between economic growth, employment and poverty, both at macro and micro levels (Islam 2004; Torm 2003). This is because labour is one of the input factors of production on the supply-side. At the macro-level, income for the poor is reflected in low wages for employed workers and low earnings for the self-employed, due to low output and productivity. Similarly, low productivity in activities that comprise household earnings provides the link between employment and poverty at the micro level. Additionally, low human capital levels, dependency burden and unavailability of remunerative employment aggravate poverty. This relationship is illustrated in Figure 5.9, which demonstrates that a pro-poor model can enable the unemployed and underemployed to move out of poverty because economic growth is a tool for employment creation and, in turn, poverty reduction among communities (Dollar & Kraay 2002, 2003).

Figure 5.9: Relationship between growth, employment and poverty reduction



Source: Based on Islam (2004)

The process illustrated by the pro-poor to demonstrate that employment leads to poverty reduction is based on the role of economic activities through the high growth rate of factor productivity. First, the LF structure transforms to high-productivity sectors. Second, even if prices do not increase but productivity does, output and income for the self-employed increases. Third, the gains of increased productivity can benefit the employed as long as employers transfer such benefits by increased wages. Finally, high earnings lead to increased welfare, reflected in the expenditure pattern of households. As a result, households can spend on social services such as education and health, and essential consumer goods. In turn, a nation experiences higher levels of production and output, and economic growth continues. Nevertheless, TFP and the absorption capacity of the nation is important for a national to benefit from increasing factors of production.

5.5.5 Concluding Remarks

To model economic growth, employment and poverty, this chapter employed the theories that explain economic growth. To achieve this, three theories were examined: the Solow-Swan Neoclassical Growth Theory, MRW and NGT. Solow and Swan, indicated the importance of capital and labour during production, proposed building on the Harrod-Domer Model, the neoclassical growth theory. However, the MRW came into being because the Solow-Swan Model ignored the role of human capital in production. To this end, the Solow-Swan Model was augmented by the MRW to include human capital. Despite the inclusion of human capital in the ASSM, the NGT was proposed as a solution to the steady state. NGT indicates that endogenous factors are important for a nation's growth. The theory internalises technology and human capital such that unlike physical objects, these two factor inputs are characterised by increasing returns, which drive a nation's growth process. Factors such technology, human capital and government policy can endogenously cause a nation to attain increasing returns-to-scale, and as such, there is no convergence, as explained by the ASSM.

Although the NGT provided a new outlook for explaining the determinants of production in a nation, the model is noted to be inadequate. For example, the theory did not attempt to include increasing returns explained by the ASSM. This study employs the ASSM in modelling economic growth, employment and poverty. This model is also the basis for modelling the impact of FDI and other explanatory variables on economic growth, employment and poverty reduction in Uganda. To measure economic growth, this study employs the logarithmic term to indicate growth in GDP. The World Bank database is the source of annual time-series data for the period 1985–2014, at 2005 constant market prices. This chapter further modelled employment based on the ASSM. As there is no minimum wage in Uganda, the starting point for modelling employment was the Harris-Todaro Model. According to the Harris-Todaro Model, a two-sector model that includes the urban and rural sector serves the purpose, while modelling employment. This is because disaggregating the employed from the unemployed becomes complicated, especially to a country such as Uganda. Accordingly, in this study, employment is based on the ILO definition, meaning all persons in Uganda who perform some work for wage or salary, or profit or family gain, in cash or in kind during a specific period.

This study further modelled poverty in Uganda based on the World Bank definition of poverty, as people whose expenditure is below the poverty line. Following this definition, poverty is modelled based on the four main measures of poverty, developed based on the FGT approach: Watts Index, PGA, SQP and HCA. As one of the objectives of this study is to measure the impact of FDI on poverty reduction in Uganda, HCA is employed because it is the most commonly used approach, and because the other three approaches are more suitable to situations involving the design of policies for poverty alleviation. HCA indicates poverty by head count, reflecting the extent to which poverty increases or decreases annually. The impact of each specific period can easily be measured. The main source of data is from the World Bank database and UBOS data for the period 1985–2014, unlike the other approaches.

The final part of this chapter examined the relationship between economic growth, employment and poverty. Based on TFP, the Solow-Swan Model presents a relationship between economic growth, poverty reduction and employment. At macro and micro levels, labour productivity is the main link between economic growth, employment and poverty. First, in order to increase output, the productive capacity of factor inputs has to increase, creating an economic growth and labour relationship. Second, the labour-poverty relationship is reflected through wages for the employed. Meanwhile for the self-employed, low productivity of economic activities that comprise household earnings provide the link between employment and poverty.

In sum, following the ASSM, as households engage in gainful employment through LFP due to increasing TFP, a nation's economic growth accelerates. As employment increases, poverty reduces and in-turn a nation's absorption capacity increases, but subject to the properties of the Solow-Swan Model. Most important first is the essentiality property of ASSM meaning that foreign capital is necessary due to a huge physical capital deficiency. As such, there is need for increasing foreign capital flows—such as FDI and tourism expenditure—to bridge the gap the private capital deficiencies. Second, increasing returns-to-scale meaning that increasing TFP is required so as to experience increasing economic growth; otherwise a nation experiences diminishing returns due to declining TFP. With innovations such as government policy, human capital and technology, a nation cannot experience a steady rate of growth. Third, the constant returns-to-scale property means that as along as a nation experiences political and macroeconomic stability as well; as good governance higher levels of economic growth are tenable through high returns and savings. This is because savings determine investment, although this is not achievable for a developing nation with no developed capital market. The main objective of this study is to establish the impact of FDI on Uganda's economic growth, employment and poverty reduction. The next step in this study involves modelling the impact of FDI and other explanatory variables on economic growth, employment and poverty reduction in Uganda.

Chapter 6: Modelling the Impact of FDI and Other Explanatory Variables on Economic Growth, Employment and Poverty in Uganda

6.1 Introduction

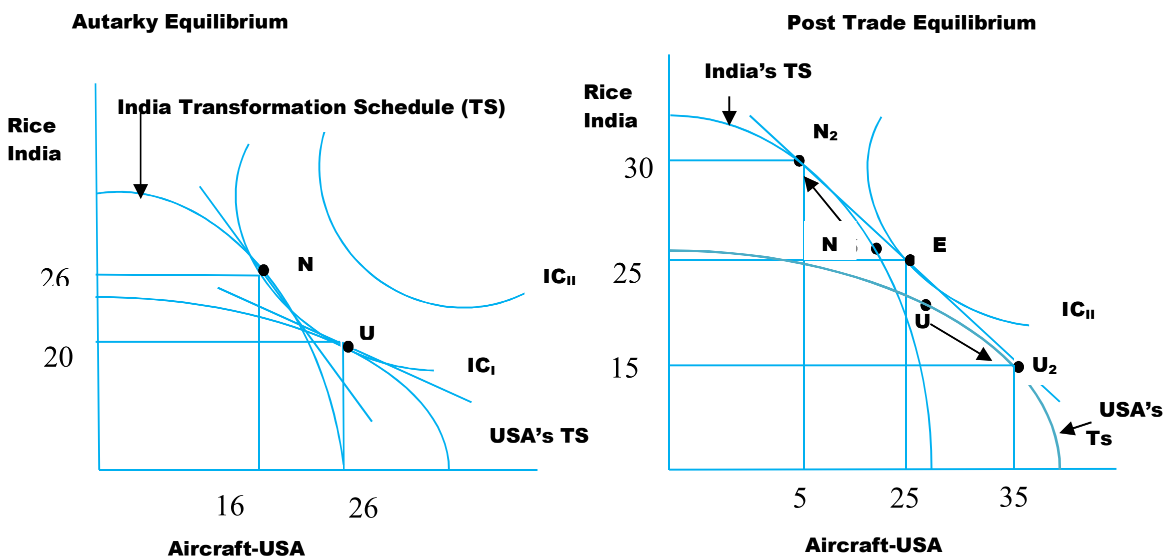
Chapter Five explained the manner in which a nation attains high levels of economic growth, employment and poverty reduction. The chapter started by modelling economic growth, followed by employment and later poverty. It finally reviewed the relationship between economic growth, employment and poverty.

This chapter establishes the media through which the explanatory variables influence economic growth, employment and poverty in a nation such as Uganda. It outlines the approaches adopted to measure these explanatory variables. The first part involves modelling openness by indicating its influence on economic growth, employment and poverty, as well as the measurement methods. The second part models tourism, followed by FDI and later, other variables that influence economic growth, employment and poverty in Uganda. These variables include human capital, telecommunications, GE, inflation and civil war. Later, this chapter explains functional elasticities as a means of deepening our understanding regarding factor productivity, explained by the Solow-Swan Model. The final part of this chapter provides a literature review on the impact of FDI on economic growth, employment and poverty.

6.2 Modelling Openness on Economic Growth, Employment and Poverty Reduction

Openness refers to the extent to which a nation opens to the flow of goods and services traded internationally, including the flow of international investment. Openness entails the adoption of trade liberalisation policies, where barriers to trade and investment are reduced (International Chamber of Commerce 2013; WTO 1995, 2006). The main link between openness and economic growth, employment and poverty reduction is the role of trade and investment in a nation. This is because openness relates to economic growth through production and comparative advantage (Babula & Andersen 2008; Carbaugh 2004). Through openness, a nation's factor inputs (such as labour and capital) are put into the production system, and cross-border trade increases. As international trade increases, so does welfare, following Ricardo's theory of comparative advantage and the Heckscher-Ohlin theory of different factor endowments (Babula & Andersen 2008). Accordingly, when nations engage in trade, each nation can specialise in the production of goods to its advantage as here below.

Figure 6.1: Comparative advantage: Gains from trade and investment



Source: Based on Carbaugh 2004

As illustrated in Figure 6.1, it can be assumed that the USA is a capital-intensive nation that produces aircraft, while India is a labour-intensive country that produces rice. Based on the factor endowment theory, the aircraft production price is lower in USA than in India. India is endowed with labour, so rice production is cheaper than in the USA. Therefore, the USA exports aircraft to India and imports rice from India. Before trade, the USA and India were producing at an indifference curve IC_I. Each country located production at the point where the nation's production possibility frontier is at a tangent to the common price in the country.

With trade, each country specialises in a commodity of comparative advantage (aircraft in the USA, rice in India). As the two nations specialise in commodities of comparative advantage, production shifted from IC_I to IC_{II}. At IC_{II}, and aircraft production in the USA increased from U to U_{II} while rice production increased N to N_{II} in India. Trade increased the market for each nation's commodity of comparative advantage through increased output and employment of factor inputs. When specialisation occurs due to a capital deficiency in India, the government appeals to foreign investors to take advantage of increasing rice production on demand in the USA, and in turn increasing production spurs employment, economic growth and poverty reduction in India.

6.2.1 Measuring Openness

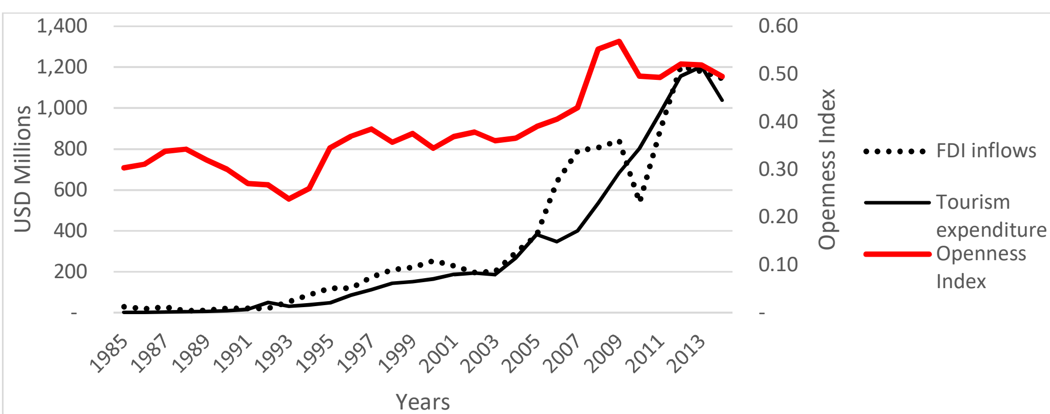
To measure openness, the extent to which a nation employs trade restrictions/distortions can be employed. Due to a decline in tariffs, a nation's average tariff rate can be employed as a measure of openness. Similar measures to tariffs are the extent to which non-tariff barriers restrict trade and investment. However, adopting such measures does not indicate the growth of trade in a nation (Dollar & Kray 2002). Trade and investment play a significant role in accelerating economic growth, employment and reducing poverty. Due to such shortcomings, to measure openness, the ratio of total trade (exports and imports) to GDP is most commonly adopted (Barro 2003; Wigeborn 2010). The measure is expressed:

$$OP_{it} = \frac{TT_{it}}{GDP_{it}} \qquad (6.2.1)$$

$$\boldsymbol{Where}: OP = Openness; TT = Total\ Trade\ (Exports + Imports); t = Time$$

The objective of openness policy is to increase trade, especially exports and investment in the form of import substitution, in developing countries. The openness index is a plot that can be made to indicate the trend by comparing tourism, as an export and FDI as capital for investment. This is illustrated in Figure 6.2, below.

Figure 6.2: Trends in Uganda's openness index, FDI flows and tourism



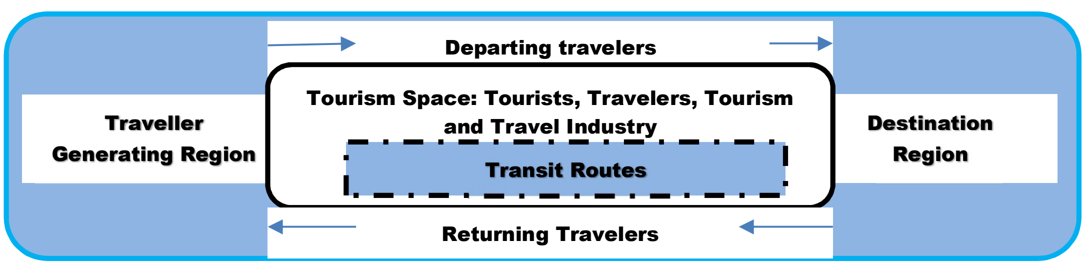
Trends indicate that as openness index increases, so does FDI and tourism in Uganda. However, export-biased growth can lead to immiserizing growth (Bhagwati 1969). A nation such as Uganda can increase economic growth but at the same time communities are worse off than before, as growth is due to declining TOT. When the index declined from 0.55 in 2008 to 0.49 in 2014 FDI inflows declined from about USD 1,205 million in 2012 to USD 1,157 million representing a 4.93% decline. During the same period, tourism expenditure declined from USD 1,157 million to 1,039 million, representing a 10.2% decline.

6.3 Modelling the Impact of Tourism on Economic Growth, Employment and Poverty Reduction

'Tourism' refers to the activities of persons travelling to and staying in places outside of their usual environment, for a period not more than one year, mainly for leisure, business and other purposes not related to exercise (Uganda Tourism Act 2008). To model the impact of tourism on economic growth, employment and poverty in a nation such as Uganda is based on the tourism value chain, outlined in Chapter Two, Figure 2.9. The figure indicates the role of inbound tourists' demand for goods and services in the country of destination. Specifically, modelling the impact of tourism can start by demonstrating the tourism system framework based on the Leiper Model, illustrated below.

Figure 6.3: The tourism system: The Leiper Model

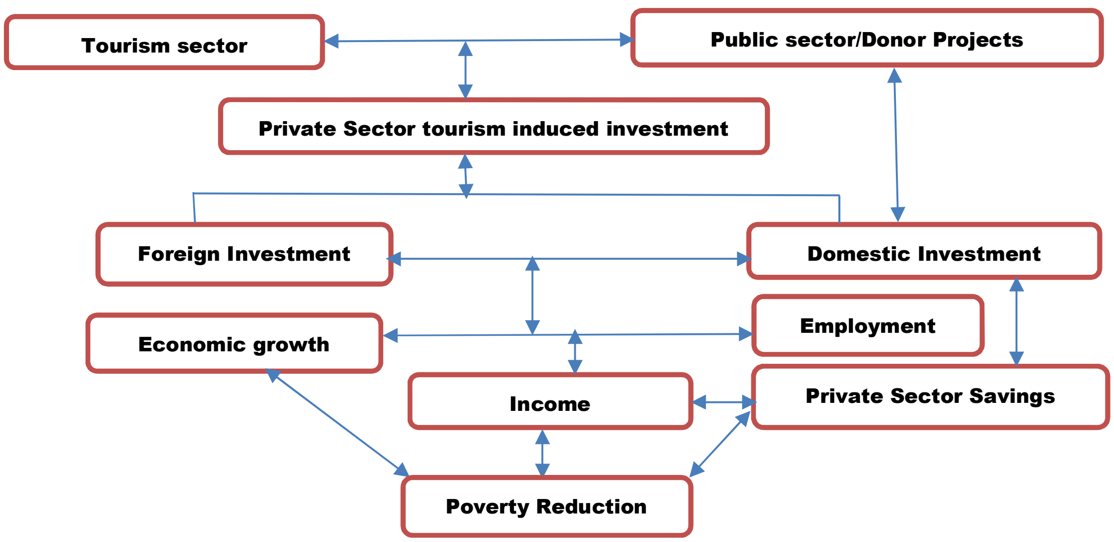
Figure 4: The tourism system: The Leiper Model



Source: Based on Candela and Figini (2012)

The Leiper Model indicates that the tourism system is comprised of three main sectors. The first sector of tourism is comprised of tourists, constituting the main economic element for the tourist industry. The second is the tourism space, consisting of geographical regions specified as the generating and destination region, as well as transit routes and the tourism sites that are visited. The third section is comprised of entrepreneurs and multi-national industries who provide services that promote tourism. When tourists start travelling, the economic importance begins to emerge, in both the generating country and the destination nation, through tourist demand for goods and services. Therefore, the tourism model adopted in this study indicates that Uganda is considered as a nation faced with a downward sloping demand curve. Similar to household demand, the tourist demand for goods and services is obtained by maximising the utility of a tourist subject to budget constraint. Based on the value chain, this study introduces a tourism model summarised in Figure 6.4.

Figure 6.4: Modelling the impact of tourism on economic growth, employment and poverty



Arising from this relationship, the demand function for tourism exports can be specified:

$$ToDGS_{gs}.P_{gs} = \beta TD_{gs}.ToEXP_{REV} \qquad \mathbf{(6.3.1)}$$

$$\boldsymbol{Where}: TDGS_{gs} = Tourist\ quantity\ demand\ for\ a\ nati\quad 's\ goods\ and\ services\ (gs);$$
$$P_{gs} = \ Aggregated\ level\ of price(P) for\ a\ natio\ \ 's\ goods\ and\ services;$$
$$\beta TD_{gs} = The\ share\ of\ tourist\ demand\ for\ anati\quad 's\ goods\ and\ services;$$
$$ToEXP_{REV} = Tourist\ expenditure\ as\ revenue\ in\ the\ country\ of\ destination$$

Following Equation 6.3.1, tourists' expenditure is the total revenue to government and income to firms and households. Such expenditure includes tourists' visa entry fees, VAT on goods and services consumed in form of leisure and hospitality services, and entry permits at tourist sites,[40] expressed:

$$ToEXP_{REV} = \Psi.TToA_C \qquad \mathbf{(6.3.2)}$$

$$\boldsymbol{Where}: \Psi = Tourist\ percapita\ consumption; TToA_C = Total\ tourst\ Arrivals$$
$$in\ country\ of\ destination$$

[40] In Uganda, the tourist sites include: game parks, cultural sites,

In the ASSM, money spent by tourists is a foreign capital flow into Uganda. In Solow's growth framework, the Cobb-Douglas production function can be employed to explain the media through which tourism can lead to economic growth (Tang & Tan 2015). The equation can be specified as follows:

$$ln\frac{Y_t}{L_t} = \beta_0 + \theta lnz + \frac{\alpha}{1-\alpha}lns_t - \frac{\alpha}{1-\alpha}\ln(n+g+\delta)_t \qquad \mathbf{(6.3.3)}$$

$\boldsymbol{Where}: Y = Output; L = Labour; s = Savings; n = Population\ growth\ rate; \delta = Rate\ of\ depreciation\ of\ stock; g = Growth\ rate\ of\ technical\ progress; z = Vectors\ affecting\ level\ of\ technology\ and\ efficiency\ in\ the\ economy$

Equation 6.3.3 indicates that the benefits of tourism in Uganda are subject to variable z, representing tourism expansion, innovation and institutional factors such as political stability. Ihalanayake (2007) explains that tourists' expenditure is a source of tax revenue to a nation through tourism products such as: transportation, food and beverages, accommodation, shopping products that include arts and crafts. As expenditure increases, so does tax revenue collected from interactional visitors. In turn as consumption and investment increases as does economic growth and employment. Therefore, tourists' expenditure can also be viewed as foreign flow, which in turn is income into the country that supplements the private-sector financing gap. This is indicated in Figure 6.4, which reflects the relationship between tourism and investment. First, tourism is a foreign exchange-earning commodity (private sector and government), and as such, an export. Second, as a supplement for the private-sector savings gap, tourism expenditure and FDI are foreign flows. Third, due to the limited capacity of local firms to invest in huge tourism demand projects (such as hotels and game park reserves); tourism is a source of FDI. Similarly, as investment increases, so does tourism and, in turn, economic growth, employment and poverty reduction. Modelling tourism can further be explained by the benefits of FDI as a foreign capital flow.

6.4 Modelling the Impact of FDI on Economic Growth, Employment and Poverty Reduction

The definition of FDI in this study is based on the UIA Investment Code Act (1991), which defines FDI as a company or partnership in which more than 50% of majority partners are not Ugandan citizens. In this study, FDI is measured as net USD FDI inflows into Uganda, as a total equity capital annually entering Uganda, as reflected in the balance of payments. The source of data is the World Bank database and UBOS. The study models the impact of FDI on economic growth, employment and poverty, based on the expenditure approach. To achieve this, the study first uses the interactions between aggregate income and demand as a nation's absorption capacity and the external current account balance. This is GDP at market prices, gross national income and gross national disposable income (GNDI), where current account balance is expressed:

$$GNDI - A = CA \qquad \textbf{(6.4.1)}$$

$\textbf{Where}: GNDI = Gross\ National\ Disposable\ Income;\ A = Absorption\ capacity,$
$CAB = Current\ Accou \quad Balance$

Developing countries are characterised by huge budget deficits. Equation 6.4.1 indicates that a current account deficit arises in cases where a nation's expenditure exceeds their income, or absorbs more production. To reduce the current account deficit, income is increased and/or absorption is reduced. To retain balance, a nation reduces consumption and/or gross investment. However, this is not good for a nation, so the need for foreign capital (such as tourist expenditure) as a means of increasing the absorption of capacity arises, in terms of demand for goods and services. This study uses the interaction relationship between the national account and current account balance through savings-investment balance, expressed:

$$S - I = CAB \qquad \textbf{(6.4.2)}$$

$\boldsymbol{Where}: S = Savings; I = Investment$

Equation 6.4.2 indicates a shortfall in savings, causes a current account deficit as it cannot finance all its investment through domestic resources. As the current account must balance, a nation has to reduce savings and/or investment. However, reducing investment means reducing expenditure on social services and infrastructure such as roads and communication networks. To overcome this situation, governments in developing countries seek other ways of financing the resource or savings gap. The GOU has been financing such expenditures by printing money, and through policies that increase FDI. The role of FDI can be explained through the current account constraint that is linked to the income and expenditure gap, and its financing by private-sector saving. This is because private-sector saving is the difference between disposable income and absorption capacity, expressed:

$$ps \quad \mathrm{GNDI}_P - \mathrm{C}_P \qquad \textbf{(6.4.3)}$$

$\boldsymbol{Where}: ps = Private\ sector\ saving; GNDI_P = Gross\ National\ Disposable\ Income;$

$C_P = Consumption$

The private-sector absorption capacity (A_P) can also be expressed:

$$\mathrm{A}_P = \mathrm{C}_P + \mathrm{I}_P \qquad (\mathbf{6.4.4})$$

$$\boldsymbol{Where}: A = Absoption\ capacity; \ \ I_P = Private\ sector\ gross\ investment$$

Therefore, $$\mathrm{GNDI}_P - \mathrm{A}_P = \mathrm{S}_P - \mathrm{I}_P \qquad (\mathbf{6.4.5})$$

Alternatively, $\mathrm{F}_P = -(\mathrm{S}_P - \mathrm{I}_P)$; $\boldsymbol{Where}$: $\mathrm{F}_P = Financing$ $(\mathbf{6.4.6})$

The private-sector financing gap indicates the absorption excess over income. The nation must finance the deficit through other sources, both from within the economy and the rest of the world. This creates the need for FDI to become part of the financing gap. Following the IMF (2008) and (Ouanes & Thakur 1997), this can be expressed:

$$\mathrm{F_P} = \mathrm{FDI_P}+\mathrm{NFB_P} + \mathrm{ANDC_P} - \mathrm{AM_2} - \mathrm{NB} \qquad (\mathbf{6.4.7})$$

$$\boldsymbol{Where}: FDI_P = Foreign\ Diect\ Investment; \ NFB_P = Borrowing\ from\ abroad;$$

$$ANDC_P = Banking\ sector\ financing\ of\ the\ private\ sector;$$

$$AM_2 = Increasing\ currency\ bythe\ private\ sector\ due\ to\ lending;$$

$$NB = Government\ borrowing\ from\ private\ sector$$

Following the equation, the current account deficit can now be financed and balanced, expressed:

$$S_P - I_P + F_P = \ S_P - I_P + FDI_P + NFB_P + ANDC_P - AM_2 - NB = 0 \qquad (\mathbf{6.4.8})$$

Equation 6.4.8 demonstrates that of FDI supplements, the saving and investment gap for developing countries that contributes to economic growth, employment and poverty reduction. This is based on two assumptions. First, a nation's total capital stock is composed of sources of investment capital that include domestic capital and FDI. Second, employment is comprised of skilled and unskilled labour drawn from a nation's total LF. Therefore, FDI contributes to economic growth, and in turn to employment, in two ways Aslam (Aslam, Hassan & Sakar 2013; Kira 2013). Total labour employment represented by labour demand is included in the model. Also, FDI contributes to GDP in terms of skilled labour through higher productivity and technological efficiency.

Since a nation has a number of sources of physical capital that contribute to economic growth, the challenge originates when distinguishing FDI-related effects. To overcome the challenge, this study employs the Solow-Swan Model. In this, the effects of FDI on a nation can be measured by the efficiency denoted (A), referred to as the Solow residual (Barro & Sala-i- Martin 2004; Ibouldo 2014; Muggeridge 2015; Petrosky-Nadeau 2008). Based on Equation 6.4.7**,** the contribution of FDI on output is indicated as physical capital. In turn, the equation establishes a relationship between FDI and economic growth, employment and poverty. To measure the impact of FDI, the Solow-Swan Model is employed, where the production function productivity (Equation 5.2.4) is rewritten and expressed as:

$$y = \frac{Y}{L} = \frac{F(K,L)}{L} = F\left[\left(\frac{FDI}{L}\right)\left(\frac{L}{L}\right)\right] = A\left(\frac{K}{L}\right)^{\alpha}\left(\frac{L}{L}\right)^{1-\alpha} = AK^{\alpha} \qquad (\mathbf{6.4.9})$$

$$\boldsymbol{Where}: FDI = Foreig \quad direct\ investment$$

Equation 6.4.9 indicates that FDI contributes to economic growth through A where the impact is not immediately observed. Accordingly, the effect of FDI on A is achieved by controlling other contributing factors to economic growth. This can be done by establishing the hypothesis that FDI at time period (A) possesses a positive effect on output. Based on this hypothesis, mathematically FDI can contribute to economic growth through the productivity factor (A). The rate of productivity change is expressed:

$$\frac{(A_t - A_{t-1})}{A_{t-1}} = g(FDI_{t-1}) \qquad (\mathbf{6.4.10})$$

Following Equation 6.4.10, the growth rate of productivity is lagged when FDI is lagged, so as to indicate the effect of FDI on the long-run productivity. Alternatively, Sun and Heshmati (2010) recommended a procedure that involves the Divisia Index. According to this, factor productivity is measured as the difference in the percentage growth in output less the percentage change in a Divisia Index of inputs.

$$TF\dot{P}_{it} = \dot{\mathrm{Y}}_{it} - \sum_{\mathrm{j}} \mathcal{E}_{\mathrm{j}}\, \dot{\mathrm{x}}_{\mathrm{jit}} \qquad (\mathbf{6.4.11}$$

$$\boldsymbol{Where}: \dot{Y}_{it} Output\ gro \quad rate\ of\ i\ at\ time\ t;\ \mathcal{E}_j\ cost\ share\ or\ output\ elasticity\ of\ input\ j\ at\ time\ t;\ \dot{\mathrm{x}}_{jit} = input\ growt \quad rate\ for\ i\ at\ time\ t$$

As output in a nation increases through FDI, productive capacity also increases. In turn, the demand for employment also increases, while in the long term, poverty reduces. However, the increase in economic growth arising from TFP is subject to the properties of the Solow-Swan Model, explained in Chapter 5. The particular properties include constant returns-to-scale, essentiality and positive and diminishing returns to factor inputs. Second, a nation's absorption capacity is related to household income and the arising demand for goods and services. After modelling FDI, the next step is to explain human capital as a factor input in the ASSM.

6.5 Modelling Human Capital on Economic Growth, Employment and Poverty

LFP is comprised of non-skilled and human capital (skilled labour). Following Equation 5.2.2, the production function model has been specified in Equation 6.5.1:

$$Y_t = AK_t^{\alpha}\,(hL)_t^{1-\alpha} \qquad \mathbf{(6.5.1)}$$

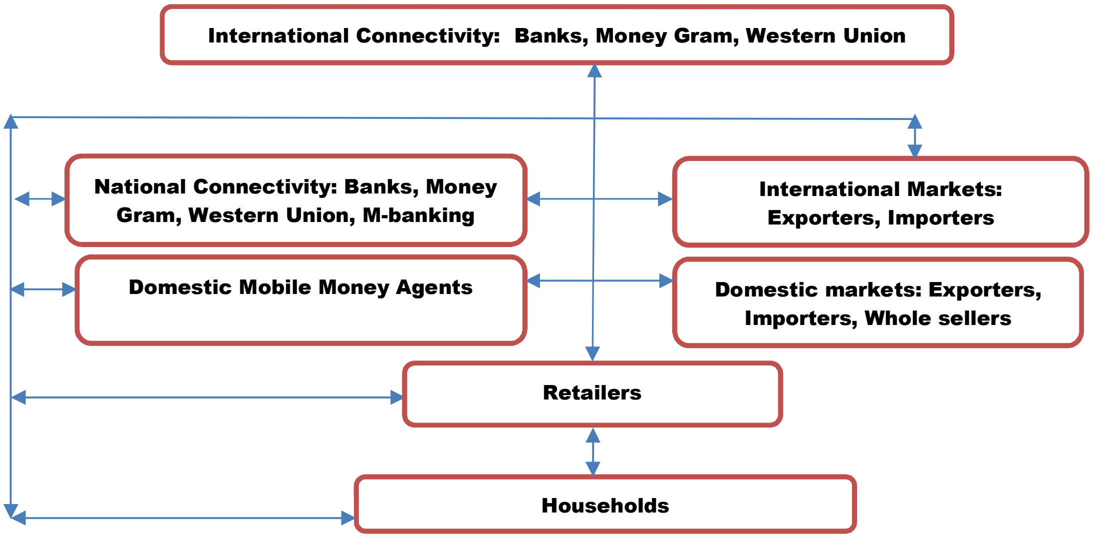
Equation 6.5.1 indicates that in the Solow-Swan Model, employment and economic growth are a function of increase in efficiency, physical capital human capital and labour. Ultimately, poverty is reduced. The growth rate of GDP, employment and poverty is a weighted average in the growth rates of $A, k\ h, l$. As demonstrated in Chapter Five, Equation 5.2.13, when educational productivity denoted by parameter (H^{β}) increases, so does output and employment. With increasing employment, incomes among communities increase, in turn reducing poverty.

However, as a factor of production, human capital productivity is subject to the assumptions of the Solow-Swan Model. This is in regard to steady growth and diminishing returns. However, through efficiency and innovations, these assumptions can be relaxed and a nation can increase production and employment and reduce poverty.

6.6 Modelling the Impact of Telecommunications on Economic Growth, Employment and Poverty

As mentioned in Chapter 2, the development of infrastructure and technology in Uganda is a growing trend, especially through ICT, indicated by mobile and Internet usage in the country. The contribution of ICT on economic growth, employment and poverty reduction are reflected in telephone usage. As indicated in Figure 6.5 below, telephone use plays a large role in production, trade and marketing telephones via M-banking and telephone connectivity.

Figure 6.5: Comparative advantage: Gains from trade and investment



The importance telephone usage in a developing country such as Uganda is explained through: productivity which enhances information asymmetry and transport substitution, entrepreneurial development, and welfare enhancement and poverty reduction (Bhatia et al. 2008). In Uganda, farmers and traders use telephones to market products, make purchases and social connections.

6.6.1 The Impact of Telecommunications on Productivity

The equation indicates the role of efficiency through technology offered by several types of machinery, including vehicles, forklifts, computers and telephone sets. Following Romer, P (1990), the production function indicating final output can be specified:

$$Y(t) = L^{\alpha}\, H_{Y}^{\beta} \int_{0}^{\infty} x^{1-\alpha-\beta} \quad \alpha, \beta > 0 \qquad \mathbf{(6.6.1)}$$

$\boldsymbol{Where}\text{:}\ H_{Y}^{\beta} = Human\ capital; x = Machines\ such\ as\ computers, Telephone\ sets\ used\ in\ producing\ output\ (Y)$

In terms of ASSM, the production function for Equation 5.2.13 can be rewritten:

$$Y_t = AK_t^{\alpha}\, (hL)_t^{1-\alpha} \qquad \mathbf{(6.6.2)}$$

Equations 6.6.1 and 6.6.2 indicate that a specialist's productivity increases through using technology (A). The efficiency of specialist (z) can be specified:δH^{z}. The contribution of technology to all specialists employed in the organisation is denoted:

$$\dot{A} = \delta H_A A; Where: \delta = Productivity\ parameter \quad (\mathbf{6.6.3})$$

Thus, since specialised skills and technology can be reflected as patents, the marginal product from specialist designs and knowledge is specified:

$$P_A \dot{A} = \delta P_A H_A A \quad (\mathbf{6.6.4})$$

$$\boldsymbol{Where}: P_A = Patent$$

Therefore, the marginal product for each specialist can be denoted:

$$H_A = \delta P_A A \quad (\mathbf{6.6.5})$$

In a developing nation such as Uganda, ICT though mobile telephone usage has greatly improved productivity, particularly through the various forms of usage, ranging from verbal communication to Internet via iPhone. In turn, ICT through mobile communication is a source of entrepreneurial development. Telephones lead to economic growth, job creation and poverty reduction.

6.6.2 The Impact of Telecommunications on Entrepreneurial Development and Employment

Traders and farmers use telephones for market research, allowing connectivity between local and international markets. As information asymmetry improves, dealers make better transaction decisions. In turn, competitiveness increases through efficiency due to reduced input cost and increased mark-up, as niche market identification is facilitated. Following (Muto & Yamano 2009), Equation 6.6.6 explains the benefits of telephones to firm gate prices:

$$P_{itj}^{FG} = P_{tj}^{M} - \gamma_j(I_t)\tau_i^2 . P_{tj}^{M} \quad (\mathbf{6.6.6})$$

$\boldsymbol{Where}: FG = Fi\quad gate; i = Firm\ gate\ price\ for\ the\ firm\ at\ time\ t;\ P_{tj}^{M} = Price\ of\ commodity\ j\ at\ the\ nearest\ market\ for\ firm\ i\ at\ time\ t;\ \tau = Distanc\quad between\ \tau firm\ (i) and\ market;\ I_t = Informatio\quad at\ time\ t; \gamma_j(I_t) = Sensitivit\quad of\ commodity\ price\ to\ output\ price\ betweenfirm\ and\ market$

As indicated by the equation, information (I) by one unit price sensitivity for the commodity $[\gamma_j(I_t)\ ]$ decreases, keeping the market price positive:

$$\frac{\partial \gamma_j(I_t)}{\partial I_t} < 0 \qquad (\mathbf{6.6.7})$$

Since information increases price sensitivity, telephone coverage increases information flow. In turn, efficiency in transport and production increases, while output price sensitivity reduces. Ultimately, the marginal change in $\gamma_j(I_t)$ for commercial perishable produce, such as bananas, becomes larger than for a cereal such as rice, due to a unit increase in information (I) at time (t):

$$\left|\frac{\partial \gamma_B(I_t)}{\partial_{I_t}}\right| > \left|\frac{\partial \gamma_R(I_t)}{\partial_{I_t}}\right| \qquad (\mathbf{6.6.8})$$

$$\boldsymbol{Where}: \gamma_B = Sensitivity\ for\ banana;\ \gamma_R = Sensitivity\ for\ rice$$

Therefore, marketing information network connectivity via telephone increases information, and in turn the market price is positive, assuming all factors remain constant:

$$\frac{\partial P_{itj}^{FG}}{\partial I_t} = -\frac{\partial \gamma_j(I_t)}{\partial I_t}\ \tau_i^2 \qquad (\mathbf{6.6.9})$$

Further, as indicated by Equation 6.6.6, a firm gate price also depends on distance. However, due to an increase in information, the price is linearly positive:

$$\frac{\partial^2 P_{itj}^{FG}}{\partial I_t \partial_{\tau_t}} = -2\frac{\partial \gamma_{j(I_t)}}{\partial I_t}\tau_i \qquad (\mathbf{6.6.10})$$

Telephones are a tool in developing countries not only for production, marketing and trade, but also in extending social connectivity. A nation benefits in four main ways. First, job creation increases at all levels of the commodity production, trade and marketing chain. In turn, as LFP increases, income increases. Second, when production increases, a nation's GDP growth rate increases, so poverty ultimately reduces. Third, since the overthrow of Amin followed by peace and stability, investment has continued to increase. Finally as investment increases in Uganda, so does tax revenue and GE.

6.6.3 The Impact of Telecommunications on Welfare and Poverty Reduction

A nation can experience poverty reduction as explained by the role of LFP and economic growth in Section 5.4.2. Also, telephones as a technology are a source of income in developing countries, to those employed in the M-banking sector, and to the self-employed. Employing the Lagrangian approach, the impact of telephones on welfare for developing countries can be estimated. Utility maximisation or minimisation can be derived, subject to specific constraints. As telephones supplement incomes in developing countries, utility is maximised. Using the Lagrangian approach, clothing and food are important commodities to the poor, and can be used to illustrate welfare gain where utility can be specified:

$$MU = (FD, CL) \qquad \textbf{(6.6.11)}$$

$$\boldsymbol{Where}: MU = Marginal\ utility;\ FD = Household\ basic\ commodity\ food;$$
$$CL = Househlod\ basic\ commodity\ clothing$$

Using the Lagrangian approach for household utility for food is maximised until a stated consumption is a multiple of variable (λ)[41] of the price of food specified:

$$MU_{FD} = \lambda P_{FD} \qquad \textbf{(6.6.12)}$$

$$\boldsymbol{Where}: \lambda = Lagrangian\ multiplier;\ P = Commodity\ price;$$

Similarly, the utility for household clothing can be specified:

$$MU_{Fc} = \lambda P_{Fc} \qquad \textbf{(6.6.13)}$$

$$\boldsymbol{Where}: CL = Household\ basic\ commodity\ clothing$$

Equations 6.6.11 and 6.6.12 can be specified as total household utility subject to commodity price:

$$P_{FD}FD + P_{CL}CL = 1 \qquad \textbf{(6.6.14)}$$

Following Pindyck and Rubenfeld (2001), the household budget constraint for food and clothing can be specified:

$$P_{FD}FD + P_{CL}CL - 1 = 0 \qquad \textbf{(6.6.15)}$$

$$\boldsymbol{Where}: P = Commodity\ price; FD = Food; CL = Clothing$$

The above equations can then be re-written to indicate the household Lagrangian approach. This is the function of household utility maximisation plus variable (λ) multiplied by the constraint.

$$\emptyset = U(FD, CL) - \lambda(P_{FD}FD + P_{CL}CL - 1) \qquad \textbf{(6.6.16)}$$

[41] $\lambda = \frac{MU_{FD}(FD,CL)}{P_{FD}} = \frac{MU_{CL}(FD,CL)}{P_{CL}}$ = Lagrangian Multiplier = Equal marginal principle

Due to limited income, families in poverty are faced with a constrained budget with which to purchase basic commodities, like food and clothing. However, with extra income from employment in the M-banking sector and increased efficiency by the self-employed in rural agriculture, the household budget can be relaxed. The benefit for households arising from extra income the utility function Equation-6.6.16 is differentiated:

$$\frac{dU}{dI} = MU_{FD}(FD, CL)\left(\frac{dFD}{dI}\right) + MU_{CL}(FD, CL)\left(\frac{dCL}{dI}\right) \qquad (\mathbf{6.6.17})$$

$$\boldsymbol{Where}: I = Income$$

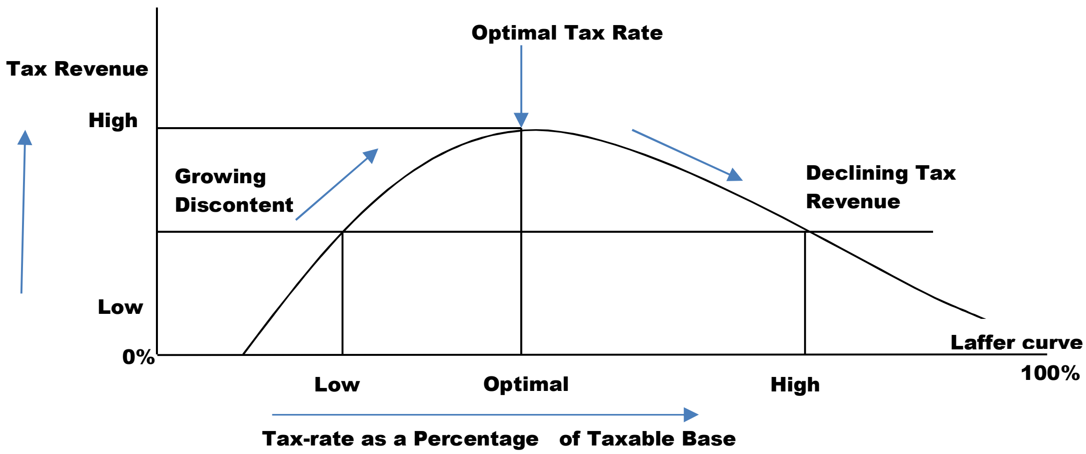
Due to any extra income, the household can relax the constrained budget and allocate more income to basic household goods.

6.7 Modelling Government Expenditure on Economic Growth, Employment and Poverty

The effect of GE on economic growth and employment can be identified by considering the role of a nation's government in regard to the provision of social services. A government's expenditure covers a wide range of sectors, including social services (such as education and health) and infrastructure development (including roads and railways). These services are reflected in government purchases and payment of wages to public servants. GE can be viewed from two perspectives (Alshahrani & Alsadiq 2014; Barro, Robert Joseph & Martin 2004; Evans 2004). First, GE can be considered a public good, and as such, free commodity. Second, GE can be considered an investment, so physical capital can then be regarded as private, and thus not a free good.

Considering GE as investment, developing countries have been encouraged by donor agencies (such as the Organization of Economic Cooperation and Development [OECD] and IMF) to widen their respective national tax revenue (Cottarelli 2011; Mascagni, Moore & McCluskey 2014). This is because a broad tax base can lead to increased tax revenue, a major source of GE, and as tax revenue increases, a nation's budget is enhanced. Further, a nation reduces foreign aid dependency. In the long term, developing countries can improve infrastructure, service delivery and undertake capital projects. These measures increase GDP, create employment and reduce poverty through increased production and productivity. However, Vlieghere and Vreymans (2006) indicate that as the tax base increases beyond the optimal level, tax revenue begins to decline. This is explained by the Laffer curve, below.

Figure 6.6: Laffer curve tax revenue



Source: Based on Vlieghere and Vreymans 2006

Following the Laffer curve demonstration, the following observations can be made. First, with a narrow tax base, tax revenue is low. With government intervention to widen the tax base, revenue gradually increases from zero. In turn, receipts increase until the optimal point. Second, as the tax base increases, resistance starts to emerge among taxpayers, due to the large tax burden. The tax regime is characterised by tax evasion, fraud and corruption. Finally, beyond the optimal level, tax revenue begins to decline to zero as the tax base approaches 100%.

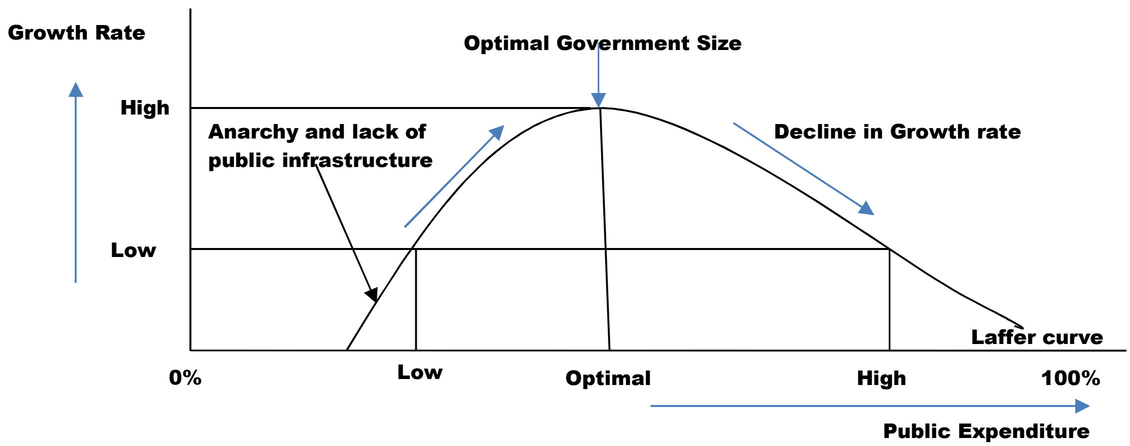
The Armey Curve builds on the foundations of the Laffer curve by indicating the effects of the level of government interference on economic growth. The Armey Curve was proposed in 1995 by Dick Armey, and similar to the Laffer Curve, indicates a relationship between the level of government interference and the optimal level of economic growth (Olaleye et al. 2014; Vlieghere & Vreymans 2006). The Armey Curve hypothesis indicates that a nation with no functioning government is in a state of anarchy. During anarchy, a nation experiences a low state of economic growth and public expenditure, requiring government intervention. As Vlieghere and Vreymans (2006), page 6 states:

> Armey argues that non-existence of government causes a state of anarchy and low levels of wealth creation because of the absence of the rule of law and protection of property rights. The absence of rule of law and continuous threat of theft or expropriation has demotivating effects. Also, the total lack of collective infrastructure leads to poor productivity and consequently low levels of wealth

creation. Similarly when all input and output decisions are the hands of the authorities, wealth creation is also low.

This statement indicates that the relationship between public spending and growth rate yields a U-shaped curve, similar the Laffer curve, as demonstrated below.

Figure 6.7: Armey Curve



Source: Based on Vlieghere and Vreymans 2006

Figure 6.7 indicates the relationship between GE and economic growth. Where there is no functioning state, public expenditure is low, and the nation's growth rate is also low, due to anarchy. As government intervenes, GE increases, leading to increased infrastructure and social service delivery. In turn, productivity and output increase, as does economic growth. However, beyond the optimal level, there is little long-run incentive for the government to intervene in the economy. Before the emergence of the Armey Curve hypothesis, Barro (1990) indicated a relationship between tax revenue, GE and economic growth. Tax revenue is the GE–output ratio, denoted:

$$T = \frac{GE}{y} \qquad (\mathbf{6.7.1})$$

$\boldsymbol{Where}: T = Tax\ revenue; GE = government\ expenditure; y = Output.$

Barro found that the ratio of GE to real GDP (GE/y) was negative. GE did not have a direct effect on private productivity, but rather, savings and growth rates were low. The negative contribution was attributed to the distorting effects from taxation or GE programmes (Barro 1990). Some observations can be therefore made. First, government intervention in the economy is necessary, but only to the optimal level. Second, the private sector plays a significant role in the economy.

Measuring the impact of GE on a nation, a model can be constructed, indicating a nation with two sources. In this study, FDI can be considered private investment, while GE public investment. Following Alshahrani and Alsadiq (2014) and Ram (1986), the impact of GE on economic growth is based on two equations. The first equation indicates the private-sector function as follows:

$$P = P(\mathrm{L}_P + \mathrm{K}_P + G) \qquad \mathbf{(6.7.2)}$$

$\boldsymbol{Where}$: $P = Private\ Sector$; $L =$ Labour; $\mathrm{K} =$ $Capital$; $G = Government\ Sector$

The second equation indicates the government sector function as follows:

$$G = G\left(\mathrm{L}_g + \mathrm{K}_g\right) \qquad \mathbf{(6.7.3)}$$

The subscripts indicate the sectors. Total inputs of the two sectors can be expressed as a nation of two inputs:

$$\mathrm{L}_P + \mathrm{L}_g = L \qquad \mathbf{(6.7.4)}$$

$$\mathrm{K}_P + \mathrm{K}_g = K \qquad \mathbf{(6.7.5)}$$

Following the above equations, output is expressed as total output of two sectors, private and public:

$$Y = P + G \qquad \mathbf{(6.7.6)}$$

Following Equation 5.7.6, since GE can be considered as physical capital, its impact on economic growth, employment and poverty is measured based on the ASSM.

6.8 Modelling Inflation on Economic Growth, Employment and Poverty

Inflation can be defined as the average price level increase as an economy increases over time (Stanford 2008). Inflation refers to an annual persistent increase in the general level of prices of goods and services. However, a nation may experience a deflation situation when the overall average level of prices declines over time. In extreme cases, a nation may experience hyperinflation when commodity prices rise rapidly over time, such that inflation reaches 100 percent or more per year. Often, nations experience hyperinflation due to economic or political breakdown, as in Uganda during the 1970s. Inflation affects developing countries in two main ways. First, output affects economic growth through production of goods and services. Second, inflation affects a nation through consumption, by the price of consumer goods and services, and factor inputs. These two broad sources of inflation establish the platform for modelling the impact of inflation on a nation, based on monetarist and neoclassical theories.

The Monetarist Theory, also called the quantity theory, is presented as the theory of the demand for money (Brunner & Meltzer 1972). Although the Monetarist Theory explains the role of inflation on economic growth, employment and poverty, it has some shortcomings. It explains more the need for government role in the economy than the role of macroeconomic variables in a nation (Espinosa-Vega & Russell 1997; Palley 2014). Macroeconomic variables—such as interest rates, wages and technology—play a role in economic growth, employment and poverty reduction due to inflation. The neoclassical theory was developed on the foundations of the Monetarist Theory, to explain the impact of inflation on a nation (Palley 2014). The theory explains the relationship between inflation and macroeconomic variables, which in turn affect economic growth, employment and poverty.

Since this study is concerned with inflation and macroeconomic variables, the neoclassical theory is employed in modelling the impact of inflation on economic growth, employment and poverty in Uganda.

6.8.1 The Neoclassical Theory and the Impact of Inflation on Economic Growth, Employment and Poverty

The neoclassical theory was based on the earlier foundations of monetary theory. This study begins by modelling the impact of inflation on a nation, based on theoretical monetarism through the Fisher equation of exchange (Friedman 1970; Meltzer, AH 1976; Palley 2014). According to theoretical monetarism, the quantity equation indicated that aggregate spending money velocity (MV) is equal to nominal output (py), and is also equivalent to real output. This relationship sets the basic foundation for neoclassical theory, expressed as follows:

$$MV = Y = Py \qquad \mathbf{(6.8.1)}$$

$\boldsymbol{Where}$: $\mathrm{M} = Quantity\ of\ money; V = Velocity\ of\ money; Y = Nominal\ GDP; y = Real\ GDP$

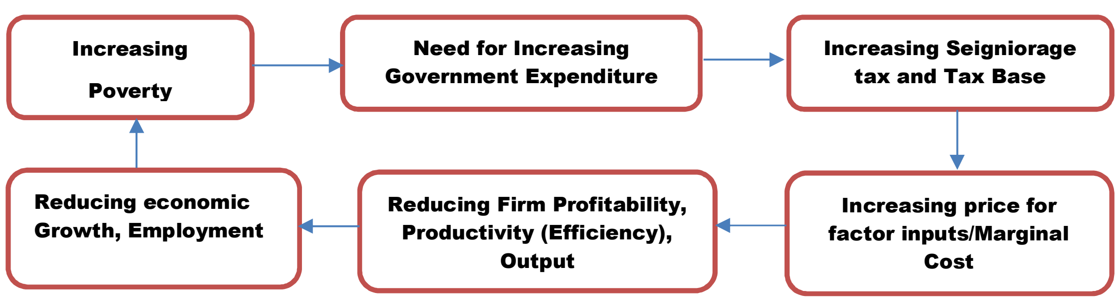
Following the Production Function Equation (5.2.2), output depends on technology, capital and labour. Based on the equation, Gylfason and Herbertsson (2001) have indicated that inflation affects economic growth, employment and poverty through other variables that affect money and price. The augmented production function can be specified to indicate the relationship among the variables:

$$Y = AL^{\alpha}\left(\frac{M}{P}\right)^{\beta} K^{1-\alpha-\beta} \qquad (\mathbf{6.8.2})$$

$\boldsymbol{Where}: M = Money\ supply; P = General\ Price\ level; A = Technolgy\ efficiency;$
$\mathrm{L} = \mathrm{Labour}$
$\alpha, \beta, and\ 1 - \alpha - \beta = Output\ elasticities\ in\ respect\ of\ labour, real\ balances, capital$

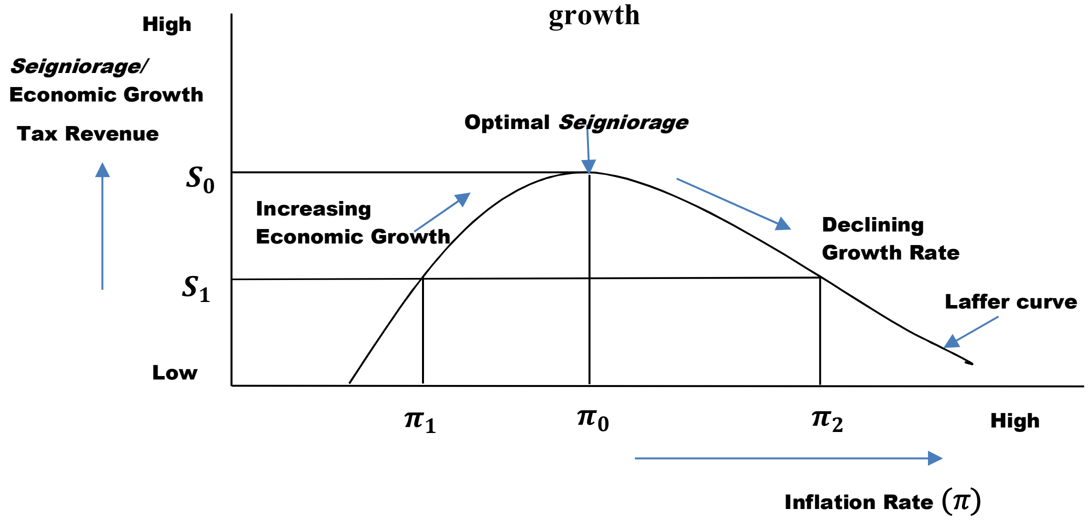
The causes of inflation have been identified as international, fiscal and monetary; food and transport; and cost and demand factors. The main cause of inflation in developing countries is monetary expansion, related to *seigniorage*, which is defined as the ability of a government to print money (Quartey 2010). This is because developing countries are characterised by low tax revenue, yet there is the need for service delivery and infrastructure development. Accordingly, government income sources become *seigniorage* for balancing the budget to finance government subsidies and poverty alleviation schemes. However, as GE deficit increases relative to gross national product, so does inflation equivalent to the *seigniorage rate*. In turn, when money expansion exceeds the equilibrium, a nation starts to experience a spiral of effects, due to the need to finance government programs summarised by Figure 6.8.

Figure 6.8: Demonstration of the relationship between GE, *seigniorage,* tax and inflation on a least-developed nation



However, similar to effects of widening the tax base, the expending the *seigniorage* rate increases inflation but reduces economic growth. This is demonstrated by the Laffer curve Figure 6.9 where *seigniorage* revenue is a proportion to GDP and inflation rate(π). The optimal seigniorage level S_O correspondents with the optimal inflation rate π_0 government keeps increasing to maintain optimal tax revenue deficit.

Figure 6.9: Laffer curve implications of *seigniorage* revenue and inflation on economic growth



Source: Based on Quartey 2010

At any level between $\pi_1$to π_0, the *seigniorage* tax keeps economic growth increasing. Hence though money expansion has caused inflation, as long as the economy is equilibrium, a nation continues to experience economic growth. , However, any *seigniorage* tax increases from π_0 to π_2 leads to declining economic growth. To this extent the effects of *seigniorage* on a nation vary across nations (Chowdhury, Anis 2002).

In view of the effects of *seigniorage* in Uganda, other causes of inflation can be regarded as factors that reinforce and exacerbate the effects of inflation in the country. Other factors, such as world food and energy prices and domestic food shortages, increase in velocity (v) or reduction in financial depth, increasing inflation. As inflation increases, the marginal cost increases, which in turn reduces a firm's profitability. Economic growth and employment reduce, while poverty increases. The cause and impact of inflation differs, and the next step in this study is the explanation of the manner in which inflation is measured, so as to measure the impact that inflation has on Uganda's economic growth, employment and poverty.

6.8.2 Measuring Inflation

A number of approaches can be employed to measure inflation, including the consumer surplus and equivalent variation, as well as CPI and the Fisher Index. The consumer surplus and equivalent variation are suitable measures of welfare when examining the impact of a tariff on a nation. In Uganda, UBOS employs CPI as a two-stage approach using Laspeyres Price Index (LI). CPI reflects the percentage change in the cost to consumers of acquiring goods and services. Also in Uganda, UBOS employs the Fisher Index as a combination of the LI and Paasche Index, to report price statistics in four categories: headline, core, energy and food inflation.

According to UBOS, headline inflation is reported on overall items for price changes in the consumption of goods prone to price volatility due to unpredictable/irregular factors. Meanwhile, core inflation (underlying inflation) is reported on all items, excluding food crops, fuel, electricity and metred water. Due to commodity sensitivities, UBOS reports food and energy inflation separately.

This section is concerned with modelling the impact of inflation on economic growth, employment and poverty, and examines the impact of inflation on the welfare and wellbeing of poor communities. Accordingly, this study employs CPI annual statistical data, published by UBOS, as a proxy for inflation, because CPI as a measure indicates the impact of inflation on welfare. The next step is to explain the manner in which CPI is measured.

6.8.2.1 The Consumer Price Index Measurement for Inflation

CPI is the most commonly used approach by UBOS for measuring the impact of inflation on the cost of living.[42] The CPI attempts to measure the average income required to purchase goods due to inflation change. In this respect, CPI indicates that the average prices of goods and services purchased by measuring the overall average price that can enable a household to purchase a basket of goods. CPI reflects headline inflation, as the measure of the relative changes in the price of all goods and services.

6.9 Rebellion as Proxy for Political Instability

After the 1966 military coup that overthrew Mutesa's elected government, Uganda started to experience political instability. Political unrest continued to prevail until Amin's coup. Armed rebellion in Uganda created a cycle, as illustrated below.

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[42] The cost of living (COL) can be defined as the minimum expenditure required for a consumer to acquire a basic utility at a specific base period (Boskin et al, 1998). In this respect, as a ratio, COL is the current period to the base period level of expenditure. Specified:

$$COL_i = \frac{M_i\,(P^1 U A_i)}{M_i\,(P^1 U A_i)}$$

$$\boldsymbol{Where}\!: M = Expenditure\ function; A \ldots; i = Consumer$$

Figure 6.10: Armed rebellion, economic growth, employment and poverty

Developing countries such as Uganda are in a cycle of conflict, largely because of low-level economic growth, unemployment and poverty. As communities suffer, rebellion becomes the avenue through which a regime can be changed, creating a spiral similar to Uganda since 1966. Armed rebellion destroys lives—not just humans, but animals and plants too. Labour and human capital, as key variables in the production function, are destroyed. Armed conflict also destroys investment and property, and hence a nation's institutions, production and productivity. This study measures the impact of armed conflict on Uganda as a dummy variable, due to the lack of data on expenditure on defence in Uganda.

6.10 Empirical Findings on the Impact of FDI on Economic Growth, Employment and Poverty

The assumptions of the Solow-Swan Model mean that the impact of FDI on a nation, especially a developing nation, depends on TFP, essentially meaning that there is need for increasing FDI and returns-to-scale. The Malign Model, the Dutch Disease phenomenon and absorption capacity demonstrate that FDI benefits depend on country characteristics. Before measuring the impact of FDI and other explanatory variables it is necessary to examine some empirical findings on the effects of FDI on host nations.

6.10.1 Empirical Findings on the Impact FDI on Economic Growth

Empirical findings on the impact of FDI on economic growth are contrasting. Nada's study (2008) of the relationship between FDI inflows and Egypt's economic growth indicated that FDI inflows did not exert a positive or significant effect on Egypt's economic growth. Kunle, Olowe and Oluwafolakemi (2014) found that FDI does not have an impact in the Republic of Guinea. Antwi and Zhao (2013) indicate that FDI does not have a significant relationship on economic growth in Ghana. Obwona's (1998) results indicated that although FDI was positively related, the coefficient was insignificant.

However, studies by Koojaroenprasit (2012), Kiiza (2007), Akpansung (2013) and Melnyk, Kubatko and Pysarenko (2014) on Nigeria, South Korea, Uganda and Tanzania, respectively, and on post-communism transition economies indicate that FDI has a positive impact on the economic growth of host nations. These studies indicate that FDI brings much-needed physical capital, technology and expertise, and benefits the balance of payments by improving the capital account due to the capital inflows into the host country. Further, taxes from multi-national corporations contribute to the national budget of the host country Egbo (2012).

Considering these contrasting findings, before committing their resources, foreign investors consider factors such as market size and human capital (Akpansung 2013). Due to preconditions, governments in developing countries establish policies that support investment, including rule of law and the provision of infrastructure, like roads. As the contribution of FDI varies across nations, it is necessary to measure the impact of FDI on Uganda's economic growth.

6.10.2 Empirical Findings on the Impact of FDI on Employment

Studies have contrasting findings on the impact of FDI on employment. According to Craigwell (2006), who tested the impact of FDI on employment in the English and Dutch-speaking Caribbean nations, employment depends on output, represented by GDP, wages, FDI as capital and efficiency. The results indicated that FDI has a positive impact on employment in the Caribbean. However, establishing pro-investment government policies played a significant role in attracting FDI.

Some studies, such as that by Dee et al. (2011) on the employment implications of liberalising FDI in OECD countries, reveal contrasting results on the impact of FDI on employment, due to factor endowment and market size among firms. In particular, domestic sectors and firms in direct competition with foreign-invested firms suffer, as sometimes labour is withdrawn from such sectors; for example, from the rural sector, as workers seek employment in agro-processing industries. These findings are consistent with Habib and Sarwar's (2013) study, which indicated a negative relationship between FDI and employment, as well as exchange rates, in Pakistan.

Nevertheless, although studies such as Dee et al's (2011) indicate that FDI causes structural adjustments as labour shifts from domestic to foreign-invested firms within each economy, structural adjustment can be beneficial to countries with excess labour in some sectors. As such, for developing countries with excess employment in the agricultural sector, FDI only bridges the capital gap to create employment. This view is consistent with Kirchner 's (2008) study on capital xenophobia in Australia. That study indicated that Australia's shortfall in domestic savings has been bridged by capital inflows from foreign investors. As foreign investments increase, Australia has experienced higher levels of consumption, investment and employment than would have been possible if the country relied on domestic savings for investment. In such cases, FDI inflows benefit host countries, although negative effects on the home country may arise, as was the case in the USA between 1977 and 1986, when 274,000 jobs were lost due to investing abroad (Baldwin 1995). FDI can contribute to economic growth, employment and poverty reduction because as a nation's LF is engaged in gainful employment, welfare increases. The next section presents the empirical findings of the impact of FDI on poverty.

6.10.3 The Impact of FDI on Poverty

The impact of FDI on poverty reduction has been tested empirically. According to Klein, Aaron & Hadjimichael (2001), FDI is positively related to poverty reduction. Prior to the industrial revolution it took over 350 years for Europe's income per capita to double. In the 19th century, as industrialisation and FDI grew, Britain's per capita doubled within 60 years. Similarly, by the end of the 20th century, several countries—such as Botswana, China, Ireland, Japan and Thailand—had doubled their per capita income in only 10 years. Hung (2004) identified variables—including GDP, FDI, employment and government spending—as explanatory variables, to which FDI was positively related to poverty reduction in Vietnam. FDI enhances income, revenue and employment opportunities, resulting in accelerated economic growth, GDP per capita, welfare and living (Assadzadeh & Pourqol 2013; Habib & Sarwar 2013; Klein, Aaron & Hadjimichael 2001; Sarisoy & Selcuk 2012; Saravanamuttoo 1999; UNCTAD 1999).

However, these findings indicate that FDI can benefit communities as long as some basic national conditions are met, such as GE, human capital and regulatory frameworks, which are important tools for poverty reduction. These characteristics indicate that the impact of FDI on poverty reduction varies according to conditions in a country and region.

6.11 Concluding Remarks

To model the impact of FDI and other explanatory variables on Uganda's economic growth, employment and poverty is based on the Solow-Swan Model. In Chapter Two, this study explained that the GOU adopted openness as a key commercial policy for investment and international trade. This was intended to promote exports, including tourism, and attract FDI into the country. Accordingly, this chapter started by modelling openness, demonstrated through the theory of comparative advantage. According to this theory, when a country specialises, production increases in the commodity of comparative advantage, which in turn increases investment. Second, exports increase in the sector of specialisation, while the nation imports the commodity of comparative disadvantage. As the openness index increases, so does tourism and FDI flows. In the ASSM, openness is regarded as a government policy for trade and investment, therefore an innovation.

Tourism expenditure and FDI in the ASSM are treated as foreign capital flows. Meanwhile, in Uganda, tourism is regarded as an export commodity, where tourists' expenditure is a foreign capital flow that promotes economic growth, employment and poverty reduction. Accordingly, in the Solow-Swan Model, tourism is an efficiency: as income to government and the private sector; as an export commodity, through which the country earns foreign exchange; and because tourism demand promotes FDI, due to the private-sector capital gap.

GE, human capital and LF are local factor inputs, or resources for the nation, used during production in the ASSM. In this way, GE contributes to production through the development of infrastructure, social service delivery and as a tool for employment creation in a nation. Consequently, GE contributes to poverty reduction through its contribution to efficiency, production and employment. Human capital contributes to a nation through skills that enhance productivity. Therefore, as factor inputs, a nation attains accelerated economic growth, employment and poverty reduces among communities in the long term. However, as Uganda is a least-developed HIPC nation, the study finds that human capital in Uganda is also a policy variable. To attain increasing human capital development, the GOU introduced polices such as universal primary and secondary education. The study further modelled other variables, including inflation, telecommunications and civil war. In the ASSM, inflation is regarded as a government policy tool for macroeconomic stability. In this way, inflation affects economic growth and employment negatively. Regarding telecommunications, the study finds that this is a pro-poor technology that promotes efficiency through network connectivity.

Finally, the study finds that the contribution of factor inputs to economic growth, job creation and poverty is subject to the assumptions of the Solow-Swan Model. First, TFP is a precondition for the nation to benefit positively from factor inputs, both local (such as human capital) and foreign flows (such as FDI and tourism expenditure). Second, due to private capital deficiency, the essentiality property demonstrates that increasing foreign capital flow is important for a developing nation such as Uganda. However, FDI inflows and tourism expenditure widely fluctuate and have a declining trend. This trend is not good for Uganda, as an HIPC characterised with low saving capacity means that the capital gap can increase with increasing foreign flows, such as FDI and tourism expenditure. Third, the benefits to Uganda from foreign flows are dependent on Uganda's absorption capacity, in the form of demand for goods and services produced by foreign investors. Finally, market-seeking FDI increases capital flight and outflows from Uganda, which negatively impact the country, as explained by the Benign Model.

Most studies concentrate on the impact of FDI on economic growth and employment, while few focus on its impact on poverty. Moreover, according to a search of empirical studies, none has explored the impact of FDI on economic growth, employment and poverty in a single conceptual framework, especially in the case of Uganda. Thus, the need for this study arose. The next step involves explaining the theoretical framework and procedure employed in the empirical analysis of the impact of FDI and other explanatory variables on Uganda's economic growth, employment and poverty reduction.

Chapter 7: Theoretical Framework and Empirical Analysis

7.1 Introduction

Chapter Four discussed the theories underlying FDI as well as economic growth. The chapter explored the theories that explain FDI, from the International Trade Theory until Hymer, which attempted to explain FDI for the first time. The chapter further explored the theoretical impacts of FDI on a nation. Earlier, Chapter One indicated that some studies have attempted to establish the impact of FDI on Uganda. The first of such studies was conducted by Obwona (1996, 1998, 2001), and later Kiza (2007). Since then, the literature has indicated that few to no economic analyses have explored the subject of in this study. Previous studies adopted Ordinary Least Square (OLS) and 2SLS regression approaches for model estimation. However, these studies contain estimation flaws as explained in Section 1.1. Kiza (2007) found a positive significant relationship between FDI and economic growth, while in all Obwona's results, found a positive insignificant relationship. Moreover, these studies did not examine the impact of FDI on employment and poverty, which are major problems that developing countries are attempting to solve.

In this study, a multi-equation systems approach has been adopted, similar to the approaches of Wei, H (2010) and Ford, Sen and Wei (2010) on FDI and China's economic growth. A multi-equation model captures the interrelationships between the independent and dependent variables, simplifying testing models with multiple dependent variables. Accordingly, this chapter establishes the method employed to find answers to the main question of this study: what is the impact of FDI on economic growth, employment and poverty in Uganda? This chapter is divided into three parts. The first part is the description of variables while the second explains the conceptual framework. The third part presents the procedure for empirical analysis explaining how this study measures the impact of FDI and other explanatory variables on economic growth, employment and poverty.

7.2 Description of the Variables

This section contains two sub-sections through which the variables of this study are described. The first sub-section explains the scope and sources of data. The second sub-section provides the definitions for each variable employed in this study, and the related measurement units. The measurement units assist this study to provide an account for dependent variables and the associated independent variables through a cause-effect relationship. Through estimations, the impact of FDI and other explanatory variables on Uganda's economic growth, employment and poverty is explained.

7.2.1 The Scope and Sources of data

Data on Uganda's annual time-series endogenous and exogenous variables for the period 1985–2014 has been collected. The sources of data are UNCTAD, IMF, WDI and UBOS databases, ILO, World Investment Reports (UWIR), BOU, MFPED and UIA.

7.2.2 Variable Definitions and Measurement

Economic Growth

This is the real increase in Uganda's GDP per annum. As indicated in Equation 5.2.20, the logarithm of Uganda's annual GDP time series is the proxy for economic growth expressed:

$$\ln(GDPGR) = ln(GDP_t) - ln(GDP_{t-1})$$

The logarithm of a number indicates the number of times such a number has been multiplied or changed. In this study, economic growth is denoted by the logarithms of GDP. The logarithmic approach allows for measuring the impact of growth of series, such as FDI and other explanatory variables on economic growth.

Employment

Employment refers to persons who perform some work for wage or salary, or profit or family gain, in cash or in kind, during a specific period. The proxy for employment is the ratio of Uganda's total annual employment to Labour force expressed as:

$$\text{EMP/LF};\ \boldsymbol{Where}: EMP = Employment; LF = Labour\ force$$

Poverty

The World Bank considers poverty as living below the poverty line on less than USD 1.25 per day expressed: $H = \frac{G}{N}$

$$\boldsymbol{Where}: H = Head\ count;\ G = Number\ of\ poor\ persons;\ N = Total\ population$$

The measure of poverty is based on the general HCA, expressed as the ratio of persons living below the poverty line to the total population.

Foreign direct investment

The measure of FDI is the total FDI inflows into Uganda, in US dollars, as reflected in the balance of payments. The FDI to GDP ratio is employed as a proxy for FDI.

Labour force

Labour force (LF) is considered to be the active population between 14 and 64 years who are eligible for employment in Uganda. The proxy for labour is the ratio of LF to total population (POP) expressed as: LF: POP.

Human Capital

Human capital refers to the skills attained at all of education levels. Secondary school enrolment is used as a proxy. This approach has been used studies including and Alfaro (2003).

Government expenditure

Government expenditure (GE) refers to development projects and recurrent expenditure, including expenses on personal benefits, salaries and wages for public servants, government subsidies and interests. The GE to GDP ratio is used as a proxy for GE measured US dollars.

Openness

Openness (OP) refers to the removal or reduction in trade restrictions/barriers that affect the flow of internationally traded goods and services in a country. To measure openness, the openness index was used. This is calculated as the proportion of total trade (TT) measured by imports plus exports to GDP.

$$OP_{it} = \frac{TT_{it}}{GDP_{it}}$$

A high index reflects the higher level of influence of international trade on Uganda.

Inflation

Data on annual CPI obtained from UBOS and WDI database is used. This is because CPI on all commodities and services has a direct impact on households Wickremasinghe (2011).

Telecommunication

Technology is a source of efficiency in production. Telephone facilities are used in commercial transactions and for social connections between firms and persons. Data published by UBOS on the real numbers of fixed telephones and mobile subscribers was employed.

Tourism

The ratio of inbound tourists' expenditure, measured in US dollars in Uganda, to exports (EXP) is employed as a proxy for tourism (TOU: EXP). The source of data for inbound tourists' expenditure is UBOS for the period 1999–2014, and the IMF for 1985–1999.

Civil War

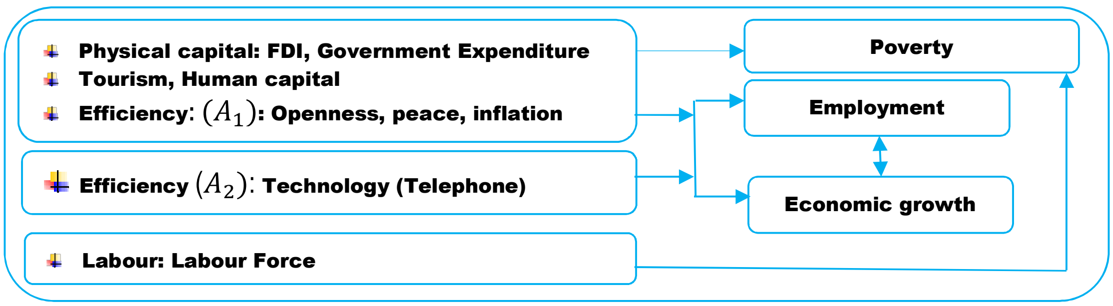
Civil war refers to organised armed resistance to a government. As explained in Chapters 2 and 3, Uganda's economy has been affected by civil wars since 1966. To take care of such trends that affect Uganda's economy, civil war is considered as a dummy variable. Therefore, to examine the impact of FDI on Uganda's economic growth, employment and poverty, 12 variables were used of which civil war is considered as a dummy variable.

7.3 Conceptual Framework

A firm's optimisation production decisions are based on factor inputs. Equation 5.2.12 indicates that through the ASSM, the determinants of economic growth, employment and poverty reduction in a nation can be identified. In Chapter Two, the background of Uganda's economy and FDI inflows were explained. According to the literature review, FDI and other explanatory variables influence economic growth, employment and poverty in Uganda. The other explanatory variables identified include fiscal policy, monetary and commercial policy variables. The fiscal policy variable identified is GE. Through fiscal policy, the GOU first targeted human capital development to improve the productivity of the country's LF. Second, the GOU identified telecommunications as a basis for technology development through ICT.

The key monetary policy identified was controlling inflation as a basis for macroeconomic stability. Finally, openness was identified as a commercial policy, to promote investment such as FDI and exports, including tourism. Finally, the study identifies Uganda as a developing country that has been through numerous civil wars since Independence. To explain the association between the explanatory and the dependent variables (economic growth, employment and poverty), a path analysis approach is employed. Through path analysis, a simple recursive relationship among variables is indicated.

Figure 7.1: Variables conceptual framework

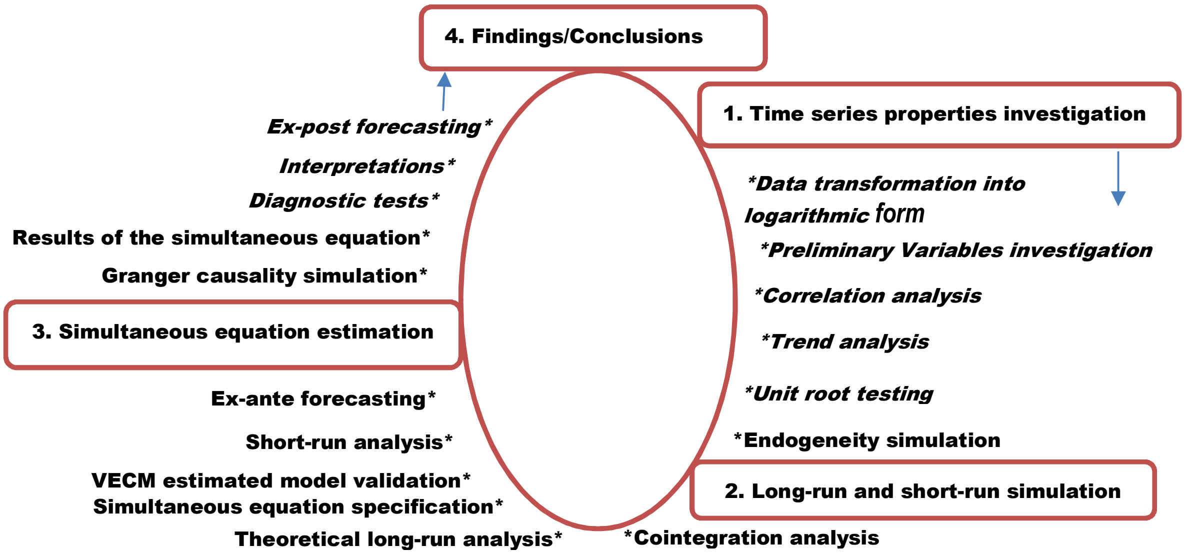


The conceptual framework explains the theoretical association among variables that are employed in this study. According to Figure 7.1, some variables are endogenously related; for example, employment and economic growth.

7.4 Procedure for Measuring the Impact of FDI and Other Explanatory Variables on Economic Growth, Employment and Poverty Reduction in Uganda

The procedure uses graphical displays and econometric model estimations to measure the impact of the explanatory variables on the dependent variables: economic growth, employment and poverty reduction in Uganda. Graphical displays generate a background through which the relationship among the series can be explained. The econometric model estimation is the standard approach through which the hypothesis is tested. Figure 7.2 illustrates the procedure. This is a stepwise approach divided into four blocks. Each block represents a chapter, for ease of study flow. The study starts by investigating the time-series properties, followed by understanding the short and long-run relationships among the variables respectively. Later, the study conducts VECM model estimation, and finally conclusions are made including suggestions for future study and recommendations.

Figure 7.2: Procedure for data analysis and interpretations



Note: The asterisks indicate specific milestones; Numbers indicate the chronology (1to4)

The study explains the process through which each of these milestones is achieved beginning with how the study examines the variable properties.

7.4.1 Investigation of Time Series Properties of the Variables

Since macroeconomic variables are employed in this study, property investigation enables to examine the cyclical movements and trends of variables on the economy. The study employs the interactions to interpret the relationships between the dependent and explanatory variables. To understand the time series variable's properties, the following investigations are considered: transforming data into logarithmic form, graphical investigations, correlation and trend analysis, unit root testing and endogeneity testing respectively.

7.4.1.1 Time-Series Logarithmic Form Transformation

In economic analysis and forecasting, variables are commonly used in logarithmic form, so this was the first step employed. Logarithmic transformation serves as a tool for stabilising the variance of the series (Lütkepohl & Xu 2009; Sehgal, Rajput & Deisting 2013). Series transformation is a means for achieving homoscedastic and normally distributed residuals (Herrendorf, Rogerson & Valentinyi 2013; Kulendran 1996).

This study is based on the Solow-Swan Model, which has taken its foundations from the production function. In economic research, logarithmic functional form coefficients can serve as elasticities of the production function used to analyse microeconomic and macroeconomic issues, such as economic growth and employment[43]. The production function means that the series expressed in logarithmic terms implies that:

> If K_t grows at the constant rate γ_x then the law of motion for capital implies that X_t must grow at the same constant rate (Herrendorf & Rogerson 2013, p. 30).

The elasticity term is used to describe the degree of response of a change of a dependent variable with respect to the change in an independent variable. A proportional change in logarithm units can be converted to a percentage by multiplying the growth by 100 as follows:

$$\left[ln\left(\frac{x_t}{x_{t-1}}\right) * 100\right] \qquad \mathbf{(7.1)}$$

Therefore, the logarithmic approach allows for measuring the impact of growth in the related series, such as FDI and other explanatory variables on economic growth, employment and poverty. This is because the logarithm of a number indicates growth in output.

Logarithmically transformed variables in a regression analysis handle situations where a non-linear relationship exists between the independent and dependent variables (Benoit 2011). Accordingly, variables expressed in logarithmic form provide effective non-linear relationships, while still preserving the linear model. Logarithmic transformations are a means of transforming a highly skewed variable into one that is more approximately normal. To this extent, transforming data into logarithmic term statistically is a means of providing preliminary inference on data, and improves the interpretations and graphical display analysis.

7.4.1.2 Preliminary Variables Investigation

To investigate the relationships among the time series mentioned above, this section employs series transformed into logarithmic form through graphs. This is to take advantage of the benefits of logarithmic expressions. Graphs provide a visual impact and help describe the relationship between two or more sets of data or variables that are related to one another. A graph predicts the functional relationship between two or more economic variables by providing generalisations about the economic phenomena. Graphical analysis is a tool for

[43] Assume economic growth = K while employment = X. When the economy of a nation grows from at rate γ then employment grows at the same rate.

explaining the manner in which the variables employed are related to Uganda's economic growth, employment and poverty. After the graphical investigations, this study undertakes a correlation study of the variables.

7.4.1.3 Correlation Analysis

When variables are related, there is correlation between them. Correlation analysis is used to measure the degree of a linear association between the variables. Correlation among variables ranges between negative one and positive one $(-1 \text{ to } +1)$. In this study, in absolute terms, no correlation means a zero relationship. Second, 0.60 above denotes highly correlated variables. Third, in absolute terms numeric value (1) between two variables is regarded as perfect correlation. In this regard, perfect correlation between the variables means that knowing the value of one variable exactly predicts the value of the other variable. The larger the magnitudes of correlation, the more to variables are perfectly related.

In this study, a correlation coefficient of above 0.60 indicates highly correlated relationship among variables. As a common practice, in economic analysis when two explanatory variables are highly correlated in a single regression analysis, at least one is removed from the study. Therefore, employing correlation coefficients, highly correlated variables have been removed from the study.

7.4.1.4 Trend Analysis

Due to non-stationarity among the time series, the trend analysis employed in this study is a graphical display to check the trend indicated by the series. Through trend analysis the study can check whether or not the series the fluctuations always come back to the mean Maradiaga (Maradiaga, Pujula & Zapata 2013). Trend analysis is necessary before testing for unit root testing, so as to determine whether or not the series are stationary around a constant or a trend that can be included during unit testing.

7.4.1.5 Unit Root Testing

Regression of time series that requires that mean, variance and covariance are constant for stationary data, such that:

$$Mean: E(y_t) = \mu \qquad (\mathbf{7.2})$$

$$Variance: E[(y_t - \mu)^2] = Var(y_t) = \sigma^2 \qquad (\mathbf{7.3})$$

$$Covariance: \gamma_k = E[(Y_t - \mu)(Y_{t+k} - \mu)] \qquad (\mathbf{7.4})$$

Following the above requirement for time-series data, before estimation this study first, tests for unit roots. Non-stationary indicates that mean, variance and covariance are not constant. Unit root testing enables the study to avoid spurious regressions. In economic analysis, spurious regression results are invalid and cannot be used for policy analysis. This is because in spurious regressions R-square is inflated and often close to one, while the $t - statistics$ ratios do not follow the $t - distribution$. Second, this study employs a VAR approach for model specification estimated in two way namely: unrestricted VAR and redistricted VAR commonly referred to as VECM for multivariate analysis.

To determine stationarity the procedure, employed is unit root testing. When series are non-stationary at level but stationary at first difference, the VECM approach is employed; otherwise, unrestricted VAR is suitable. Two approaches can be adopted to test for unit roots: $t - ratio$ test and ADF tests. However, the $t - ratio$ test null possesses non-standard distribution, the critical values for $t - statistic$ are not applicable. Therefore, this study employs the ADF approach developed by Dickey and Fuller (1979).

7.4.1.5.1 Augmented Dickey- Fuller Tests

Song and Witt (2000) indicate that the ADF approach obtains critical values based on Monte Carlo simulations. The ADF approach employed is based on three regressions:

$$\Delta y_t = \emptyset_0 + \gamma y_{t-1} + \sum \beta_i \, \Delta y_{t-i} + \varepsilon_t \; (With\ constant) \qquad (\mathbf{7.5})$$

$$\Delta y_t = \emptyset_0 + \emptyset_2 \mathrm{t} + \gamma y_{t-1} + \sum \beta_i \, \Delta y_{t-i} + \varepsilon_t (With\ constant\ and\ Trend) \qquad (\mathbf{7.6})$$

$$\Delta y_t = \gamma y_{t-1} + \sum \beta_i \, \Delta y_{t-i} + \varepsilon_t (Without\ constant\ and\ trend) \qquad (\mathbf{7.7})$$

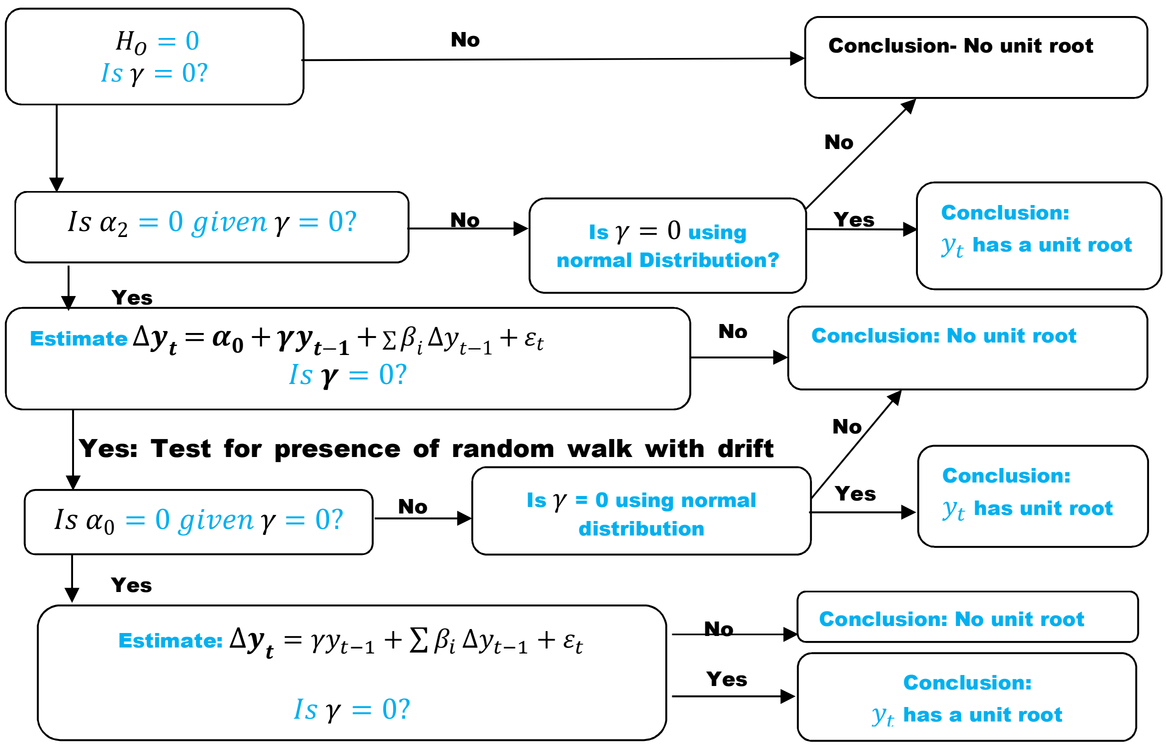
$$\boldsymbol{Where}: \Delta y_t = (y_{t-1} - y_{t-2});\ \Delta y_{t-2} = (y_{t-2} - y_{t-3}) \dots \dots \dots \dots \dots \dots$$

The variables are tested at level and first difference, based on the procedure recommend by Enders (1995), a flow chart, as illustrated below.

Figure 7.3: Unit root test procedure employed

$$\text{Estimate equation: } \Delta y_t = \emptyset_0 + \emptyset_2 t + \gamma y_{t-1} + \sum \beta_i \, \Delta y_{t-i} + \varepsilon_t$$
$$y_t - y_{t-1} = H_0 : \gamma = 0 \ (Unit\ root)$$

$$H_0 : \gamma \neq 0 \ (No\ unit\ root)$$



Source: Enders 1995

Following the procedure illustrated under Figure 7.3, the ADF test employed is based on the null hypothesis that data has a unit root, and as such is non-stationary expressed as follows:

$$H_0 : \boldsymbol{\gamma} = 0 \ Data\ y_t\ has\ unit\ root\ or\ y_t\ is\ non-stationary$$
$$H_0 : \boldsymbol{\gamma} < 0 \ Data\ y_t\ has\ no\ unity\ root\ or\ y_t\ data\ is\ stationary$$

The null hypothesis of non-stationary series is rejected in favour of the stationary alternative for each test when the ADF test statistic is more than the critical values, and the corresponding probability value is less than 5%. The main problem of the ADF test employed in this study is the choice of lag length (p) while dealing with autocorrelation and heteroscedasticity. This is because using too small a lag length p, serial correlation that remains in the errors can bias the test. If the lag is too large, the strength of the test is affected. Due to these weaknesses, the ADF test can be validated by the Phillips-Perron (PP) test.

7.4.1.5.2 The Phillips-Perron Test for Unit Roots

Phillips and Perron (1988) developed the PP test employed in this study that is similar to ADF tests. However, the PP test is more comprehensive because the test incorporates an automatic correction to the Dickey-Fuller procedure to allow for autocorrelated residuals and heteroscedasticity. Also, unlike the ADF test, the PP test does not require the specification of the lag length (p). The PP test is based on the $t-statistic$ calculation specified:

$$t_{\alpha}^{pp} = t_{\alpha}\left(\frac{\gamma_0}{f_0}\right)^{\frac{1}{2}} - \frac{T(f_0-\gamma_0)(S_{\widehat{\alpha}})}{2f_0^{\frac{1}{2}}S} \qquad \textbf{(7.8)}$$

$\boldsymbol{Where}$: $f_0 = Residual\ estimato\ \ ; \gamma_0 = Error\ varioance\ estimator\ with$
$Frequency = 0; S_{\widehat{\alpha}} = Standard\ error\ coefficient; S = Standard\ Error$

Similar to the ADF tests, the conclusions and hypothesis for the PP tests is the same. The null hypothesis of non-stationary series is rejected in favour of the stationary alternative for each test when the PP test statistic is more than the critical values, and the corresponding probability value less than 5%. Though the ADF and PP tests are believed to be most commonly used unit root tests there are some shortcomings. First, both the ADF and PP tests are known to possess low power with a large autoregressive root. Second, the ADF and PP tests sometimes possess some weaknesses in the form of large distortions, to the extent that the null hypothesis can be over-rejecting. In order to validate the ADF and PP tests, this study also employs the Kwiatkowski, Phillips, Schmidt and Shin (KPSS) test, developed by Kwiatkowski et al. (1992). This procedure of model validation has been used by a number of studies that include Gupta and Yang (2011), Kipkoech (2015) and Asuamah (2016).

7.4.1.5.3 The KPSS Tests for Unit Roots

The KPSS test is a Langrange Multiplier (LM)-based test, based on the null hypothesis that series is stationary. It is based on OLS residual regression:

$$y_t = x'_t\delta + u_t; \qquad \textbf{(7.9)}$$

$\boldsymbol{Where}$: $x'_t\delta = Exogenous\ term, either\ constant$

The KPSS can be specified:

$$\mathcal{V} = T^{-2}\sum_1^T \frac{S_t^2}{\sigma_k^2} \qquad \textbf{(7.10)}$$

$$\boldsymbol{Where}: \mathcal{V} = \text{Asymptotic distribution; } s_t = \sum_{i=1}^{t} e_i\,; t = 1..T; k = Numberof\ lagged$$

$$periods;\ T = Samplesize; e_i = Regressio\quad coeffient\ for\ intercept\ series;$$

$$\sigma_k^2 = \text{is an estimator for long run variance}; t = time$$

The null for KPSS is that the data is stationary. The null is rejected when KPSS test statistic is greater than the critical value. After unit root testing, this study conducts endogeneity tests.

7.4.1.6 Endogeneity Investigation

Endogeneity investigation is used to determine that an explanatory variable x_j is correlated with error u meaning that the variable is endogenous (Wooldridge 2010). In this way, the variable is determined if endogenous within the context of a model. Meanwhile when x_j is uncorrelated with u then the variable is said to be exogenous in equation. Therefore, endogeneity analysis is necessary as a tool for determining whether the variable can be regarded as exogenous or endogenous. This can be tested based on the Pairwise Granger causality test, as it indicates the extent to which two variables can Granger-cause each other; for example, X can Granger-cause Y and vice versa. In this way, the type of model under study can be identified though either the presence or absence of Granger-cause. Based on Granger 1969, the Granger causality model is specified based on a simple VAR:

$$X_t = \sum_{i=1}^{n} \alpha_i\, Y_{t-i} + \sum_{J=1}^{n} \beta_j\, X_{t-j} + \mu_{1t} \qquad \textbf{(7.11)}$$

$$Y_t = \sum_{i=1}^{m} \lambda_i\, Y_{t-i} + \sum_{j-1}^{m} \delta_j\, X_{i-j} + \mu_{2t} \qquad \textbf{(7.12}$$

In Equations 7.11 and 7.12 it is assumed that the disturbances μ_{1t} and μ_{2t} are uncorrelated. The hypothesis specified where the β indicates the influence of X_{t-j} on Y_t such that if:

$$H_O: \beta_1 = \beta_2 = \cdots \beta_m = 0\ (X\ does\ not\ Granger\ cause\ Y)$$

$$H_1: \beta_1 \neq \beta_2 \neq \cdots \beta_m \neq 0\ (X\ does\ Granger\ cause\ Y$$

The null hypothesis explains that the Granger causality test identifies that *Y does not* Granger-cause *X*. When the $p - value$ F-Statistic is jointly significant,($P - value < 0.05$) the null is rejected.

7.4.2 Long and Short-Run Estimation

The previous section explained the manner in which the time-series properties employed. This section presents the approaches employed for long and short-run estimations.

7.4.2.1 Time-Series Cointegration estimation

This section examines the approaches employed to test for the existence of long and short-run relationships among the series. Time-series data is often non-stationary, implying that data drifts and does not belong to the same system. When data drifts apart it exhibits a stochastic drift, causing a change in the value of the random or stochastic process (Hendry & Juselius 1999). Consequently, the dependent variable and explanatory variables' stochastic trends result in spurious regression, due to data non-stationarity.[44] Spurious regression results are invalid for economic policy making.

To establish that the series belong to the same system or stochastic drift, a cointegration test is undertaken. Cointegration in economic analysis means that two variables have a long-tern equilibrium relationship (Chimobi 2010; Osuala, Osuala & Onyeike 2013). First, cointegration relationship means that time series variables such as x and y are stationary, do not drift away in the long-run and are integrated to order one $[I(1)]$. Second, through cointegration, this study investigates if there are long-run relationships among the variables of the model estimated. Third, through cointegration analysis we establish that the vector y_t series contains N endogenous variables, of which all are integrated of the same order.

Regarding the need to test for cointegration among the series, two approaches can be employed: the Engle and Granger two-stage cointegration analysis and Johansen's Maximum Likelihood Method. The Engle and Granger two-stage cointegration approach is suitable for conducting a test involving two variables, while Johansen's Method is a multivariate approach. Since this study involves a simultaneous equation model specifications, the cointegration approach employed is based on Johansen's Method (Kasindi & Mwakanemela 2013). The Engle and Granger approach suffers from a number of weaknesses. First, it is restricted to a single equation, with one variable designated as the dependent variable, explained by another variable that is assumed to be weakly exogenous for the parameters of interest. Second, it relies on pretesting the time series to find out whether variables are $I(0)$

[44] Economic time series data exhibits random walks containing unit root

or $I(1)$. These weaknesses can be addressed through the use of Johansen's procedure. Its advantages include the fact that pretesting is not necessary. Also Johansen approach allows to estimate more than one co-integration relationship if the data set contains two or more time series as well as gives the maximum rank of co-integration (Kasindi & Mwakanemela 2013). In this way allowing numerous cointegrating relationships the Johansen procedure treats all variables as endogenous while testing the relating to the long-run parameters. The resulting model is known as a VECM, as it adds error correction features to a multi-factor model known as VAR. The procedure is performed as follows:

- Step 1: estimate an unrestricted VAR involving potentially non-stationary variables
- Step 2: test for cointegration using Johansen's test
- Step 3: form and analyse the VECM.

Following the aforementioned steps, Johansen's Method explicitly uses VAR to estimate cointegration or long-run among non-stationary series, as well as capturing the short-run dynamics via VECM. Also, VAR facilitates easy simulation while conducting ex-ante forecasting using impulse response analysis and variance decomposition. Following Hjalmarsson and Österholm (2007), Chinobi (2010), Kasindi and Mwakanemela (2013), Johansen's Method takes its starting point in VAR of order $[AR(p)]$ expressed:

$$y_t = \mu + A_1 y_{t-1} + \cdots + A_\rho y_{t-\rho} + \varepsilon_t \qquad \mathbf{(7.13)}$$

$\boldsymbol{Where}$: y_t $is\ an\ n \times 1\ vector\ of\ variables\ that\ are\ cointegrated\ to\ order\ one$ $[I(1)]$;

$\varepsilon_t is\ an\ n \times 1\ vector\ of\ innovations$

The VAR can be rewritten as follows:

$$\Delta y_t = \mu + \Pi y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + \varepsilon_t \qquad \mathbf{(7.14)}$$

$$\boldsymbol{Where}: \Pi = \sum_{i=1}^{p} \mathrm{A}_i - I;\ \Gamma_i = -\sum_{j=i+1}^{p} \mathrm{A}_j\, ; \varepsilon_t \boldsymbol{is\ an}\ n \times 1\ vector\ of\ innovations$$

In Equation 7.14, the coefficient of matrix Π has a reduced rank $r < n$. In this way the VAR model contains $n \times r$ matrices α and β where each with rank r (denotes the number of cointegrating relationships) such that:

$$\Pi = \alpha\beta'; \text{and } \beta' y_t \; is \; stationary \qquad (\mathbf{7.15})$$

$\boldsymbol{Where}$: $\alpha = Adjustment\ parameters\ in\ VECM$; $\beta =$ Matrix of $Cointegrati \quad vector$

Further, for any given r the maximum likelihood estimator of β explains the combination of Y_{t-1} that provides the largest r canonical correlations of Δy_t with y_{i-1}. The Johansen Method employs two different likelihood ratio tests of the canonical correlations to test for significance of cointegrating relationships namely: trace test and Maximum Eigenvalue test.

7.4.2.1.1 Trace Statistic

The trace statistic null of r cointegrating relations among the endogenous variables:

$$J_{trace} = -T \sum_{i=\mathrm{r}+1}^{n} Log\left(1 - \hat{\lambda}_i\right) \qquad (\mathbf{7.16})$$

$\boldsymbol{Where}$: $r = 0\ to\ r = n - 1, \ldots until\ fail\ to\ reject\ H_0\ such\ that$

$0 = No\ integrating$ (None)$equations\ while\ 1, 2 \ldots =\ 1\ or\ more\ integrating$

$equations; k = Number\ of\ endogenousvariables; T = sample\ size;$

$\hat{\lambda}_i = i^{th}\ largest\ Eigen\ value\ of\ longrun\ coefficient\ matrix$

Trace statistics are based on the hypothesis until it fails to reject the null:

Hypothesis 1, 2…..: $\boldsymbol{H_0}$: $Trace\ stastic < Critical\ value = Integrating\ equation$

$\boldsymbol{H_1}$: $Trace\ stastic > Critical\ value = At\ least\ integrating\ equation$

7.4.2.1.2 Maximum Eigenvalue Statistic

The Maximum Eigenvalue statistic null of r cointegrating relations, based on the equation:

$$J_{max} = -TLog\left(1 - \hat{\lambda}_{r+1}\right) \qquad (\mathbf{7.17})$$

$\boldsymbol{Where}$: $r = 0, 1, \ldots, n - 1\ until\ fail\ to\ reject\ \boldsymbol{H_0}$

The Maximum Eigenvalue statistic is based on the hypothesis until it fails to reject the null, specified as follows:

Hypothesis 1, 2…..: $\boldsymbol{H_0}$: $Eigenvalue < Critical\ value = No\ Integrating\ equation$

$\boldsymbol{H_1}$: $Eigenvalue > Critical\ value = At\ least\ integrating\ equation$

Before conducting the simulations, this study determines the lag lengths that are employed.

7.4.2.1.3 Lag Lengths Selection Criteria

Although the VAR model is widely used in forecasting and model estimation, the determination of the lag length is necessary before simulations. This is because in VAR, all variables are treated as endogenous. Endogenous variables are treated as a function of the lagged values of all endogenous variables within the system. When the lag length is inconsistent with the true lag length, the simulated results are invalid for policy analysis (Braun & Mittnik 1993). This is because first, incorrect lag length criteria yield wrong impulse response functions and variance decomposition simulations. Second, Lütkepohl (1993) indicated that over-fitting (selecting a higher order lag length than the true lag length) leads to increased VAR mean-square forecast errors, while under-fitting the lag length often generates autocorrelated errors. Third, Hafer and Sheehan (1989) indicate that the accuracy of forecasts from VAR models varies substantially for alternative lag lengths. To determine the lag length, the unrestricted VAR lag order selection criteria is employed. In a VAR model t the appropriate maximum lag based on the hypothesis of the Chi-square is that:

$$H_O: Coefficients\ on\ lag\ l\ are\ jointly\ zero$$
$$H_1: Coefficients\ on\ lag\ l\ are\ not\ jointly\ zero$$

The appropriate lag length to be included in the model is considered by first comparing the critical values for each criteria at 5%, level for criteria such as Likelihood ratio test (LR) test statistic, Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC) and Hannan-Quinn (HQ). Using this approach, the best criterion is identified by considering the critical values in a descending order, starting with a maximum lag, to the minimum lag. The determination is guided by the size of the critical values, whereby the smaller the values the better the criteria are. Second, in unrestricted VAR, an asterisk indicates the best lag order. The best lag length is selected considering the lag criteria that is identified by the majority asterisk indicator. This study has employed the AIC method the most widely used method and more efficient compared to others (Acquah 2010).

After selecting the lag length, this study then conducts the simulations that provide the results of the trace statistics and Maximum Eigenvalue statistics. These results are used to determine whether or not the series are cointegrated, and also the number of cointegrating equations. Second, the results of the normalised coefficients indicate the nature of the long-run relationship among the series under study.

7.4.2.2 Estimation of Short-Run Relationship Among Endogenous Variables

The Johansen Method establishes cointegrating vectors and long-run relationship, and explicitly uses VAR to investigate short-run dynamics, too. VAR sidesteps the purpose for structural modelling by treating all variables as endogenous.[45] As such, variables are not differentiated under VAR but are considered as endogenous within the system. In this study, some variables are endogenous while others are exogenous, which are determined outside the system; for example, economic growth is endogenous while inflation is exogenous. This study first employs a simultaneous approach following Song & Witts (2000). This is followed by estimating the equation as a VECM. Diagnostic tests are conducted to test the validity of this model. After, short-run simulation is conducted, employing the VECM Granger causality approach. Finally, the study conducts ex-ante forecasting using impulse response and variance decomposition analysis.

7.4.3 Simultaneous Equation Specification

In a simultaneous system model, Johnston and DiNardo (1997) indicate that the system of equations is stacked in a general form, expressed as:

$$y_i = X_i\beta_i + u_i, Such\ that\ i = 1, \dots \dots, m \qquad \mathbf{(7.18)}$$

$$\boldsymbol{Where}: y_i\ is\ an\ \ n \times\ 1\ vector\ obervation\ on\ the\ i^{th};$$
$$X_i\ is\ an\ n \times\ k_i\ matrix\ of\ the\ observations\ on\ the\ explanatory\ variables;$$
$$\beta_i\ is\ a\ k_i \times 1\ vector\ of\ coefficients; u_i is\ an\ n \times 1\ vector\ of\ disturbances$$

In Equation 7.19, y indicates a set of dependent variables in the simultaneous equation, while the disturbances and explanatory variables for equations are assumed to be uncorrelated. In this way, estimator stacks m equations in a general form, expressed as:

$$\begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ y_m \end{bmatrix} = \begin{bmatrix} X_1 & 0 & \cdots & 0 \\ 0 & X_2 & \cdots & \vdots \\ \vdots & \vdots & \ddots & 0 \\ 0 & \cdots & 0 & X_m \end{bmatrix} \begin{bmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_m \end{bmatrix} + \begin{bmatrix} \epsilon_1 \\ \epsilon_2 \\ \vdots \\ \epsilon_m \end{bmatrix} \qquad \mathbf{(7.19)}$$

$$\boldsymbol{Where}: y_m is\ a\ T\ Vector;\ x_m \text{is a } T \times k_m \text{matrix};\ \beta_m \text{is a } k_m\ matrix;$$
$$\epsilon\ is\ a\ T \times MT\ covariance\ matrix\ V$$

[45] Refer Eviews 9 Chapter 38, page 623

As linear equations, we estimate single equations expressed as:

$$y_1 = x_1\beta_1 + \varepsilon_1 \qquad \mathbf{(7.20)}$$

$$y_2 = x_2\beta_2 + \varepsilon_2 \qquad \mathbf{(7.21)}$$

$$\vdots$$

$$y_m = x_{\mathrm{m}}\beta_{\mathrm{m}} + \varepsilon_{\mathrm{m}} \qquad \mathbf{(7.22)}$$

Following systems model estimators, the OLS method of model estimation is the implemented in this study.

7.4.3.1 Structure of the Simultaneous Equation

As a common practice, the systems approach employed consists of multivariate technique that takes into account interdependencies included in the equations, especially among endogenous and exogenous variables. The system can be expressed in general terms as:

$$f(y_t, x_t, \beta) = \epsilon_t \qquad \mathbf{(7.23)}$$

$\boldsymbol{Where}$: y_t is a vector of $endogenous\ variables$; x_t is a vector of $exogenous\ variables$; ϵ_t is a vector of $possibly\ serilly\ correlated\ disturbances$; $\beta = Vector\ of\ parameters\ under\ estimation$

Using data collected on each of the variables, this study is comprised of five endogenous variables: economic growth, employment poverty, tourism and FDI. Meanwhile, exogenous variables employed in this study are determined based on theory and Uganda’s policy. The exogenous variables include inflation, openness and human capital. As earlier mentioned, the pairwise Granger Causality approach is employed in this study top test for endogeneity. This study is also guided by theory to determine endogeneity. Based on theory, in the Solow-Swan Model, human capital is exogenous, while openness is treated as innovation. As Uganda is a least-developed nation, these variables are driven by policy from government, due to the need to reconstruct the nation after years of political instability. Therefore, five equations are stacked in the simultaneous equation as a system in which the exogenous variables applied equally to all equations theoretically, specified as:

$$\text{lnGDP} = \text{f(FDI, TOU, EMP, POV ucpi, op, hcap)} \qquad \textbf{(7.24)}$$

$$\text{EMP} = \text{f(FDI, lnGDP, TOU, POV, ucpi, op, hcap)} \qquad (\textbf{7.25}$$

$$\text{TOU} = \text{f(FDI, lnGDP, EMP, POV, ucpi, op, hcap)} \qquad (\textbf{7.26}$$

$$\text{FDI} = \text{f(lnGDP, TOU, POV, ucpi, op, hcap)} \qquad (\textbf{7.27})$$

$$\text{POV} = \text{f(FDI, lnGDP, EMP, TOU, ucpi, op, hcap)} \qquad (\textbf{7.28})$$

$\boldsymbol{Where}$: $lnGDP$ GDP in logarithic for as proxy for econ$omic\ growth$;

FDI Proportion of $Foreign\ Direct\ Investment\ to\ GDP\ \left[ln\left(\frac{FDI}{GDP}\right)\right] as$

$proxy\ for\ FDI; EMP = Proporti\ \ \ of\ Employment\ to$ LF $\left[ln\left(\frac{EMP}{LF}\right)\right]\ as\ proxy$

$for\ employment; TOUProportion\ of\ inbound\ tourists\ expenditure\ (TOU) to\ exports$

$\left[ln\left(\frac{TOU}{UGEXP}\right)\right]\ as\ proxy\ for\ tourism;\ POV = Proport\ \ \ of\ persons\ below$

$poverty\ line\ headcount\ (PHC)\ to\ Population\ \left[ln\left(\frac{PHC}{POP}\right)\right] as\ proxy\ for\ Poverty;$

$OP = Openness\ Inde\ \ \ \ Proportion\ of\ total\ trade\ (TT)\ to\ GDP\ expressed$

$\left[ln\left(\frac{TT}{GDP}\right)\right]$ as proxy for openess; $lnucpi = Cons\ \ \ \ price\ index\ as\ proxy$

$for\ inflation; lnhcap = AnnulSecondary\ education\ enrolment\ as\ procy$

$for\ hum\ \ \ \ capital$; ln $= Logarothimic\ t\ erm$

Based on the simultaneous equation established by the theoretical model, the study proceeds to explain the approach used to estimate the simultaneous equation as a means of establishing the long-run and short-run dynamics among the endogenous variables. To achieve this, the study employs a VAR approach through a VECM procedure.

7.4.4 Simultaneous Equation Estimation Under a VAR Approach

The VAR approach is a common tool employed while forecasting systems equations of interrelated time series. The VAR model is based on the general approach proposed by Sargan (1964) and later developed by Davidison et al. (1978), Hendry and Von Ungern-Sternberg (1981) and Mizon and Richard (1986) as an approach for model specification (Song & Witts 2000). Using this approach, the general equation is specified in the form of an Autoregressive Distributed Lag Model (ADLM), where the long-run relationship among the variables can be indicated by specifying the equation as follows:

$$y_t = \alpha + \sum_{j=1}^{k}\sum_{i=0}^{p}\beta_{ji}x_{jt-i} + \sum_{i=1}^{p}\emptyset_i y_{t-i} + \varepsilon_t \qquad (\mathbf{7.29})$$

$\boldsymbol{Where}$: $\boldsymbol{y_t}$ $= Dependent\ variable;\ k = Explanatory\ variables;\ p = 1\ for\ annual\ series\ data;\ j = Explanatory\ variable\ k\ effects\ on\ the\ nation;\ i = Country\ specific\ effects;\ e_t = Error\ term\ (\ normal\ distribution\ such\ that\text{: } \varepsilon_t \sim N(0, \sigma^2), t = Time$

Equation 7.29 explains a linear relationship that first indicates the relationship between the dependent and explanatory variables. Second, Figure 5.3 indicates a steady state. However, as explained previously, due to the role played by research and design, technological innovation and government, a nation experiences continuous growth. The coefficients in the linear model can be estimated to indicate a long-run relationship among the variables. As such, the linear equations indicate the sensitivity of the changes in explanatory variables to the independent variables. This establishes the basis for this study to employ VECM as a procedure for forecasting and model estimation.

7.4.4.1 The Theoretical VECM Procedure for Estimating the Simultaneous Equation

Following Equation 7.14, the short and long-run relationship among variables is explained as:

$$\Delta Y_t = \sum_{i=1}^{p-1}\emptyset_i \Delta Y_{t-i} + \emptyset Y_{t-p} + U_t \ = \boldsymbol{VECM} \qquad (\mathbf{7.30})$$

$\boldsymbol{Where}$: $\emptyset_i = -(1 - \beta_1 - \beta_2 - \cdots \beta_i);\ \emptyset = -(1 - \beta_1 - \beta_2 - \cdots \beta_p);\ \emptyset Y_{t-p} = Error\ correction\ term;\ \emptyset_i and\ \emptyset = Short\ and\ long\ run\ adjustments\ to\ changes\ in\ Y_t$

The linear relationship first indicates the relationship between the dependent and explanatory variables. Second, the coefficients in the linear model can be estimated indicating the sensitivity of the explanatory variables' changes to the independent variables. Following Equation 7.30, for estimation and hypothesis testing, VECM can be expressed as:

$$\Delta Y_t = \alpha B' Y_{t-1}\sum_{i=1}^{p-1}\Gamma_i \Delta Y_{t-i} + \cdots BX_t + \varepsilon_t \qquad (\mathbf{7.31})$$

$\boldsymbol{Where}$: $\beta = Long - run\ measure\ among\ variables;\ \Gamma_i = Coefficient\ measure\ for\ short - run\ effects\ of\ shock\ on\ \Delta Y_t$

As indicated, VECM enables identifying the short and long-run relationship among variables. In this way, forecasting the impact of the variables in the study is facilitated. Following this approach, this study specifies the model and simulations are conducted to indicate the long-run and short-run.

7.4.4.2 Rationale for Employing the VECM Procedure

As previously explained, cointegration measures the existence of long-run relationship among series and explicitly allows the use of VECM. In this respect, VECM a type of VAR model is used to reconcile the short-run value with the long-run behaviour (value) of the model (Ray 2012; Suliman & Elian 2014). This is based on the Granger Theorem which explains that a set of cointegrated time series possess an error correction term. Therefore, as cointegration only captures the long-run relationship, VECM is used to capture the short-run dynamics of the as well.

Since this study is a systems approach comprising of eight variables, VECM is employed as the error correction terms become equivalent to the number of cointegrating relationships. Also, VECM is employed because the series are non-stationary at level but stationary at first difference as a precondition a VAR model. Another approach would have been the Engle and Granger Model, but this is suitable when conducting a test with two variables. In particular, Song and Witt (2000) further indicate a number of attributes that make VECM the best approach for this study. First, application of the VECM approach enables the study to verify that $\beta_t' y_t$ (indicated in Equation 7.15) is trend stationary. Second, VECM allows investigation of the long-run relationship among the variables including short-run correction from the variable to the equilibrium. The short-run and long-run effects are all presented in a single model. This indicates that the dependent variable y_t depends on explanatory variable changes (Δx_t) and the previous period disequilibrium error. In this regard, VECM takes care-of any disequilibrium that may occasionally shock the system. This is made possible due to ability of VECM to pick up such disequilibrium and guide the variables of the system back to equilibrium.

Third VECM takes care of the spurious correlation among time-series (Suliman and Elian 2014). This is because the VECM represents a stationary process as long as (y_t) and (x_t) are cointegrated. This approach is superior to the growth rate model, which employs differentiated data. Impulse response and variance decomposition is calculated to indicate how variables react to the innovations and shocks. Finally, VECM is another form of re-writing and re-enforcing the ADLM. In this way, VECM takes care of the multicollinearity problem that ADLM is likely to suffer when a model includes a large number of explanatory variables. Engle and Granger (1987) indicate that the VECM explanatory variables are orthogonal, which implies almost a zero correlation between variables. Considering these attributes, this study finds that VECM possesses the basic attributes of a model that can produce reliable results for policy analysis. The model is: parsimonious, encompassing, theory based and coherent with data, with constant parameters and the ability to deal with problems such as endogeneity among the explanatory variables.

After explaining the procedure employed to estimate the simultaneous equation employing VAR through the VECM procedure, this section now explains how the procedure is implemented to measure the long-run among vectors and the short-run dynamics.

7.4.4.3 Procedure for VECM Estimation of Short-Run and Long-Run Relationship

The easiest way to demonstrate how VECM estimates the simultaneous equation is to adopt the Engle and Granger (1987) causality approach. Following Wickremasinghe (2011) the Engle and Granger approach is demonstrated assuming two variables as:

$$\Delta x_t = \alpha_1 + b_1 ect_{t-1} + \sum_{i-1}^{m} c_1 \Delta x_{t-i} + \sum_{i=1}^{n} d_1 \Delta y_{t-i} + \varepsilon_{1t} \qquad (\mathbf{7.32})$$

$$\Delta y_t = \alpha_2 + b_2 ect_{t-1} + \sum_{i-1}^{m} c_2 \Delta y_{t-i} + \sum_{i=1}^{n} d_2 \Delta x_{t-i} + \varepsilon_{2t} \qquad (\mathbf{7.33}$$

$\boldsymbol{Where}: x_t, y_t = Variables;\ \Delta = Operator\ difference; m, n = variable\ lag\ lengths;$
$ect_t = Cointegratin\quad equations\ residuals;\ \varepsilon_{1,}\varepsilon_2 = White\ noise\ residuals$

Based on the approach illustrated in Equations 7.32 and 7.33, the model is then extended a multivariate system. Accordingly, in the multivariate case, the numbers of equations are equal to the number of variables while the number of error correction terms equals the number of cointegrating relations. The advantage with VECM (the error correction term that is not applicable in the standard Granger causality tests) opens up a new channel through which causality indicates error correction term statistical significance by a separate t-test, which also indicates the short-run. Second, the new channel indicates the lags for each explanatory variable by F-/Wald Chi-square test as a joint significance. Third, the channel indicates the error correction term by joint F-/ Wald Chi-square test. These attributes explain the basis for which this study employs the VECM approach, as a basis model specification and forecasting.

After fitting the series into the model by employing Eviews, this study then simulates the model. The model simulated is comprised of two parts. The first section is the error correction term, indicating the long-run relationship. The second part indicates the short-run relationship. After model simulation, the next step is to validate the systems model. This is followed by long-run and short-run analysis of the model and ex-ante forecasting.

7.4.4.4 VECM Model Validation

Model validation is necessary to check that the residuals of the model satisfy the assumption indicated by Equations 7.2–7.4, namely: normality, constant error variance and uncorrelated error terms. As such, to validate the simulated VECM model, the following diagnostic tests are conducted: model stability, correlogram analysis, residual portmanteau tests for autocorrelations, normality tests and residual examination. Due to the limitations VECM validation tests, other tests are conducted after model estimation.

7.4.4.4.1 Model Stability

As a common practice during economic analysis, it is necessary to confirm the model adequacy. A stability test is conducted to confirm the suitability of the parameters in the model across all sub-samples of the data employed. This is because time-series data employed in this study are often non-stationary. To avoid invalid results, a stability test is conducted. Stability is tested through the companion matrix of the VECM model with m endogenous variables and r cointegrating equations possessing $m - r$ eigenvalues. The stability is tested based on the inverse roots of the characteristic VAR polynomial by the eigenvalues of the modulus. In a stable model, in arithmetic terms all the roots of companion matrix are less than one and in a graph form all lie inside the circle. The model stability condition is indicated as:

$$\alpha_2 + \alpha_1 < 1;\ \alpha_2 - \alpha_1 < 1, \boldsymbol{such\ that}\ \alpha_2 > -1, \alpha_2 < 0 \qquad (\mathbf{7.34})$$

The results of the model employed are indicated as stable and not misspecified, as the general distributions of the entire companion matrix roots lie inside the unit circle and are less than one. This means that the process is stationary and that the model is sufficient for policy analysis.

7.4.4.4.2 Correlogram Analysis

Testing serial correlation starts by presenting the easy visual test of constructing correlogram graphs. The model is free from autocorrelation by the manner in which the residuals lie in the graph. A valid model is indicated by the residuals that lie between the standard limits of -1 and 1.

7.4.4.4.3 Portmanteau Residual Test for Autocorrelations

In addition to the correlogram graphs, in mathematical terms autocorrelation can be tested by employing the residual portmanteau tests for autocorrelations. These tests are based the Ljung-Box Q-Statistics and the corresponding probability values (Kulendran 1996). The test statistic for the Q-Statistics is reported as Chi-square Q distributions, with a null specified where the Q-Statistics probability values are greater than 5% ($P - value > 0.05$).

$$H_0: There\ is\ no\ autocorrelation\ up\ to\ order\ k;$$
$$H_1: There\ is\ autocorrelation\ up\ to\ order\ k$$

The Q-Statistic test is widely used in economic studies, and the test is built in time-series programs such as Eviews, which are employed in this study.

7.4.4.4.4 Residual Normality Test

In economic analysis, the Jarque-Bera (JB) test is employed to check whether the null hypothesis error term is normally distributed. The testable hypothesis is specified as follows:

$$H_O: Data\ is\ normaly\ distributed;$$
$$H_1: Data\ is\ not\ normaly\ distributed$$

When the time-series model error term is normally distributed first, in arithmetic terms the value of the skewness is indicated between $-1 > 0 > 1$, while the kurtosis is $1 > 3$. The JB is given as $1 > 5.99$ where the corresponding probability value is greater than 5% critical value. Normality is also indicated by constructing histograms, indicated by a peak around zero and a clear tailing off on either side with a bell curve, or Gaussian distribution.

7.4.4.4.5 Residual Endogenous Variables Examination

The stability test serves as an indicator for constant variance. To take care-of heteroscedasticity the data has been transformed into logarithmic form. Additionally, this study further examines the residual of the endogenous variable. Constant variance is demonstrated by a graphical line display, rotating around zero, meaning that data is stationary. After validation, the study analyses the short-run and long-run relationships among the variables.

7.4.5 VECM Systems Long-Run and Short-Run Analysis

Equations 7.30 and 7.31 demonstrate the media through which VECM facilitates, to measure the long-run and short-run relationships among variables. Accordingly, the VECM system model is comprised of the short-run and long-run components. This section explains the approaches adopted in analysing the simulated VECM systems model.

7.4.5.1 Long-Run Analysis

Earlier, it was explained that the cointegration simulation provides an avenue for the analysis of long-run relationship analysis among variables by employing the normalised cointegrating coefficients. It was also mentioned that the first part of the VECM model represents the error correction term, which also indicates the long-run relationship. The error correction term explains the long-run relationship of the cointegrating equations. At this stage, the long-run relationship of the cointegrating equations is interpreted by employing the coefficients, standard error and $t - statistic$ in theoretical terms. The $t - statistic$ is based on the testable hypothesis, specified:

$$H_O: \beta_i = 0;\ H_O: \beta_i \neq 0$$

The $t - statistic$ measure indicates the likelihood that the actual value of the parameter is not zero. To test the hypothesis in standard normal distribution the observed $t - statistic$ values fall outside the range plus or minus 2. As a rule, a $t - statistic$ larger than 2 in absolute terms means that there is a 5% or smaller probability of occurrence if the true coefficient were zero. The greater the value is in absolute terms, the better the results, meaning that the actual value of the parameter is statistically significant reflecting 95% confidence that the coefficient does not include zero.

7.4.5.2 Short-Run Analysis

The existence of short-run relationships among the variables is tested using two approaches. First, the second part of the VECM systems indicates the short-run relationships. The $t-statistic$ values produced are used to interpret the theoretical short-run among series. Second, the study conducted a Granger causality test, which reflects the causal relationship among variables, which also serves as the short-run and F-/ Wald test statistics. The null for no causality is rejected at 1%, 5% and 10% statistical critical value.

7.4.5.3 VECM Systems Model Ex-Ante Forecasting

Innovation accounting is comprised of impulse response and variance decomposition. This is conducted as a means of establishing the extent to which a change in one variable creates a change in another variable in the next period. In this study, conducting innovation accounting approaches creates empirical indicators on the effects of the variables within the system.

7.4.5.3.1 Impulse Response

Impulse response refers to the reaction of any dynamic system in response to some external change. Impulse response refers to the immediate effect of innovation or shock, resulting from one series to other series within the system Ericsson (Ericsson, Hendry & Mizon 1998; Pesaran & Smith 1998; Wei 2013). This is a tool through which the reaction of one variable to an impulse or shock on another variable in the system can be explained. In a VAR model, impulse response is indicated as a positive shock of one standard deviation to the error terms in the model, so as to observe the reaction of the variables. The effects of innovation within the system are computed based on the residuals, such that innovations on $\in_t$ by one unit create a forward movement within the system. In this way, the innovation to the j^{th} variable first directly affects the same j^{th} variable. Its innovations (j^{th} variable) are transmitted to all other endogenous variables in the system through the VAR dynamic lag structure. Impulse response function traces the effect of a one-time innovation to one of the shocks on current and future values of the variable.

To analyse impulses in a system, the exogenous and deterministic variables are treated as fixed, and may be removed from the system (Lütkepohl 2006). In Eviews, impulse response is estimated by employing the Monte Carlo procedure via the Cholesky-dof adjusted ordering. The Monte Carlo approach is comprised of two approaches. The first approach offers simulations on $\emptyset_i$ from the asymptotic distribution. Second, VAR is simulated enabling $\emptyset_i$ to create estimated results that can be interpreted. The Cholesky ordering employs the Cholesky inverse factor of the residual covariance matrix to orthogonalise the impulses, and results are produced using graphs and tables.

The graphical output displays a visual display, and produces multiple graphs, which indicate the effect of the innovations on the series within the system. The effect of innovations is demonstrated by the manner in which the line graph departs from the zero line. As they depart from zero, the impulse line graph illustrates the path that a variable takes from the short to the long-run, expressed using a positive or negative sign. Meanwhile, the numerical output reflects the actual values, either positive or negative, that the impact of the innovations represent. This study employs the numerical approach for interpreting the results of the impulse response. This is because numeric values can be easily explained, as opposed to the line graphs. In this study, 3 years period is considered as short-run means while 10 years period is considered as long-run.

7.4.5.3.2 Variance Decomposition

Variance decomposition explains the manner in which one standard deviation shock creates variations in arithmetic terms from one period to another among the series. In this way, variance decomposition demonstrates the forecast error of a variable. In proportions attributed to innovations (shocks), each variable in the system, including its own, has internally induced innovations (Wickremasinghe 2011). In a simple linear equation, for any change in x at time (t) there is a corresponding change in y as a dependent variable. The variance decomposition created on the dependent variable y is expressed as:

$$var(y) = E\left[var\left(\frac{y}{x}\right)\right] + var\left[E\left(\frac{y}{x}\right)\right] \qquad (\mathbf{7.35})$$

Equation 7.32 demonstrates that in a relationship between x and y. The variance of the dependent variable y is comprised of two relationships. The first relationship is explained by the expected variance of the dependent variable y with respect to the independent variable. The second relationship indicates the variance of y caused by the expected change from its own expected variance value.

In a VAR model, variance decomposition attempts to explain the proportion of the variance of the forecast error in predicting $y_t, T + h$ due to a structural shock or innovation, expressed as: η_t. Based on orthogonal innovations η_t the $h-step$ future forecast error vector can be expressed with known coefficients, as provided by the VECM model. In this study, based on the Monte Carlo procedure and ordering by Cholesky, the forecast is comprised of short-run (three years), medium-term (five years) and long-run (10 years). The results of variance decomposition forecast for endogenous variables.

7.4.6 Simultaneous Equation Estimation

In systems of models, a number of estimators can be employed, including OLS, NLLS, the Full Information Maximum Likelihood Method and Instrument Variable (IV) methods such as Generalised Moments Methods, 2SLS and three-stage linear square methods. The choice of such an estimator largely depends on the properties of the series (Kunst 2012; Wei, H 2010). OLS is the estimator employed in this study. Estimating the simultaneous equation that is estimated is based on the VECM system model, whose specification approaches are explained in Section 7.4.3. Following this approach, OLS satisfies the properties of an efficient estimator.

7.4.6.1 Rationale for OLS for Model Estimation

The approaches for establishing the simultaneous equation through which VAR is employed were explained earlier. Using the VECM procedure, the equation is estimated to understand the long-run relationship and short-run dynamics. This section explains the rationale for employing the OLS estimator. The OLS estimator provides sufficient results because the simultaneous equations are estimated based on the results of estimated by VAR, through a VECM systems approach. As such, employing OLS as a model estimator provides sufficient and valid results for economic policy, provided sufficient conditions are met. First, if the series are non-stationary at level but stationary at first difference. Second, if the series are cointegrated to in the same order $[I(1)]$. Third, if the roots of the companion matrix of the system lie inside the unit circle and are all less than one in absolute terms. Fourth, when the number of cointegrating vectors among all variables is equal to the number of endogenous variables. When the residual is tested for model stability, normality, variance and covariance, the results all indicate that data fits the model. Fifth, OLS can produce sufficient results as long as all the equations in the system have the same exogenous variables. Therefore, this study is comprised of three exogenous variables used in all the five equations.

Based on the preconditions mentioned, the OLS estimator is equivalent to the generalised least square estimator when all equations have identical regressors to all equations in the system. Approaches involving IV methods are often suitable in situations where polynomial roots lie outside the circle, and in reasonably large samples (King & Watson 1997). In sum, the OLS estimation method produces sufficient and reliable results for policy analysis. Employing OLS, the manner in which the VECM systems employ a simultaneous equation theoretical specification is the next step.

7.4.6.2 Validation of the VECM Systems Simultaneous Equation Residual

This study tests for stability, starting by checking whether or not the residual for VECM systems simultaneous equation OLS estimation is stable. The residual is tested by displaying the graphical display. Stationary data is indicated by the manner in which the line graph rotates around zero mean; otherwise, data is said to be non-stationary. After graphical display, confirmatory tests are conducted via the ADF and PP test, and are confirmed by the KPSS.

After validation of the VECM systems simultaneous equation residuals, this study then estimates the five systems equations individually. This is because systems equations estimated under OLS have limited validation tests. The study finds that validating the OLS system equation is similar to the validation approaches. This study validates the systems equation estimated under OLS by estimating each of the five equations separately. This is intended to confirm that the findings and conclusions are sufficient for policy analysis. Moreover, under OLS systems, equation ex-post analysis is not application. The only option available is to estimate each equation separately, and then conduct ex-post analysis.

7.4.6.3 Estimation of the Simultaneous Equations

At this stage, the five equations are estimated separately by employing the NLLS/ARMA and adopting the Gauss-Newton/Marquardt Method of estimation. These individual results are similar to the OLS estimated coefficients. However, Antonakis et al. (2014) advises that before estimating a model, it is necessary to understand the nature of causality among variables of the simultaneous equation. Using the VECM Ganger causality approach, two models are estimated. First, the endogenous variables and human capital are estimated. This is followed by estimating the endogenous variables together with openness. This approach is taken because first, in the ASSM human capital and openness can be treated as exogenous.

Second, in some studies (e.g., Wei 2010) openness is treated as endogenous to economic growth. Third, Chapter Five illustrated how endogeneity exists between human capital, FDI and economic growth. In this respect two causality simulations are conducted to take care of these relationships. This can deepen our understanding of the relationship among variables as we attempt to examine the extent of causality among the related variables in this study. Finally, only two causality test models estimated, due to insufficient observations. After the causality tests, the simultaneous equation is estimated, validated and followed by interpreting the results based on specific testable hypotheses explained under Section 7.4.7.

7.4.7 Specifications of Testable Hypotheses

Aim 1: To examine the impact of FDI and other explanatory variables on Uganda's economic growth

H 1.1: The explanatory variables employment, tourism, FDI, human capital, openness has a positive impact on economic growth

H 1.2: The explanatory variables inflation and poverty have a negative impact on economic growth

Aim 2: To examine the impact of FDI and other explanatory variables on employment in Uganda

H 1.1: The explanatory variables employment, economic growth, tourism, FDI, human capital, openness has a positive impact on employment.

H 1.2: The explanatory variables inflation and poverty have a negative impact on employment.

Aim 3: To examine the impact of FDI and other explanatory variables on poverty in Uganda

H 1.1: The explanatory variables employment, economic growth, tourism, FDI, human capital, openness has a negative impact on poverty.

H 1.2: The explanatory variables inflation has a positive impact on poverty

7.4.8 Validation of the Estimated Simultaneous Equations

Section 7.4.4.4 demonstrated the approaches employed in validating the VECM model. In this section the study the approaches adopted to test each equation is tested for stability, autocorrelation, heteroscedasticity and normality. Before diagnostic tests, goodness fit of the models is first examined by adjusted R-square and F-statistics. The adjusted R-square is employed as a measure for the goodness fit of the model, indicating the variance of dependent variables explained by the independent variables in the system. The adjusted R-square is employed because this never decreases, as more regressors are added into the model. To test the goodness of fit, the simulated output of VECM provides the results. First, the adjusted R-square values are used by checking on their closeness to one for a good model.

Second, the F-statistics is employed as a means of checking the overall significance of the systems model. The results of the VECM systems simulated output indicates the results of the F-statistics. The null is tested, based on the hypothesis that all the coefficients of the regression are zero. To accept the null, the probability value of the $F - statistic$ probability value of 5% is used $(P - value\ > 5\ percent)$.

7.4.8.1.1 Stability Tests

The residuals for each equation are tested for stability by testing the residual, by first employing the actual fitted graph and fitted table. The fitted graph indicates the actual values of the dependent variable used in a regression, from the original data. A valid model is demonstrated by both the regression line and original data line graph moving together, otherwise the results are invalid. The fitted table provides statistics on the overall significance of the model being fitted. This is demonstrated by the manner in which the line of the residual fluctuates between one and negative one $(-1\ and\ 1)$ for a normal fitted model. Data stability is also indicated by employing the Cumulative Sum Control Chart (CUSUM) test statistic and recursive coefficients. To accept the null hypothesis, stability is confirmed within the 5% critical bounds of parameter stability. Parameters are indicated as stable when the line graph fluctuates between the two bounds.

7.4.8.1.2 Serial Correlation Tests

The serial correlation tests employed include Q-Statistic developed by Ljung and Box (1978) tests and the Breusch-Godfrey LM Test proposed by Breusch Breusch and Godfrey (1986) . These are compared to the Durbin-Watson (DW) as explained by Durbin and Watson (1971). The Q-Statistics test hypothesis for absence of autocorrelation is rejected when probability values are less than 5% critical value

The Breusch-Godfrey LM Test statistic computes lag order p based on an auxiliary regression of the residuals of the estimated regression. The testable hypothesis is specified as:

$$H_0: No\ serial\ correlation\ among\ the\ residuals;$$
$$H_1: There\ is\ serial\ correlation\ in\ the\ residuals$$

The null is accepted when the probability values of the LM Test are greater than 5% ($P - value\ > 0.05$) indicating the absence of serial correlation among the residuals.

7.4.8.1.3 Heteroscedasticity Tests

This study employs two tests of whether or not data is Heteroscedastic: the autoregressive conditional heteroscedasticity (ARCH) and Breusch-Pagan-Godfrey heteroscedasticity tests. The ARCH tests for heteroscedasticity under the testable hypothesis are specified as follows:

$$H_O: \alpha_1 = 0; \alpha_2 = 0;\ \alpha_q = 0\ (No\ ARCH\ effects)$$
$$H_O: Not\ all\ of\ \alpha_1; \alpha_2; \ldots \alpha_q are\ 0\ (There\ are\ ARCH\ effects)$$

The null is accepted for no ARCH effects when the probability values are greater than 5%. Meanwhile, the Breusch-Pagan-Godfrey heteroscedasticity test is conducted as a validation test for the ARCH tests. The null is also accepted for data homoscedasticity when the probability values are greater than 5%.

7.5 Ex-Post Forecasting

Ex-post forecast is conducted in this study as a means of observing both endogenous variables and the exogenous explanatory variables during the period under study, 1985–2014. This simulation is conducted to check existing data and evaluating the ex-post forecasted model[46].

7.6 Concluding Remarks

To measure the impact of FDI and other explanatory variables on economic growth, employment and poverty in Uganda, four procedures have been conducted: time-series properties investigation, short-run and long run analyses and VECM simulations. However, this study starts by presenting the conceptual framework, which provides a preliminary theoretical relationship among the variables. This is followed by a description of variables by defining and providing the media through which they are measured. The procedure starts by investigating the properties of the time-series: transforming the series into logarithmic terms,

[46] Due limited data sample, there is no comparison made.

followed by graphical, correlation and trend analysis. Later, unit root approaches are explained, with final endogeneity examination of the variables.

The second part explains the methods employed to measure the short-run and long-run relationships among variables. This part explains how cointegration analysis is conducted, followed by long-run interpretation, VECM systems model specification and simulation. Later, the diagnostic approaches are examined as a basis for long-run and short-run interpretations and VECM systems causality simulation and ex-ante forecasting. The final part of the procedure explains the approaches employed in the VECM systems simultaneous simulations. The first involves explaining the manner in which the study conducts VECM Granger causality tests, and later VECM systems model estimation. The method for model estimation is based on OLS and the rationale is provided. After, the study explains the media through which diagnostic tests are conducted, including their interpretation. Through this procedure, the findings and conclusions for the study are made, following a chronological approach.

Chapter 8: Time-Series Properties and Investigation of the Variables

8.1 Introduction

In Chapter Six, a theoretical framework was developed that indicated the variables employed in this study. Following this conceptual framework, 12 variables are employed in this study: FDI, economic growth, employment, poverty, tourism, GE, inflation, telecommunications, openness, LF, human capital and civil war. This chapter investigates the properties of the series employed in this study by conducting graphical analysis of the variables, so as to understand the relationships among variables. Second, the series is transformed into logarithmic term followed correlation analysis among variables, in order to better understand the manner in which the variables are related. The third section presents a trend analysis, to indicate the fluctuations of the variables. This establishes the basis for the next step, involving unit root tests. Finally, an endogeneity causality test is conducted in order to understand a causal relationship among variables.

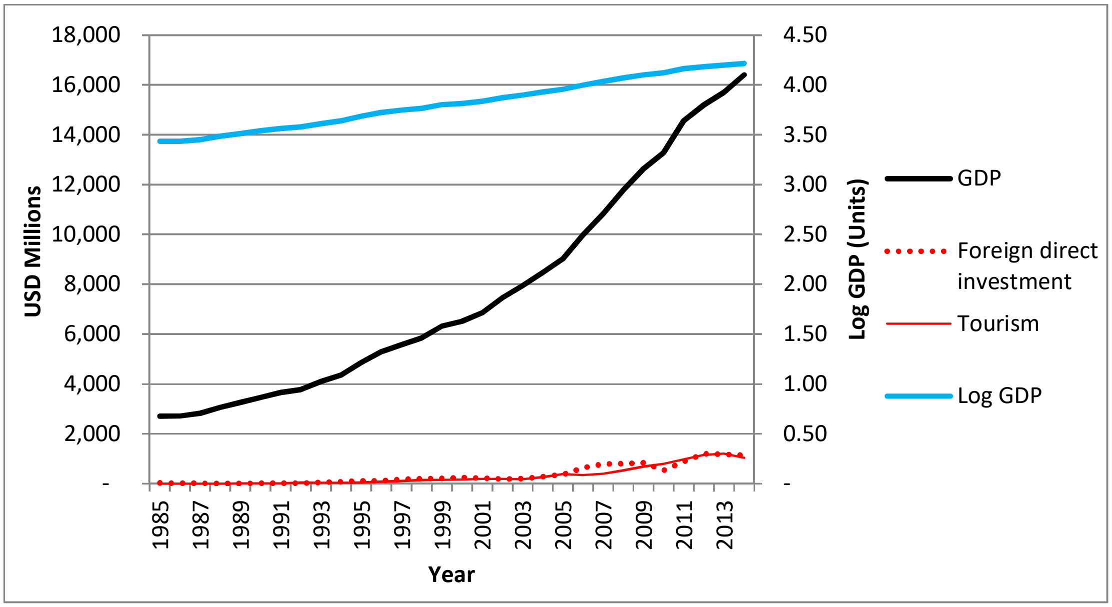
8.2 Preliminary Variables Relationship Investigation

Section 7.4.1.1 explains the benefits of transforming times into a logarithmic form. This section employs the series transformed into logarithm form to provide a preliminary investigation in the relation among the series. Employing the logarithmic approach provides an avenue for measuring the impact of independent variables (FDI and other explanatory variables) onto the dependent variables: economic growth, employment and poverty. Using graphs, this study starts by understating the relationship between GDP, economic growth, FDI and tourism, followed by indicating the relationship between economic growth, GDPGR and factor inputs (FDI, tourism expenditure and human capital). A further graphical analysis indicates the relationship between GDPGR and the growth in factor inputs. Finally, the study examines the relationship between log of GDP and employment.

8.2.1 The Relationship Between GDP, FDI and Tourism

The study mentioned the relationship between FDI and toursim in Section 5.3. The immediate objective of attracting FDI and promoting tourism is to acclearte economic growth. The study begins by indicating the relationship between FDI, GDP and toursim, followed by the growth in output, indicated by the logarithm of GDP for each year.

Figure 8.1: The trend of GDP, log GDP, FDI and toursim



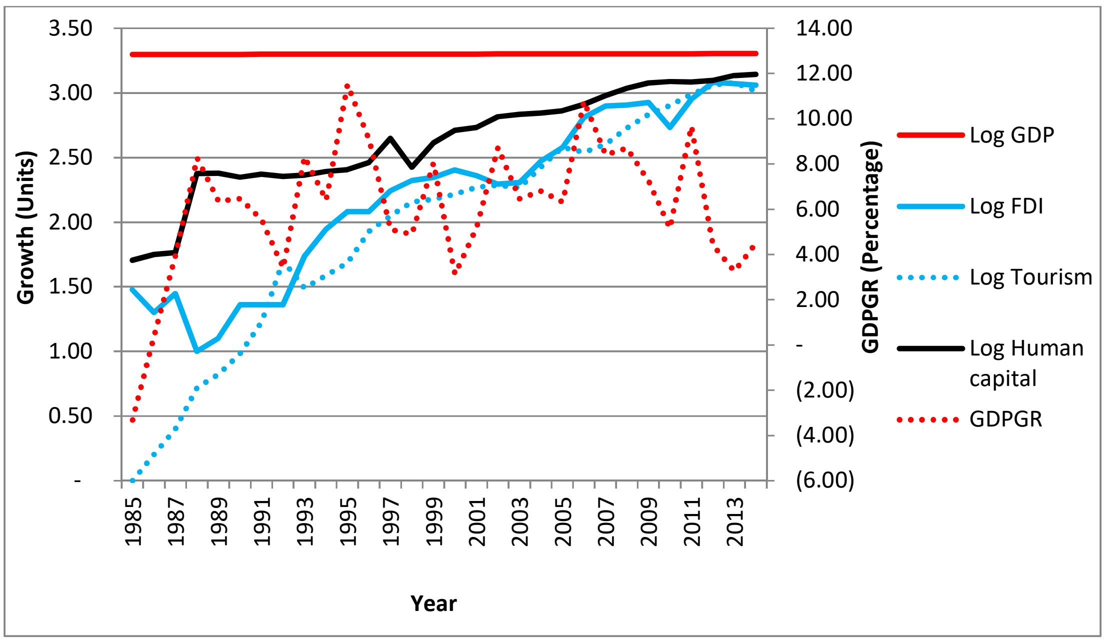
The trend indicates that GDP increased from USD 2,708.22 million in 1985 to USD 16, 406.24 million in 2014. Though the trend demonstrates that GDP, FDI and tourism expenditure have increased, the growth in output indicated by GDP in logarithmic form is low, and sometimes appears constant. This is because growth in production increased *de minimis* from 3.43 units to 4.22 units; therefore growth was only by 0.78 units.

8.2.2 The Relationship Between GDPGR, GDP and Factor Inputs Growth

Production and the rate at which it grows depend on factors of production and their productivity, as well as the absorptive capacity of the nation. This section first indicates the relationship between the growth in production for each year and the GDPGR. Second, it explains the relationship between factor inputs and the growth of production within the year, indicated by GDP in logarithmic form. The relationship is demonstrated by Figure 8.2.

GDPGR increased from -3.43% per annum in 1985 to 11.52% per annum in 1995, but since then has been declining, with wide fluctuations to as low as 4.51% per annum. A further review indicates that growth in factor inputs was also positive. Growth in FDI indicated in logarithmic terms increased from 1.48 units in 1985 to 3.06 units in 2014, indicating a growth by 1.58 units. Meanwhile, during the same period, tourism grew from 0.001 units to 3.059 units, growing by 3.058 units during the period under study. Human capital grew from 1.71 units to 3.14 units, meaning that Uganda's largest LF is unskilled. Despite the impressive increase in GDP, the growth in output is low and can be regarded as *de minimis*, although factor inputs grew beyond *de minimis* measured. This can be explained partly by TFP and the absorptive capacity of the country. GDPGR fluctuated along a constant, which corresponds with the constant growth. As demonstrated by the relationship between GDPGR and growth in output, the trend demonstrates that the increase in both is constant.

Figure 8.2: Trend in GDPGR, economic growth, FDI and tourism expenditure



Notes: GDPGR= Gross Domestic Product Growth Rate; GDP = Growth Domestic Product; FDI = Foreign direct investment; Log = Logarithmic tern measuring growth

This preliminary investigation possesses implication from the Solow-Swan neoclassical theory meaning that though Uganda's GDP has been increasing at declining rate as explained by Figure 2.3. As earlier explained Uganda last attained high GDPGR in 1995 when at the growth level of 11.52 percent per annum but declined to 4.51 percent annum in 2014. First, the essentiality property means that due to huge physical capital deficiency, there is a need for increasing foreign capital flows, such as FDI and tourism expenditure, to bridge the gap in the private capital deficiency. However, in the case of Uganda though FDI and tourism expenditure has been increasing the trend indicates fluctuating and declining physical capital of these two sources. FDI increased from USD 30 million in 1985 to USD 1,205.54 million in

2012 but decreased to USD 1,146.13 million in 2014. During the same period, tourists' expenditure in Uganda increased from USD 1 million to USD 1,157.00 but declined to USD 1,039 million in 2014. This means Uganda as least developed nation, foreign flows are important for increasing economic growth.

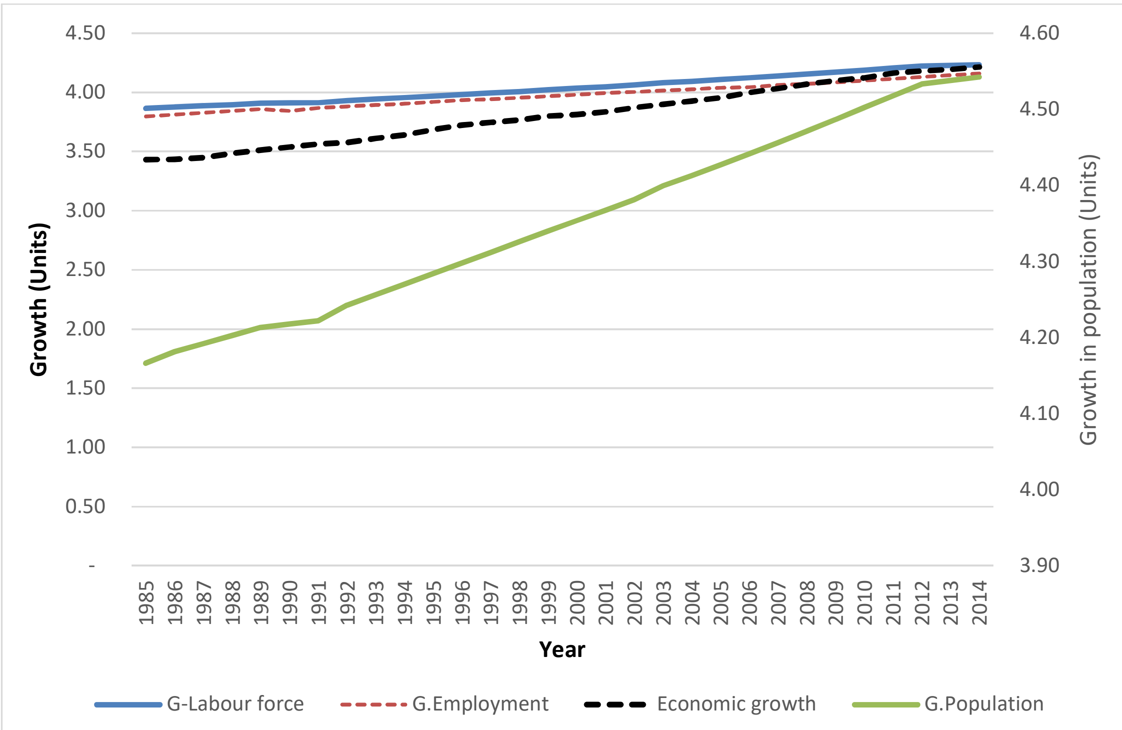
Second, the ASSM positive and diminishing returns property means that TFP is important for a nation to experience increasing returns. In this respect, the preliminary investigation indicates low TFP. As a result the nation experiences fluctuating and declining GDPGR which in-turn affects Uganda's economic growth.

Third, increasing returns-to-scale are required; otherwise a nation experiences declining TFP. With innovations such as government policy, human capital and technology, a nation cannot experience a steady state of growth. This means that even if factor inputs do not increase Uganda can experience increasing economic growth. However, due to macro-economic instability for example increasing inflation the country cannot experience increasing returns to scale. As demonstrated by Figure 2.5, CPI decreased from 154 percent per annum in 1985 to 103.20 percent per annum in 2006 but increased to 216.05 percent per annum in 2014. Also the as explained by Figure 2.7, terms of trade have worsened from USD -412.98 million in 1985 to -1,690.24 million in 2014. Fourth, though savings are not easily forthcoming to developing countries such as Uganda, nurturing a savings culture in the country is quite important. In this way SMEs can develop, which in turn increases economic growth, employment and poverty reduction. Finally, economic growth in a nation such as Uganda depends on the absorption capacity for goods and services in the country.

8.2.3 The Relationship Between Employment, Human Capital and Economic Growth in Uganda

Use of local resources in production in a nation is a foundation of economic growth. In Chapter Five, LFP is the basis for modelling employment in Uganda. The relationship between population and production represents the wellbeing of communities through employment of a nation's LF. Employment is a factor of production, indicated by LF in production. This is because for Uganda as a least-developed country with no welfare, employment is the main indicator of wellbeing for households. Comparing growth and employment becomes necessary, to indicate the relationship between output growth and labour. Higher production growth can be an indicator of high factor productivity, while a low growth could mean low productivity. Figure 8.3 illustrates that in Uganda, the growth of the population and its relationship with production growth (economic growth) is based on LF employment.

Figure 8.3: Growth of employment and human capital in relation to economic growth



Notes: G = Growth

The figure also illustrates that growth in production is lower than growth in employment of Uganda's LF. This could partly mean that the productivity of Uganda' LF is low. Since output growth is low, this also confirms that unemployment among the skilled LF, comprised of youths, is high. According to the findings, population growth is greater that the growth in LF. The population grew from 4.17 units in 1985 to 4.54 units, while during the same period LF grew from 3.86 units to 4.23 units. The graph illustrates that employment grew from 3.80 units to 4.16 units, lower than the growth in population and LF, meaning growing unemployment in the country. This could be attributed to a high population growth rate at 3% per annum and an increasing young population, which accounts for over 52% of Uganda's total population.

8.3 Correlation Analysis

As indicated in Chapters Two and Four, this study is comprised of 12 variables, of which five are endogenous variables: economic growth, employment, tourism, poverty and FDI. The other seven series are exogenous: inflation, openness, government consumption, human capital, LF, telecommunications and civil war (as a dummy variable). In some studies (e.g., Wei 2010), openness and human capital are treated at endogenous. Figure 5.4 indicates that human capital, FDI and economic growth are endogenous. However, as Uganda is a least-developed country, human capital and openness are driven by government policy. This is explained by the introduction of universal primary education in 1997 and the establishment of the UEPB. The board was introduced to promote export-led growth in Uganda. As such, both human capital and openness as policy-oriented variables are treated as exogenous variables. The result of the correlation analysis is presented under Table 8.1.

Table 8.1: Variable correlation analysis

	LNTEL	LNEMP	LNFDI	LNGC	LNGDP	LNHCAP	LNLF	LNOP	LNPOV	LNTOU	LNUCPI
LNTEL	1.000										
LNEMP	-0.838	1.000									
LNFDI	0.780	-0.652	1.000								
LNGC	-0.771	0.680	-0.678	1.000							
LNGDP	0.930	-0.764	0.904	-0.829	1.000						
LNHCAP	0.853	-0.621	0.784	-0.806	0.942	1.000					
LNLF	-0.298	0.016	-0.599	0.177	-0.479	-0.566	1.000				
LNOP	0.846	-0.812	0.774	-0.769	0.862	0.765	-0.252	1.000			
LNPOV	-0.839	0.593	-0.877	0.720	-0.932	-0.867	0.496	-0.743	1.000		
LNTOU	0.639	-0.268	0.685	-0.519	0.761	0.838	-0.757	0.438	-0.801	1.000	
LNUCPI	0.000	-0.042	-0.204	-0.055	-0.079	-0.137	0.532	-0.198	0.059	-0.125	1.000

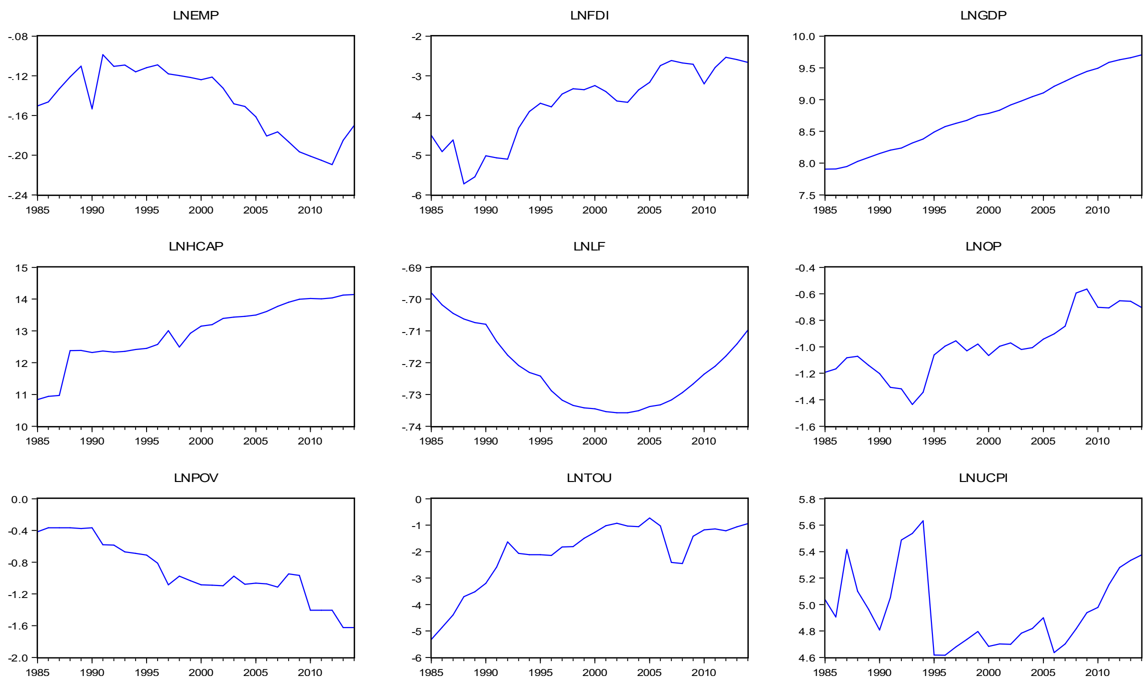
Notes: TEL= Telecommunication; EMP=Employment; FDI = Foreign direct investment; GC= Government Consumption; LNGDP= Economic growth (Logarithm of GDP); HCAP= Human capital; LF= Labour force; OP= Openness; POV = Poverty; TOU = Tourism; UCPI= Inflation (CPI for Uganda)

Correlation coefficients indicted in three forms indicated numerically as -1 and +1 allows predicting whether two variables are related to each other. As explained in Section 7.4.1.3, the larger the magnitude of correlation coefficient, the more to variables are perfectly related. In this study, telecommunication and GE are removed due to high correlation with other explanatory variables. After excluding highly correlated series, the next step is to understand the trends in the series.

8.4 Series Trend Analysis

Times series data often exhibits increasing or decreasing trends, with fluctuations. As such, trend analysis is necessary before unit root testing, to establish whether the series has a unit root or not. Trend analysis can be a tool for determining whether the series is stationary around a constant or a trend that can be included during unit testing.

Figure 8.4: Series trend analysis



The results of graphical display indicate that the series exhibit a random walk with drift and trend. The series reflect a trend with a pattern of large fluctuations, meaning that the series are non-stationary. The properties of the series data is therefore tested for unit root, including a constant with trend at level, and finally at first difference. This is because if series are non-stationary at level but stationary at first difference, then the study can employ restricted VAR (VECM) for model estimation.

8.5 Time-Series Unit Root Testing

Considering **t**he properties of our series, we test unit root by first testing the series at level, including a constant, followed by constant and trend. However, we also include none for the purpose of examining our series further. Later we test the series at first difference. We conducted unit root tests employing Augmented Dickey-Fuller (ADF) method, validated by the PP test and KSS.

8.5.1 Augmented Dickey-Fuller Unit Root Tests

Unit root tests were conducted with a maximum of two lags using the Schwartz Info Criterion, based on the Ender 1995 approach. The second ADF test at level involved a trend and intercept, while in the third, none were included. Later data was tested at first difference. Following Dickey and Fuller (1979) and Davidson and Mackinnon's (1993) method, the series y_t are estimated. The results of the ADF tests at level and first difference are summarised below.

Table 8.2: ADF unit root tests

Variable	ADF Test Statistic			
	Constant	**Constant and Trend**	**None**	**First difference**
LNGDP	0.59	-3.43	14.27	-4.88
lnEMP	-1.18	-2.62	0.24	-7.09
lnTOU	-2.97	-2.45	-3.21	-4.4
lnPOV	-0.28	-2.53	1.60	-6.15
lnFDI	-0.85	-2.66	-1.14	-5.63
lnUCPI	-0.28	-2.16	0.11	-5.52
lnOP	-0.91	-2.98	-1.15	-4.11
lnHCAP	-2.11	-3.46	-1.91	-6.32
lnLF	-0.86	2.25	-0.84	-1.11

Notes: Test critical values at 5% (At level: constant = -2.96, Constant and trend = -3.97, none = -1.95 while at First difference = -2.97); P-value= Probability value, * Series issue noted

As indicated by the asterisk, the tourism variable ($lnTOU$) is stationary when tested at level with a constant, but non-stationary when tested at level with constant and trend. Since the series are not stationary when tested at constant and trend, it is concluded that the series are non-stationary at level. However, as indicated by the asterisk for LF ($lnLF$), the series are non-stationary in all cases, including at first difference. We therefore conclude that series for LF are non-stationary, because data is stationary when the ADF test statistics are less than the test critical values at 5% ($ADF\ test\ statiscs\ < Test\ critical\ value\ at\ 5\ percent$). The corresponding probability value for stationary data is less than 0.05 ($P - value\ < 0.05$). Following the ADF test, all series except LF are non-stationary at level but stationary at first difference. However, ADF tests are often affected by the choice of the lag length (p) and lose power while estimating a large sample. As such, the ADF tests results are validated by the Phillips–Perron (PP) test and KPSS.

8.5.2 The Phillips–Perron Unit Root Test

The advantage of the PP test over the ADF test is that the test corrects any heteroscedasticity and serial correlation in the errors terms(u_t). Also, PP tests do not require lag selection and are based on a serially correlated regression error term. Similar to the ADF test, the null for PP is also based on the null that the series are non-stationery. The results of the PP test are indicated in Table 8.3. The results indicate that the series are non-stationary at level but stationary at first difference, except for the LF. The next step involves validating the ADF and PP tests by the KPSS tests.

8.5.3 The Kwiatkowski-Phillips-Schmidt-Shin (KPSS) Unit Root Test

The advantage of the KPSS test over the ADF and PP tests is that this is an LM Test. The KPSS is tested based on the null that series is stationary. The results of the KPSS tests are also included in Table 8.3.

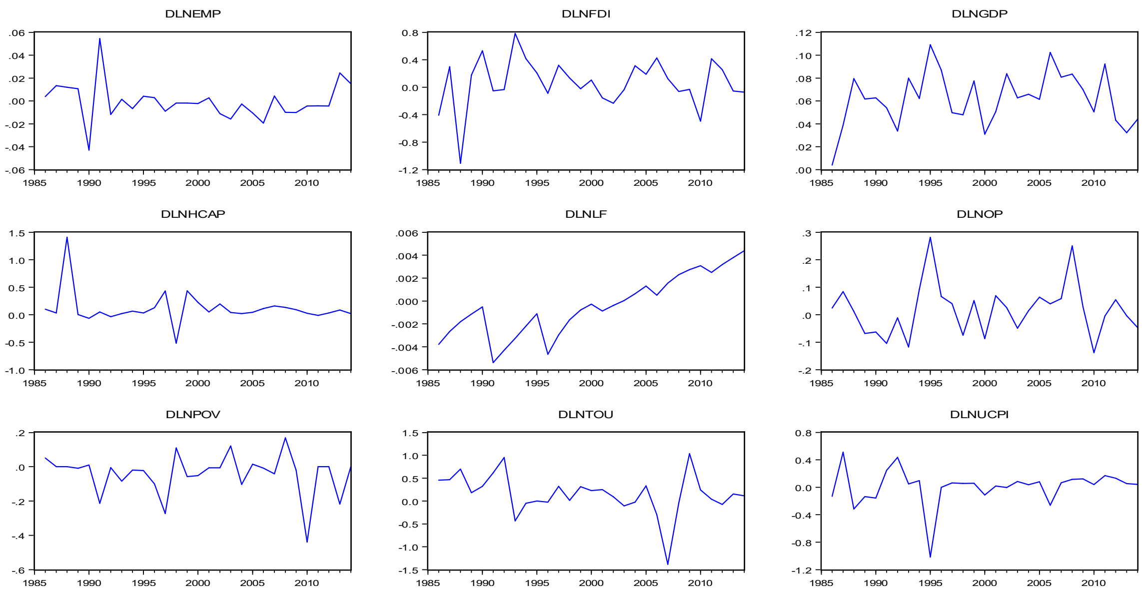
Table 8.3: Summary of the PP and KPSS unit root test statistics results

Variable	PP Test Statistic				KPSS test statistic		
	Constant	Constant and Trend	None	First difference	Constant	Constant and Trend	Constant
lnGDP	0.59	-3.43	14.27	-4.89	0.707	0.111*	0.181
lnEMP	-1.04	-2.53	0.05	-7.07	0.489	0.159	0.143
lnTOU	-6.53	-3.02	-3.89	-3.95	0.557	0.165	0.329
lnPOV	-0.03	-2.61	1.84	-6.1	0.669	0.085*	0.088
lnFDI	-0.83	-2.75	-1.14	-5.71	0.616	0.095*	0.078
lnUCPI	-1.86	2.17	0.40	-0.79	0.158*	0.158	0.413
lnOP	-1.05	-2.32	-1.12	-3.96	0.590	0.100*	0.079
lnHCAP	-2.25	-3.66	2.31	-6.4	0.711	0.169	0.205
Lnlf	-1.86	2.17	-0.400	-0.79*	0.332*	0.190	0.644*

Notes: KPSS: Test critical values at 5% (At constant =0.463, constant and trend=0.146; first difference=0.463); *Series issue noted; $lnlf$: $Second\ difference$: $Constant\ KPSS = 0.377$; $Constant\ and\ Trend\ KPSS = 0.355$; $lnlf\ is\ not\ stationary\ at\ both\ level\ and\ first\ difference$

The PP and KPSS tests confirm that all series, except the series for labour, are non-stationary at level but stationary at first difference. Again, as indicated by the asterisk, the LF series are neither stationary at level nor at first difference but are stationary when tested at second difference. After noting the characteristic properties for the labour series, we presented a graphical visual display of the series at first difference. The results are summarised below.

Figure 8.5: Results of the series trend test after first difference



The series for LF moves upwards with fluctuations, confirming that the series are not stationary at first difference. Before excluding LF from the study, we further conducted OLS regression analysis to test the significance of LF to poverty. When tested, findings indicate that LF contribution to poverty reduction is insignificant. When a nation's LF is engaged in production, poverty reduces. Following these findings, LF is excluded from the study as the series was non-stationary and insignificant to its contribution to poverty reduction in Uganda.

VECM is the method employed in this study for estimation and forecasting. Among the preconditions is that the series must be non-stationary at level but stationary at first difference. As such, LF is excluded from the study. The study is now comprised of the remaining variables only: economic growth, employment, poverty, tourism, FDI, inflation, openness and human capital. Civil war is excluded from cointegration for being a dummy variable. The next step involves conducting endogeneity tests.

8.6 Endogeneity Analysis

Endogeneity analysis is a necessary tool for determining whether or not the variables can be regarded as exogenous or endogenous. Following the approach developed in Chapter Six, endogeneity can be tested based on the Pairwise Granger causality test. To test the hypothesis, the results for the Pairwise Granger causality tests are presented under Table 8.4. The null hypothesis is rejected at 1%, 5%, and 10% F-Statistic critical value.

Table 8.4: Summary of the pairwise causality tests

Variables Independent Dependent	F-Statistic	Prob.	Variables Independent Dependent	F-Statistic	Prob.
LNFDI LNEMP	1.236	0.308	LNPOV LNHCAP	1.604	0.222
LNEMP LNFDI	0.687	0.512	LNHCAP LNPOV	1.571	0.229
LNHCAP LNEMP	4.014	0.032*	LNTOU LNHCAP	0.168	0.846
LNEMP LNHCAP	1.427	0.260	LNHCAP LNTOU	1.891	0.173
LNOP LNEMP	1.590	0.225	LNUCPI LNHCAP	0.931	0.408
LNEMP LNOP	2.504	0.103	LNHCAP LNUCPI	0.147	0.863
LNPOV LNEMP	1.321	0.286	LNGDP LNHCAP	6.480	0.005*
LNEMP LNPOV	1.328	0.284	LNHCAP LNGDP	0.767	0.475
LNTOU LNEMP	2.270	0.125	LNPOV LNOP	2.486	0.105
LNEMP LNTOU	1.093	0.351	LNOP LNPOV	1.806	0.186
LNUCPI LNEMP	1.633	0.217	LNTOU LNOP	14.38	9.E-0
LNEMP LNUCPI	1.661	0.211	LNOP LNTOU	0.661	0.525
LNGDP LNEMP	3.820	0.036*	LNUCPI LNOP	0.053	0.947
LNEMP LNGDP	0.796	0.463	LNOP LNUCPI	2.085	0.147
LNHCAP LNFDI	3.029	0.067**	LNGDP LNOP	3.798	0.037*
LNFDI LNHCAP	2.748	0.085**	LNOP LNGDP	2.120	0.142
LNOP LNFDI	1.280	0.297	LNTOU LNPOV	2.841	0.078**
LNFDI LNOP	6.279	0.006**	LNPOV LNTOU	0.826	0.450
LNPOV LNFDI	2.670	0.090**	LNUCPI LNPOV	0.048	0.952
LNFDI LNPOV	0.755	0.481	LNPOV LNUCPI	0.488	0.616
LNTOU LNFDI	5.857	0.008*	LNGDP LNPOV	2.717	0.087**
LNFDI LNTOU	0.694	0.509	LNPOV LNGDP	0.073	0.929
LNUCPI LNFDI	0.146	0.864	LNUCPI LNTOU	1.453	0.254
LNFDI LNUCPI	0.404	0.671	LNTOU LNUCPI	0.468	0.631
LNGDP LNFDI	1.906	0.171	LNGDP LNTOU	0.982	0.389
LNFDI LNGDP	0.283	0.755	LNTOU LNGDP	1.009	0.380
LNOP LNHCAP	3.322	0.054**	LNGDP LNUCPI	0.820	0.452
LNHCAP LNOP	1.467	0.251	LNUCPI LNGDP	0.271	0.765

Notes: EMP=Employment; FDI = Foreign direct investment; LNGDP= Economic growth; HCAP= Human capital; OP= Openness; POV = Poverty; TOU = Tourism; * Causality at 5 % critical level; ** Causality at 10 % critical level;

Based on the Pairwise Granger causality test, the study concludes that first; none of the variables in the study does Granger-cause economic growth in Uganda. Second, human capital and economic growth do Granger-cause employment. Third, tourism and economic growth do Granger-cause poverty. Fourth, FDI and economic growth do Granger-cause openness. Fifth, openness and economic growth do Granger-cause human capital. Finally, poverty, human capital and tourism do Granger-cause FDI in Uganda, with feedback between FDI and human capital.

8.7 Concluding Remarks

This chapter started by transforming the series into logarithmic form as a basis for preliminary investigations of the relationship among the variables. By using graphs, the relationship among the series during the period under study (1985–2015) was illustrated. Although trends demonstrate that GDP, FDI and tourism expenditure have increased over the period, the growth in output indicated by GDP in logarithmic form is low and sometimes appears constant. This is confirmed by the graphical investigation that demonstrates that the growth in GDPGR and output is constant (growth in production is *de minimis* by 0.78 units only). The growth in output is not consistent with the law of motion, since growth in factor inputs is greater than production in the country. The Solow-Swan Model could partly explain the results of this preliminary investigation.

First, due to Uganda's huge physical capital deficiency, increasing foreign capital flows, such as FDI and tourism expenditure, to bridge the gap in the private capital deficiency is essential. However, in the case of Uganda FDI and tourism expenditure has been increasing but characterised with fluctuating and declining physical capital. For example, FDI increased from USD 30 million in 1985 to USD 1,205.54 million in 2012 but decreased to USD 1,146.13 million in 2014. During the same period, tourists' expenditure in Uganda increased from USD 1 million to USD 1,157.00 but declined to USD 1,039 million in 2014. This means Uganda as least developed nation, foreign flows are important for increasing economic growth. Second, productivity of factor inputs is important for a nation to experience positive returns to scale even if factor inputs do not increase. In this respect, the preliminary investigation indicates low TFP. As a result, Uganda experiences fluctuating and declining GDPGR which in-turn affects Uganda's economic growth.

Third, increasing returns-to-scale are required; otherwise a nation experiences declining TFP. With innovations such as government policy, human capital and technology, a nation cannot experience a steady state of growth. This means that even if factor inputs do not increase Uganda can experience increasing economic growth. However, due to macro-economic instability for example increasing inflation the country cannot experience increasing returns to scale. As demonstrated by Figure 2.5, CPI decreased from 154 percent per annum in 1985 to 103.20 percent per annum in 2006 but increased to 216.05 percent per annum in 2014. Also the as explained by Figure 2.7, terms of trade have worsened from USD -412.98 million in 1985 to -1,690.24 million in 2014. Fourth, though savings are not easily forthcoming to developing countries such as Uganda, nurturing a savings culture in the country is quite important. In this way SMEs can develop, which in turn increases economic growth, employment and poverty reduction. Finally, economic growth in a nation such as Uganda depends on the absorption capacity for goods and services in the country.

Furthermore, absorptive capacity for Uganda could be a concern for the nation due to poverty. In this respect, consumption of goods and services produced is important otherwise, a nation experiences declining economic growth. Finally, preliminary investigation also demonstrates that the growth in employment is greater than growth in production. This could indicate that Uganda is a least-developed country, with abundant LF. Further, considering demographic factors, Uganda's population is growing faster than LF, and LF is growing faster than employment, which confirms the increasing unemployment among youths.

This chapter further conducted a correlation analysis. GE and telecommunications were excluded from the study because they were highly correlated with other explanatory variables. After unit root testing, data is non-stationary at level but stationary at first difference for all variables except LF. Accordingly, LF was excluded from the study because the series are neither stationary at level nor at first difference. Moreover, when a regression analysis was conducted, LF is not significant to poverty reduction. Finally, endogeneity tests among variables were investigated, employing pairwise causality tests. The objective of this study is to establish the impact of FDI on economic growth, employment and poverty in Uganda. On the basis of the Pairwise Granger causality we conclude that FDI does not Granger-cause economic growth, employment and poverty reduction. However, causality exists between FDI and human capital with feedback. Further, findings indicate that tourism does Granger-cause poverty reduction and FDI, demonstrating that tourism is an important export commodity for Uganda. Since poverty does Granger-cause FDI, foreign investment in Uganda is partly humanitarian-induced, as in the years during colonialism and soon after Independence.

Chapter 9: Estimation of the Short and Long-Run Relationships Among the Endogenous Variables

9.1 Introduction

In Chapter Eight, the properties of the series employed in this study were investigated. The section involved a graphical study of the series followed by correlation analysis and later unit root tests. Finally, the study conducted a Pairwise Granger causality test to indicate endogeneity among the series and explain causality among the variables. The first section of this chapter involves cointegration analysis to explain the long-run and short-run relationships among the series. In the second section a VECM model is specified, followed by diagnostic testing. The final section of this chapter provides ex-ante simulations comprised of impulse response and variance decomposition.

9.2 Series Cointegration Analysis

As mentioned in Chapter Six, cointegration involves examining the existence of a long-run relationship among variables under investigation, to indicate that data belongs to the same system. By conducting cointegration analysis we can establish that the vector y_t series contains N endogenous variables, of which all are integrated to the same order $[I(1)]$. As mentioned in Chapter Seven, two approaches can employed to test for cointegration among the series: Engle and Granger two-stage cointegration analysis and Johansen's Maximum Likelihood Method. Since this study involves a simultaneous equation model specification, the cointegration approach employed is based on Johansen's Maximum Likelihood Method. To test the hypothesis, Johansen's Maximum Likelihood approach employs the trace Statistic and Maximum Eigenvalue Statistics to test cointegration among variables.

It was previously mentioned that before testing, to establish the existence of long-run relationships, the lag length is determined as a precondition. Lag length determination is important for model specification. First, misspecification of the lag length leads to inconsistent impulse response function and variance decomposition results derived from the estimated VAR. Second, over-fitting causes an increase in the mean-square forecast errors of the VAR. Third, under-fitting the lag length often generates autocorrelated errors.

In this study, to determine the lag length, the unrestricted VAR lag order selection criteria is employed. In the unrestricted VAR model, the appropriate lag is indicated with an asterisk and the smaller the value, the better the criteria. The results of VAR lag order selection criteria are indicated below.

Table 9.1: VAR lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	71.980	NA	1.18e	-4.070	-3.356	-3.851
1	184.590	160.875*	2.441*	-10.328*	-8.424*	-9.746*
2	208.324	25.4262	3.62e	-10.237	-7.144	-9.291

Notes: * indicates lag order selected LR: sequential modified LR test statistic (each test at 5% level), FPE: Final Prediction error; AIC; SC; SIC; HQ

The asterisk indicates that all criteria except LogL are appropriate, employing one lag length. In this study, the AIC is to be employed but SIC can also be used. After establishing the optimal lag length, a cointegration test was the next step.

9.2.1 Cointegration Test Results

The cointegration output results are summarised in Table 9.2. The null tested is that there are no cointegrating equations. The alternative is that there is at least one cointegrating equation.

Table 9.2: Summary of the Johansen Cointegration test output

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.974	274.577	159.529	0.000	102.763	52.362	0.000
At most 1 *	0.854	171.813	125.615	0.000	54.065	46.231	0.006
At most 2 *	0.721	117.748	95.753	0.000	35.840	40.077	0.139
At most 3 *	0.623	81.908	69.818	0.004	27.369	33.876	0.244
At most 4 *	0.570	54.538	47.856	0.010	23.641	27.584	0.147
At most 5 *	0.448	30.897	29.797	0.037	16.677	21.131	0.187
At most 6	0.293	14.219	15.494	0.077	9.736	14.264	0.229
At most 7 *	0.147	4.483	3.841	0.034	4.483	3.841	0.034

Notes: * denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values; Trace test indicates 6 cointegrating eqn(s) at the 0.05 level; Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

According to trace test statistics, the null hypothesis is rejected because the trace statistic value is greater than the critical value ($274.577 > 159.529$) while the probability value is less than 5% (P-value = 0.000). This means that there is at least one cointegrating vector. A further review indicates that we reject the null hypothesis for asterisks ranking one–five, as well as seven since the trace statistic value is greater than the critical values. The corresponding probability values are less than 5%. In sum, there is at least one cointegrating vector and results indicate that at least six equations are cointegrated to order one $[I(1)]$ at 0.05 critical level.

Considering the Max-Eigen results, the null hypothesis indicating no cointegrating equations is also rejected. This is because the Max-Eigen Statistic is greater than the critical value $(102.763 > 52.362)$, while the probability value is less than 5% (P-value = 0.000). This means that there is at least one cointegrating vector. Based on the trace Statistic Test and Max-Eigen Test, the series are cointegrated to the same order $[I(1)]$, as indicated in Annex 9.1. Also, there exists a long-run relationship among the series employed in this study. After establishing that a long-run relation exists among the vectors, our next step is to examine the manner in which this association exists. The long-run relationship is interpreted based on the hypothesis mentioned in Chapter Seven.

9.2.2 Long-Run Relationships Among Cointegrating Variables

The detailed cointegration test results reflected in Annex 9.2 indicate the error correction term. The error correction model captures both the long-run and short-run behaviour of the relationships among integrated series. In this way, it becomes possible to study the short-run dynamics that work back towards the long-run equilibrium relation. To indicate the long-run relationships, the results are extracted from the normalised cointegrating coefficients. The table below illustrates the long-run relationship coefficient results.

Table 9.3: Summary results of the long-run simulation

LNOP	LNPOV	LNUCPI	LNTOU	LNHC	LNGDP	LNFDI	LNEMP
1.000	0.485	0.131	0.172	-0.006	-0.352	0.040	0.349
	1.000	-0.386	0.448	-0.605	0.582	0.275	6.953
		1.000	0.990	-0.362	-3.085	0.562	-20.020
			1.000	-0.987	2.439	-0.798	29.762
				1.000	-3.452	0.671	-32.694
					1.000	-0.328	8.979
						1.000	17.801

Note: standard error in parentheses excluded (For details refer to Appendix 9.1)

The theoretical table is interpreted to mean that a shift of negative one leads to a long-run change of positive one in both variables. In terms of elasticity, a negative sign indicates inelastic elasticity, while a positive sign denotes elastic elasticity. According to interpretation, the signs of the coefficients for openness are contrary with those predicted in regard to tourism, FDI and employment. According to the results, an increase in tourism, FDI and employment by 10% reduces the openness index by 17.2%, 4% and 34.9%, respectively. This could partly be due to the fact that as more FDI comes into the country, the government begins to screen the quality, so the openness index declines. But in Uganda, as a developing country, this is likely not the case. Also, the findings indicate that increasing poverty and inflation reduces openness by 48.5% and 13.1%. When inflation and poverty increase in a developing nation there is a greater need for openness, requiring an increase in foreign inflows. However, poverty, inflation, human capital and economic growth are consistent with the predicted signs. Regarding poverty and inflation, a 10% increase in each reduces openness by 48.5% and 13.1%, respectively. Also, a 10% increase in human capital and economic growth increases openness by 0.6% and 35.23%, respectively.

The signs for poverty indicate a weakness for human capital and inflation. According to the results, a 10% increase in human capital increases poverty by 60.5%. Meanwhile, other variables' findings are consistent, as a 10% increase in inflation increases poverty by 38.66%, and the relationship in inelastic. A further review indicates that a 10% increase in tourism, economic growth, FDI and employment reduces poverty by 44.8%, 58.24%, 27.54% and 695%, but the relationship is elastic.

The results indicate that a 10% increase in tourism and FDI reduces inflation by 99% and 56.24% respectively, and this is inelastic. A further review indicates that weaknesses, human capital, economic growth and employment increase inflation, contrary to the predicted signs. This can partly be explained by inflation through *seigniorage* tax. This is because in Uganda, as a least-developed nation, most poverty reducing programmes such as subsidies, infrastructure development and social services are financed through money expansion.

Human capital and FDI increase tourism by 98.71% and 79.89%, respectively. However, economic growth and employment are not consistent with the theory. Economic growth and employment reduce tourism by a large proportion. This could in theoretical terms, be explained by Uganda being a least-developed country with poor infrastructure and social services, as well as security. As a result, tourists find little incentive to travel to Uganda.

Economic growth and employment increase human capital and the relationship is inelastic. However, FDI reduces human capital by 67.17%, contrary to the predicted signs of theory. Further, findings indicate that FDI increases economic growth by 32.89% and the relationship is inelastic. Finally, employment reduces economic growth and FDI, which could be attributed to TFP of labour. This could mean that most of Uganda's LF is unskilled. This could be true, as Uganda is a least-developed nation.

The purpose of this chapter is to estimate the long and short-run relationship among series, and then conduct ex-ante forecasting. The long-run relationship among series has been explained by employing the normalised cointegrating coefficients. To explain the short-run relationship among endogenous variables, the study establishes a simultaneous equation. This is followed by estimating the equation employing VAR through VECM as a basis for establishing short-run dynamics and conducting ex-ante forecasting.

9.3 Simultaneous Equation Model Specification

This study previously indicated that civil war, a dummy variable, is included in this study. The study employed the Chow tests to determine the dummy break-even point. The tests in indicated that the break-even point was 1995. This year was when the Constitution was promulgated, after the military regime of the 1970s. Despite establishing the break-even point when a dummy is included in the data, the model becomes explosive. As such, a dummy variable is excluded from the study.

The study establishes a simultaneous equation comprised of five endogenous variables, namely economic growth, employment, poverty, tourism and FDI. The explanatory variables are inflation, openness and human capital. These are categorised as exogenous, based on theory. First, in the Solow-Swan Model, human capital is exogenous while openness is treated as innovation. Second, these variables are driven by policy from the GOU due to the need to reconstruct the nation after the years of political instability. In particular as explained in Chapter Two, the GOU introduced UPE as a means of improving the human capital base. Later in 2007 USSE was introduced. In this respect openness and human capital as well as inflation explain economic growth, employment and poverty from outside the model.

Table 9.4: Summary display of VECM systems model

Variable \ Equation		Eq_1	Eq_2	Eq_3	Eq_4	Eq_5
Endogenous		*Economic growth*	*Employment*	*Poverty*	*Tourism*	*FDI*
	Economic growth	*	*	*	*	*
	Employment	*	*	*	*	*
	FDI	*	*	*	*	*
	Tourism	*	*	*	*	*
	Poverty	*	*	*	*	*
Exogenous	*Inflation*	*	*	*	*	*
	Openness	*	*	*	*	*
	Human capital	*	*	*	*	*

Notes: * Explanatory variables for each dependent variable. All exogenous variables are applied equally

All series have been transformed into logarithmic tests and unit root tests, and endogeneity tests have been conducted, as well as cointegration analysis. VAR is employed through the VECM procedure to examine the long-run relation using the error correction term, to examine the short-run relationship among series, and later conduct ex-ante forecasting.

9.4 Simultaneous Equation Estimation Employing VAR

This study previously demonstrated that the series for the variables employed in this study are non-stationary at level but stationary at first difference, and that the series are cointegrated to the same order $[I(1)]$. It has also demonstrated that the roots of the companion matrix of the system lie inside the circle and are all less than one in absolute terms, and that after cointegration tests, a long-run relationship exists among the variables. The study estimates the simultaneous equation as a basis for establishing a short-run relationship, by employing VAR through VECM procedure. Another approach that would have been employed is the Angle and Granger Model, but this is suitable when conducting a test with two variables. Therefore, the VECM systems approach is suitable because this study is comprised of eight variables. When a VECM systems approach is employed, the error correction term becomes equivalent to the number of cointegrating relationships. Also, while employing VECM, the long and short-run relationships between the endogenous and exogenous variables are investigated simultaneously. Finally, the impulse response and variance decomposition is calculated to indicate how variables react to innovations and shocks. It can be concluded that a VECM systems approach can be applied in this study, as preconditions are met.

9.4.1 Results of the Simultaneous Equation Estimated by VAR

Employing VAR, the model is estimated via VECM procedure using two lags, where the endogenous variables are transformed to first difference via the error correction term. The results of the estimated model are indicated in Figure 9.8. The first part, the error correction term, indicates the long-run equilibrium, while the second reflects the short-run relationship. Before interpreting and conducting the short-run simulation and ex-ante forecasting, the VECM model is validated for policy analysis.

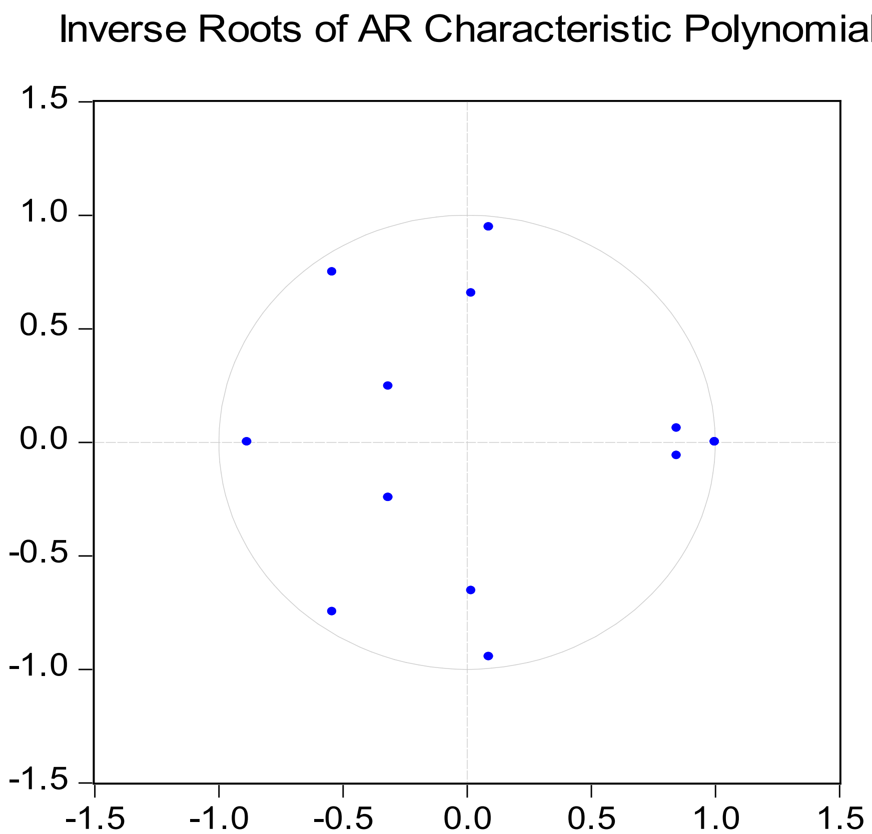
9.4.1.1 Diagnostic Tests of the Results of the Simultaneous Equation Estimated by VAR

The result of the VECM systems model is validated for stability, serial correlation and normality. Due to insufficient observations, we were unable to test for heteroscedasticity. However, all variables were transformed into logarithmic form for the purpose of taking care of heteroscedasticity. Also, homoscedasticity is related to model instability. Testing for model stability and transforming series into logarithmic terms can take care of heteroscedasticity. In addition, the residual graphs of the endogenous variables are another way of taking care of heteroscedasticity.

9.4.1.1.1 Model Stability

It is common practice during economic analysis to confirm the model adequacy. Model quality and stability are conducted to indicate the suitability of the parameters to the model across all sub-samples of data employed. Table-8.3 indicates that the series employed in this study are non-stationary at level, but only stationary at first difference. As such, to avoid invalid results, it is necessary to test the companion matrix of the VECM model with m endogenous variables and r cointegrating equations possessing $m - r$ eigenvalues. The model is stable and not misspecified, as the general distributions of the entire companion matrix roots lie inside.

Figure 9.1: Roots companion matrix distribution



As illustrated above, the study concludes that the model employed in this study is stable and able to produce sufficient results for economic analysis. After the stability test, the residuals are further tested for absence of autocorrelation, serial correlation and normality.

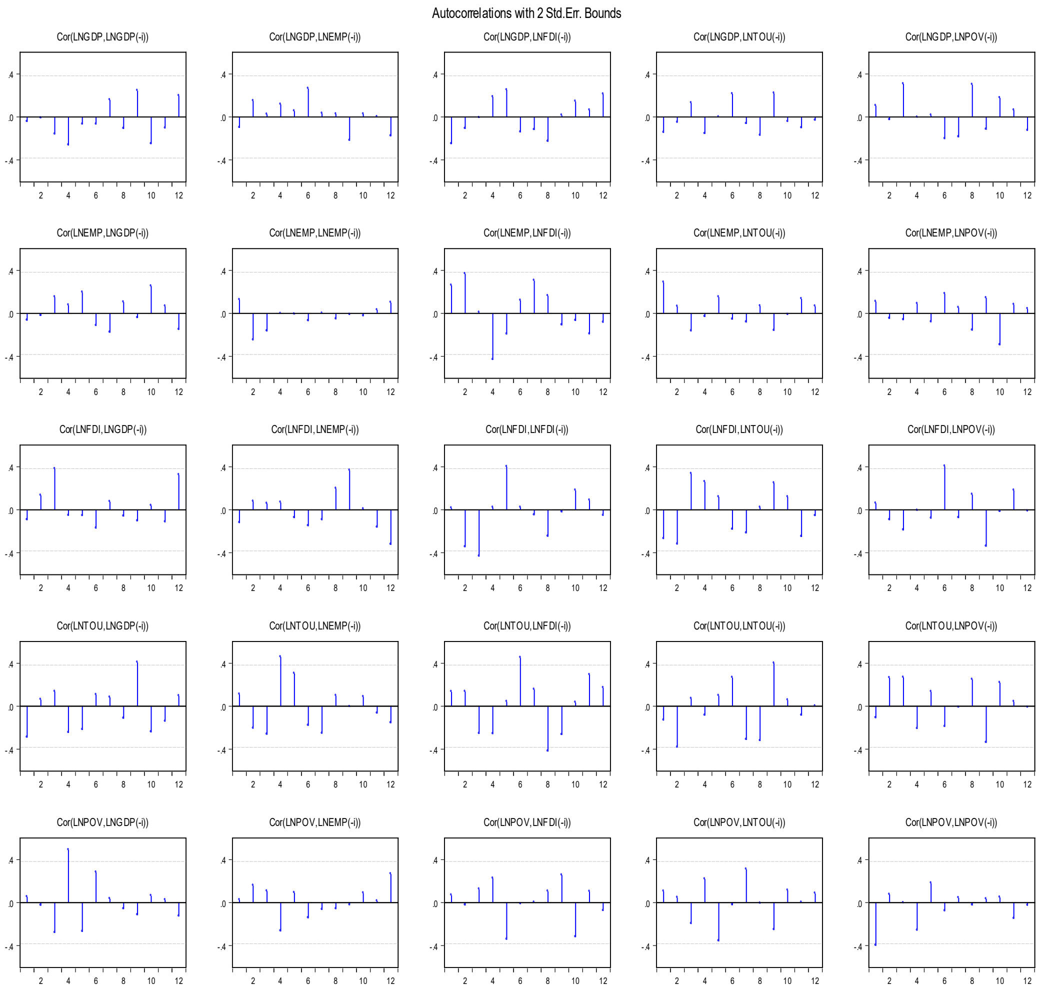
9.4.1.1.2 Residual Test for Serial Correlation

In order to test for serial correlation, this study employs the correlogram residual test, residual portmanteau tests for autocorrelations and the LM Test.

9.4.1.1.3 Correlogram Autocorrelation Residual Test

To test for autocorrelation, we begin with the visual test that involves constructing residual correlogram graphs. The results of the residual correlogram graphs are illustrated below.

Figure 9.2: Results of the residual correlogram graphs



The results demonstrate that autocorrelation lies between the standard limits of -1 and 1, meaning that the model is free from autocorrelation. Based on the correlogram residual test, the model is valid. As a further validation procedure, the study conducts residual portmanteau tests.

9.4.1.1.4 Residual Portmanteau Tests for Autocorrelations

In mathematical terms, autocorrelation can be tested by employing the residual portmanteau tests for autocorrelations. The hypothesis for the residual portmanteau tests indicates that there is autocorrelation between the current value and the previous value for each endogenous variable in the study. The portmanteau tests are based on the Ljung-Box Q-Statistics and the corresponding probability values. The test statistic for the Q-Statistics is reported as Chi-square Q distributions with a null specified where the Q-Statistics probability values are greater than 5% $(P - value > 0.05)$. The results of the portmanteau tests for autocorrelations based on the Q-Statistic test are indicated below.

Table 9.5: VEC residual portmanteau tests for autocorrelations

Lags	Q-Stat.	Sty.	Adj Q-Stat.	Prob.	Df
1	20.412	NA*	21.197	NA*	NA*
2	41.811	NA*	44.309	NA*	NA*
3	67.495	0.016	73.202	0.005	45
4	93.103	0.033	103.26	0.006	70
5	108.370	0.164	122.001	0.032	95
6	134.878	0.167	156.083	0.014	120
7	161.592	0.164	192.147	0.005	145
8	184.193	0.216	224.264	0.003	170
9	197.889	0.428	244.808	0.008	195
10	216.985	0.544	275.137	0.006	220
11	231.404	0.724	299.468	0.009	245
12	245.874	0.851	325.514	0.011	270
13	262.531	0.913	357.638	0.007	295
14	271.900	0.976	377.098	0.015	320
15	279.687	0.995	394.619	0.033	345
16	289.586	0.999	418.917	0.040	370

The Q-Statistics results indicate the absence of autocorrelation at lag order 2. The Chi-square Q-Statistics probability values are greater than 5% $(P - value > 0.05)$, meaning that the model is free from autocorrelation. Based on the portmanteau tests for autocorrelation, the model is valid.

9.4.1.1.5 Autocorrelation Residual LM Test

The LM Test is commonly used to test for serial correlation in autoregressive model–one $[AR(1)]$. LM Test statistic computes lag order p based on an auxiliary regression of the residuals of the estimated regression under the hypothesis that there is no serial correlation from lag one. The results of the LM are indicated below.

Table 9.6: Residual serial correlation LM tests

Lags	**LM-Stat**	**Prob**
1	35.563	0.078
2	30.329	0.212

The probability values of the LM Test are greater than 5% $(P - value\ > 0.05)$, indicating the absence of serial correlation among the residuals. All tests conducted indicate absence autocorrelation and serial correlation. It can be concluded that the VECM model is valid for economic analysis. Finally, the normality tests are conducted.

9.4.1.1.6 Residual Normality Tests

Residual tests require checking data for normality as a precondition for producing reliable probability value results. This is because times series employed are based on the assumption that that data is normally distributed. The standardised residuals of skewness and kurtosis are tested and validated by the JB test, under the testable hypothesis that data is normally distributed. The normality test results are summarised below.

Table 9.7: Residual normality tests

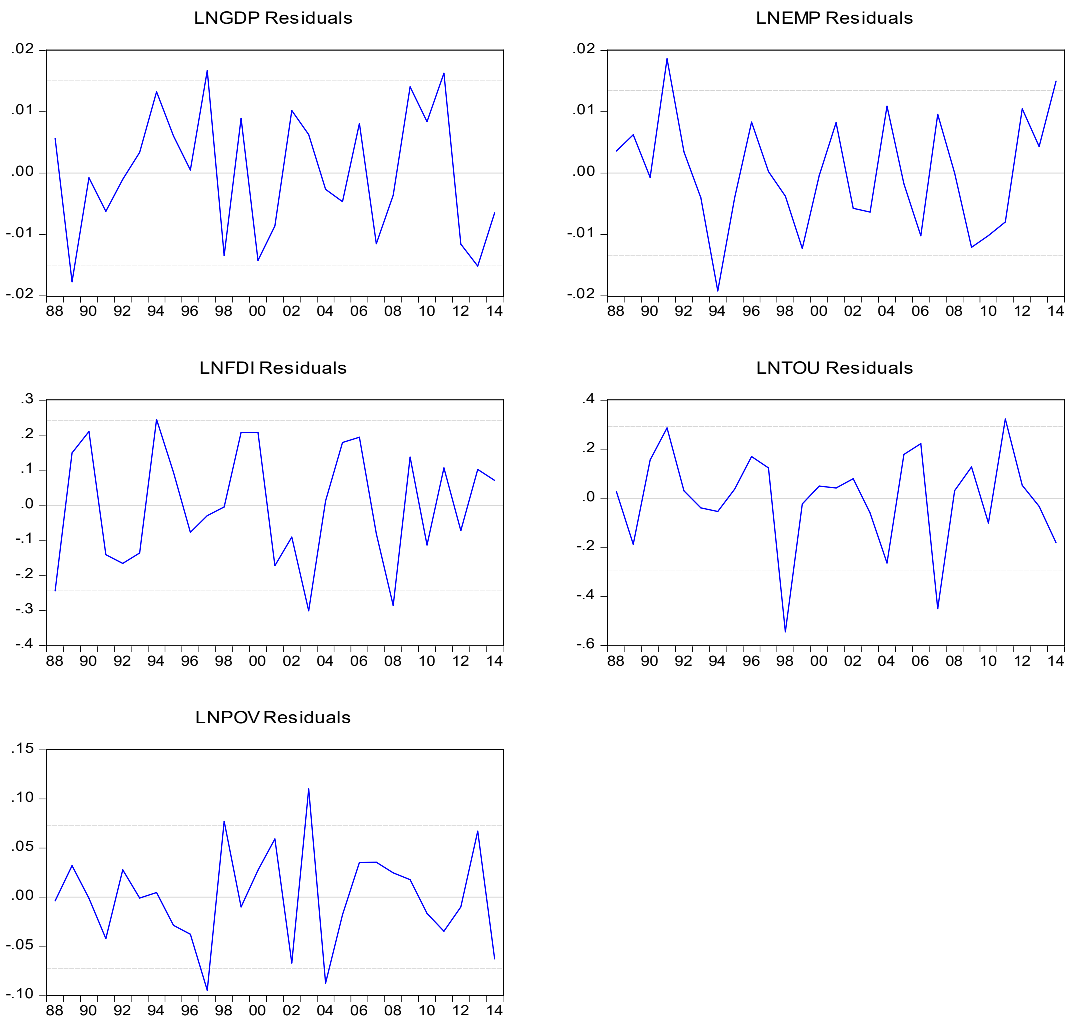
Component	Skewness	Chi-sq	Df	Prob.
1	-0.039	0.007	1	0.933
2	0.344	0.535	1	0.464
3	-0.669	2.016	1	0.155
4	-0.708	2.261	1	0.132
5	0.069	0.021	1	0.883
Joint		**4.841**	**5**	**0.435**
Component	**Kurtosis**	**Chi-sq**	**Df**	**Prob.**
1	1.854	1.476	1	0.224
2	2.427	0.368	1	0.543
3	2.404	0.398	1	0.527
4	2.657	0.132	1	0.716
5	2.734	0.079	1	0.778
Joint		**2.455**	**5**	**0.783**
Component	**Jarque-Bera**	**Df**	**Prob.**	
1	1.484	2	0.476	
2	0.903	2	0.636	
3	2.415	2	0.298	
4	2.393	2	0.302	
5	0.100	2	0.950	
Joint	**7.2972**	**10**	**0.697**	

Skewness is $-1 > 0 > 1$ while the kurtosis is indicated by $1 > 3$. The JB Chi-square statistical probability value is insignificant in all cases. Therefore, we accept the null hypotheses and conclude that the data is normally distributed, meaning that the VECM systems model employed in this study is normally distributed and valid for economic analysis.

9.4.1.1.7 Heteroscedasticity Test

There are two options for testing for heteroscedasticity in Eviews: white heteroscedasticity employs cross terms and no cross terms. However, we were unable to test for heteroscedasticity due to insufficient observations. All series must be transformed into logarithmic form. The VECM model employed in this study has been tested for stability. According to the stability tests, the model is valid for economic analysis. Further, variance can be detected by the manner in which the residual of the visual endogenous graphical display fluctuates. The results of our test are displayed below.

Figure 9.3: Endogenous variables residual graphs



The residual-line graph fluctuates, meaning constant variance for the equations under estimation. We indicated that all series are transformed into log form, and that stability tests indicate that the VECM model is stable. Since the endogenous variables residual graph indicates constant variance, we can conclude that our VECM systems model is homoscedastic and valid for economic analysis.

All tests for stability, autocorrelation, normality and heteroscedasticity have been conducted. We observe that our VECM systems model is valid and able to provide reliable results. We now describe the short-run test among endogenously related variables.

Table 9.8: Results of the VAR estimated simultaneous equation

Error Correction:	D(LNGDP)	D(LNEMP)	D(LNFDI)	D(LNTOU)	D(LNPOV)
CointEq1	0.022	-0.006	0.132	-0.250	0.060
	(0.005)	(0.004)	(0.083)	(0.100)	(0.024)
	[4.375]	[-1.305]	[1.589]	[-2.489]	[2.418]
D(LNGDP(-1))	-0.464	-0.072	2.819	-3.782	-2.226
	(0.18993)	(0.168)	(3.043)	(3.671)	(0.912)
	[-2.44431]	[-0.426]	[0.926]	[-1.030]	[-2.440]
D(LNGDP(-2))	-0.527	-0.098	5.560	2.867	-3.643
	(0.170)	(0.151)	(2.725)	(3.287)	(0.816)
	[-3.103]	[-0.649]	[2.040]	[0.872]	[-4.459]
D(LNEMP(-1))	1.0405	-1.104	9.146	-19.873	3.679
	(0.402)	(0.357)	(6.444)	(7.774)	(1.931)
	[2.587]	[-3.088]	[1.419]	[-2.556]	[1.904]
D(LNEMP(-2))	0.653	-0.2054	9.562	-22.396	0.412
	(0.319)	(0.284)	(5.121)	(6.179)	(1.535)
	[2.044]	[-0.723]	[1.867]	[-3.624]	[0.269]
D(LNFDI(-1))	-0.035	0.008	-0.363	-0.149	-0.233
	(0.014)	(0.013)	(0.235)	(0.284)	(0.070)
	[-2.444]	[0.635]	[-1.544]	[-0.525]	[-3.302]
D(LNFDI(-2))	-0.006	0.029	-0.1873	-0.250	-0.194
	(0.011)	(0.010)	(0.185)	(0.223)	(0.055)
	[-0.573]	[2.904]	[-1.012]	[-1.124]	[-3.504]
D(LNTOU(-1))	-0.054	0.014	-0.450	0.539	-0.354
	(0.013)	(0.011)	(0.213)	(0.257)	(0.064)
	[-4.105]	[1.240]	[-2.108]	[2.091]	[-5.529]
D(LNTOU(-2))	-0.006	0.008	-0.154	-0.524	-0.219
	(0.012)	(0.010)	(0.19)	(0.235)	(0.058)
	[-0.535]	[0.750]	[-0.791]	[-2.228]	[-3.753]
D(LNPOV(-1))	-0.053	0.020	-1.256	0.892	-0.713
	(0.035)	(0.031)	(0.568)	(0.68)	(0.170)
	[-1.511]	[0.654]	[-2.209]	[1.30]	[-4.185]
D(LNPOV(-2))	-0.029	0.031	-1.376	0.448	-0.447
	(0.028)	(0.025)	(0.461)	(0.556)	(0.138)
	[-1.040]	[1.216]	[-2.983]	[0.806]	[-3.238]
C	1.610	-0.106	-2.949	-5.857	3.175
	(0.332)	(0.295)	(5.328)	(6.428)	(1.597)
	[4.841]	[-0.359]	[-0.553]	[-0.911]	[1.988]
LNUCPI	-0.0582	0.035	-0.185	1.069	-0.181
	(0.015)	(0.013)	(0.240)	(0.29030)	(0.07213)
	[-3.878]	[2.691]	[-0.768]	[3.683]	[-2.515]
LNOP	0.0211	0.0646	-2.253	1.121	-0.401
	(0.037)	(0.033)	(0.601)	(0.725)	(0.180)
	[0.563]	[1.936]	[-3.745]	[1.544]	[-2.224]
LNHCAP	-0.088	-0.000	0.096	0.140	-0.171
	(0.021)	(0.019)	(0.345)	(0.416)	(0.103)
	[-4.088]	[-0.022]	[0.280]	[0.337]	[-1.658]
R-squared	0.7580	0.7023	0.784	0.805	0.838
Adj. R-squared	0.4758	0.3550	0.534	0.578	0.651

Notes: Standard errors in ( ) & t-statistics in [ ]

9.4.2 Simultaneous Equation Short-Run Simulation and Analysis

As explained by the procedure employed in this study, the results comprised of two parts: the error correction term and the short-run. The VECM systems approach introduces a channel to estimate a causal relationship among endogenous variables. The system allows a simultaneous examination of the error correction terms and lagged values for each variable by joint F-statistics or Wald Chi-square test. In this way the system first serves as a diagnostic F-statistics or Wald test, to understand the causality among the lagged values. Second, the system serves as a short-run causality simulation test. The results of the short-run test are presented below.

Table 9.9: Variables diagnostic F-/Wald tests and short-run test

Dependent Variable: Economic growth

Lags	Chi-sq	Prob.
Excluded	7.059	0.029
D(LNEMP)	6.629	0.036
D(LNFDI)	18.542	0.000
D(LNTOU)	2.735	0.254
D(LNPOV)	22.432	0.004
All		

Dependent Variable: Employment

Excluded	Chi-sq	Prob.
D(LNGDP)	0.503	0.777
D(LNFDI)	9.457	0.008
D(LNTOU)	1.603	0.448
D(LNPOV)	1.603	0.448
All	15.110	0.057

Dependent variable: Poverty

Excluded	Chi-sq	Prob.
D(LNGDP)	21.993	0.000*
D(LNEMP)	4.850	0.088**
D(LNFDI)	15.312	0.000*
D(LNTOU)	33.104	0.000*
All	38.998	0.000*

Dependent variable: FDI

Excluded	Chi-sq	Prob.
D(LNGDP)	4.383085	0.111
D(LNEMP)	3.619835	0.163
D(LNTOU)	4.453877	0.107
D(LNPOV)	11.11288	0.003*
All	34.63925	0.000*

Dependent variable: Tourism

Excluded	Chi-sq	Prob.
D(LNGDP)	2.3623	0.306
D(LNEMP)	13.349	0.001*
D(LNFDI)	1.267	0.530
D(LNPOV)	1.928	0.381
All	18.400	0.018*

Notes: *Significant at critical level= 5%, **10%; Degrees of freedom for each = 2 while joint=10

According our findings, there exists a short-run relationship from the explanatory variables to the independent variable, as indicated by the Chi-square joint statistics probability values. The VECM systems Granger causality tests are similar to the earlier results obtained from the Pairwise Granger causality tests. First, economic growth and tourism do Granger-cause poverty, while poverty does Granger-cause FDI in Uganda. However, the findings in this section depart from the Pairwise Granger causality tests in that previously, GDP does Granger-cause employment, while in this test it does not. Tourism previously does Granger-cause FDI, while in these results it does not. A further departure is that the findings in this section indicate that tourism, FDI and employment do Granger-cause economic growth in Uganda, with no feedback. In the sense of these findings and previous findings, there exists feedback between economic growth and employment in the country. Also, FDI and tourism do Granger-cause employment, while tourism does Granger-cause FDI. Finally, on the basis of these findings, employment does Granger-cause poverty. The next step is to conduct ex-ante forecasting involving impulse response and variance decomposition tests.

9.5 VECM Systems Ex-Ante Forecasting

Ex-ante forecasting is innovation accounting conducted to establish the extent to which a change in one variable creates a change in another in the next period. In this way, we can conduct innovation impulse response and variance decomposition to forecast and understand the effects of each variable on other variables in the system.

9.5.1 Simultaneous Equation Long-Run Analysis

The results for the error correction term coefficient theoretically indicate a long-run relationship between the dependent variables employment and tourism. However, the $t-statistic$ critical value for employment is low, indicating that the long-run relationship with the explanatory variables is insignificant. Meanwhile, for tourism the $t-statistic$ is more than 2.48 in absolute terms, indicating the existence of a long-run relationship with the explanatory variables. Coefficients measure the magnitude or extent of change in the dependent variable, due to a unit or a percentage change in the explanatory variable. Tourism and employment is inelastic, while economic growth, FDI and poverty are elastic.

9.5.2 Impulse Response

Impulse response refers to the immediate effect of innovation or shock resulting from one series to other series within the system. This is a tool through which the reaction of one variable to an impulse or shock on another variable in the system can be explained. As a function, impulse response traces the effect of a one-time innovation to one of the shocks on current and future values of the endogenous variables. A VAR model impulse response is indicated as a positive shock on one standard deviation to the error terms in the model, so as to observe the reaction of the variables. The effects of innovation within the system are computed based on the variable's residuals, such that innovations on $\in_t$ by one unit create a forward movement within the system.

In the system, an innovation to the j^{th} variable does not only directly affect the j^{th} variable, but rather the effects of that innovation are transmitted to all other endogenous variables through the VAR dynamic lag structure. To this extent, an impulse response function traces the effect of a one-time innovation to one of the shocks on current and future values of the endogenous variables. To analyse impulses in a system, the exogenous and deterministic variables are treated as fixed (Lütkepohl et al. 2006). In Eviews, impulse response can be indicated, employing the Monte Carlo procedure via the Cholesky-dof adjusted ordering. The Monte Carlo approach is comprised of two approaches. First, the approach offers simulations on $\emptyset$ from the asymptotic distribution. Second, VAR is simulated, enabling $\emptyset_i$ to create estimated results that can be interpreted. The Cholesky ordering employs the Cholesky inverse factor of the residual covariance matrix to orthogonalize the impulses.

The results of the impulse response simulation are indicated in Table 9.10, comprising 10 years ex-ante forecast. Each endogenous variable is indicated in the manner in which its one positive standard deviation shock affects its own future and other endogenous variables in the system. The forecast period into the future is 10 years for each endogenous: economic growth, employment, poverty reduction, tourism and FDI. The effect of innovations is indicated by the path from year one to the short-run and the long-run, expressed as positive or negative. An account for each endogenous variable can easily be explained by considering the extent of the effect of either negative or positive from short-run to long-run.

9.5.2.1 Economic Growth Impulse Response Function Interpretation

In Uganda, economic growth forecast indicates a positive trend through shocks and innovations with fluctuations. Results indicate that economic growth own shock, innovations from tourists' expenditure and poverty reduction will account for increasing economic growth in the country. First, a one standard deviation positive own shock will cause a change from 0.004 in the short-run, and continue to increase to 0.018 in the long-run. Second, forecast indicates that the positive impact from tourism to economic growth extends from the short-run to the long-run. According to the simulation, a one positive standard deviation shock from tourism will cause economic growth to increase by 0.0004 in the short-run. The shocks will continue to make economic growth increase by 0.0009 in the long-run, thus increasing tourism, which is important. This is partly explained by literature which indicates that tourism is the main single foreign earner for the country. Third, innovations for poverty reduction cause economic growth to increase over 10 years. Simulations indicate that a one positive standard deviation shock to poverty will cause economic growth to increase by 0.007 in the short-run and continue to increase by 0.025 in the long-run. This means that reducing poverty is important for the nation to experience accelerated economic growth.

However, innovations from FDI and employment of LF indicate that Uganda's economic growth will decline in the next years. Innovations from employment to economic growth indicate that throughout the period of 10 years, the impact of economic growth will be negative. This is because a one positive standard deviation shock to employment in the short-run will cause economic growth to decline by -0.013. The impact continues in the long-run, where a one positive standard deviation shock to employment causes economic growth to decline by -0.064. Similarly, our observations from FDI innovations to economic growth also indicate a negative impact. A one positive standard deviation shock from FDI will cause economic growth to decline from -0.007 in the short-run to -0.056 in the long-run.

This trend is not good for the country. This could be attributed declining FDI yet as a foreign capital resource it is essential for bridging the low private capital base for the nation. Also Uganda being least developed nation factor input productivity could be low. This means that labour is highly unskilled while technology is low and in-turn low TFP. As a result, if the trend continues, the nation might experience declining economic growth as demonstrated by the simulations. Second, constant returns to scale explained the Solow-Swan model is a critical property which indicates that macroeconomic stability is important for Uganda. According to literature as explained in Chapter Two Uganda experiences worsening terms of trade. Also the nation inflation is a key indicator for macroeconomic stability is concern for the nation. CPI increased from 154 percent per annum in 1985 to 216.05 percent per annum in 2014. As a result, if macroeconomic instability continues in the country, the nation will experience declining economic growth. However, we found poverty reduction to be important because economic growth depends on the extent to which poverty reduces. We also found tourism to have a positive impact on economic growth in the short-run into the long-run. In this way increasing tourism is important for Uganda.

Table 9.10: Impulse response analysis

		Response of LNGDP:			
Period	LNGDP	LNEMP	LNFDI	LNTOU	LNPOV
1	0.015	0.000	0.000	0.000	0.000
2	0.008	-0.007	-0.007	-0.001	0.004
3	0.004	-0.013	-0.007	0.004	0.007
4	0.012	-0.023	-0.012	0.008	0.009
5	0.016	-0.029	-0.019	0.006	0.011
6	0.016	-0.036	-0.030	0.005	0.014
7	0.012	-0.043	-0.034	0.009	0.019
8	0.014	-0.052	-0.041	0.012	0.021
9	0.017	-0.058	-0.048	0.011	0.023
10	0.018	-0.064	-0.056	0.009	0.025
		Response of LNEMP:			
Period	LNGDP	LNEMP	LNFDI	LNTOU	LNPOV
1	-0.008	0.010	0.000	0.000	0.000
2	-0.002	0.003	0.001	0.000	-0.000
3	-0.008	0.008	0.007	0.000	-0.000
4	-0.0045	0.011	0.002	-0.004	-0.003
5	-0.006	0.0132	0.010	-0.001	-0.003
6	-0.007	0.013	0.010	0.000	-0.002
7	-0.007	0.016	0.011	-0.002	-0.005
8	-0.004	0.015	0.013	-0.003	-0.005
9	-0.007	0.020	0.015	-0.001	-0.005
10	-0.007	0.019	0.014	-0.002	-0.006
		Response of LNFDI:			
Period	LNGDP	LNEMP	LNFDI	LNTOU	LNPOV
1	0.008	-0.1040	0.218	0.000	0.000
2	0.033	-0.070	0.161	-0.045	-0.013
3	0.134	-0.072	0.180	0.009	-0.005
4	0.168	-0.253	0.169	0.145	0.077
5	0.159	-0.325	0.062	0.128	0.091
6	0.251	-0.466	-0.082	0.060	0.108
7	0.239	-0.549	-0.124	0.142	0.194
8	0.212	-0.660	-0.285	0.185	0.240
9	0.234	-0.813	-0.351	0.192	0.269
10	0.297	-0.922	-0.464	0.193	0.314
		Response of LNTOU:			
Period	LNGDP	LNEMP	LNFDI	LNTOU	LNPOV
1	0.129	0.064	0.058	0.247	0.000
2	0.122	0.103	0.009	0.245	-0.037
3	0.154	0.108	-0.028	0.046	-0.094
4	0.010	0.311	0.018	-0.051	-0.110
5	-0.095	0.463	0.126	0.015	-0.137
6	-0.110	0.525	0.343	0.094	-0.187
7	-0.027	0.653	0.424	-0.013	-0.284
8	-0.023	0.853	0.490	-0.148	-0.353
9	-0.120	0.986	0.648	-0.087	-0.353
10	-0.187	1.086	0.819	-0.008	-0.394
		Response of LNPOV:			
Period	LNGDP	LNEMP	LNFDI	LNTOU	LNPOV
1	-0.027	-0.042	-0.029	0.007	0.042
2	-0.080	-0.028	-0.074	-0.051	0.030
3	-0.091	-0.054	-0.060	-0.046	0.034
4	-0.061	-0.050	-0.021	0.019	0.048
5	-0.049	-0.056	-0.078	-0.013	0.035
6	-0.049	-0.079	-0.072	-0.035	0.039
7	-0.058	-0.075	-0.077	-0.012	0.056
8	-0.073	-0.072	-0.095	-0.010	0.051
9	-0.054	-0.109	-0.084	-0.003	0.055
10	-0.048	-0.099	-0.094	-0.009	0.057

9.5.2.2 Employment Impulse Response Function Interpretation

Impulse response forecast indicates that Uganda's future for the employment of the LF is positive, as indicated by employment shocks. In the short-run, a one standard deviation positive own shock will cause employment to increase by 0.008, but by 0.019 in the long-run. Also, innovations from FDI will cause employment to increase from the short-run into the long-run. According to the results, a one positive standard deviation shock to FDI will cause employment to increase by 0.007, while in the long-run employment will increase by 0.014.

A further review indicates that innovations to tourism have a mixed effect on employment, from positive in the short-run to negative impact on employment in the long-run. One positive standard deviation shock in tourism causes employment to increase by 0.0001 units. However, a similar one standard deviation positive innovation to tourism causes employment to decrease -0.002 in the long-run. Also, positive shocks from economic growth and poverty to employment are negative from the short-run into the long-run. A one standard deviation positive shock from economic growth will cause employment to decline by -0.008 in the short-run. Similarly, one positive standard deviation innovation from economic growth will cause employment to decline by -0.007 in the long-run. Second, a one positive standard deviation shock to poverty causes employment to decrease by -0009 in the short-run, while poverty will cause a steady decline to -0.006 in employment in the long-run.

In conclusion, the results indicate that in the long-run, employing Uganda's LF is important for increasing job creation, as indicated by an employment innovation impact. It was also found that the FDI as capital in production is necessary for increasing output and creating employment. However, concerns arise since economic growth and poverty undermine employment creation. According to theory and literature, economic growth of a nation depends on production. Second, impulse response of factor inputs will cause economic growth to decline in Uganda. In this regard, the contribution of FDI on employment is likely to be affected by the declining economic growth. Also, the declining FDI for the country is not good yet according to literature foreign capital is important for a least developed nation such as Uganda. Furthermore, the study finds mixed results for tourists' expenditure on employment. In the short-run employment will increase but shocks from tourism will cause employment to decline in future. This could attribute to declining tourists' expenditure in Uganda as observed in Chapter Two and the preliminary investigation in Chapter Eight. In this regard, increasing tourism is important for Uganda.

Finally as earlier explained, TFP is important for Uganda's future. In this way economic growth, employment and poverty reduction in the country depends on increasing technology and human capital development in the country. Also the ASSM constant returns to scale means that macroeconomic stability in Uganda is important. As such controlling inflation is key increasing economic growth and employment. With these limitations stayed, it is probable that if FDI and tourism inflows increase, improved economic growth will lead to increasing employment. In turn, poverty will reduce in the long-run.

9.5.2.3 Poverty Impulse Response Function Interpretation

Forecasts indicate that poverty will be a concern for the nation, and that it will increase. A one standard deviation negative own shock leads poverty to increase by 0.034 in the short-run, and by 0.057 in the long-run. This can partly be attributed to highly insecure non-poor people who comprise 40% of the population. Such a large number of people vulnerable to sliding into poverty means that poverty can easily increase in the future. However, innovations from economic growth, employment, FDI and tourism can all cause poverty to decline. In the short-run, a one positive standard deviation shock to economic growth causes poverty to decline by -0.019; to employment causes a decline of -0.549; to FDI causes a decline of -0.060; and to tourism causes a decline of -0.046. According to the results, in the long-run a one positive standard deviation shock to economic growth causes a -0.048 decline in poverty; employment causes a decline of -0.099, FDI causes a decline of -0.094; and tourism causes a decline of -0.009.

In conclusion, the study finds that innovations to employment followed by FDI will have the largest impact on poverty reduction in Uganda in the long-run. We can observe that increasing FDI and policies that have positive effects on the country's employment important for poverty reduction. We also find increasing economic growth to be quite important, as poverty will decrease in the long-run. Finally, tourism as an export is important for poverty reduction, since increasing tourism reduces poverty. Exports spur an increase in production as demand abroad has a cyclical effect on economic growth and employment, thus reducing poverty.

9.5.2.4 Tourism Impulse Function Response Interpretation

Impulse response forecast indicates tourism uncertainties, considering tourism's shocks and innovations to economic growth and poverty. One standard deviation positive own shock causes tourism to increase by 0.046 in the short-run. Meanwhile, a similar positive one standard deviation own innovation leads tourism to decrease by -0.008 in the long-run. The findings indicate that one standard deviation positive shock to economic growth causes tourism to increase by 0.154 in the short-run. A similar one standard deviation positive innovation to economic growth accounts for a -0.187 decline in tourism in Uganda in the long-run. Further, one positive standard deviation innovation to poverty causes tourism to decline by -0.094 in the short-run. Also, tourism further declines by -0.394 in the long-run as a result of poverty in Uganda.

Innovations to employment account for positive fluctuations in tourism, both in the short-run and the long-run, although a mixed impact is observed regarding shocks to FDI. Findings indicate that one positive standard deviation shock to employment accounts for a 0.108 tourism increase in Uganda. A similar positive one standard deviation innovation to employment causes tourism to increase by 1.086 in the long-run. A further review indicates that one positive standard deviation innovation to FDI causes tourism to decline by -0.028 in the short-run. However, a similar one standard deviation positive shock to FDI significantly causes tourism to increase by 0.819 in the long-run. Poverty and the need for economic growth and job creation are concerns for tourism growth. There is the need to create adequate policies that lead to an increase in tourism in the country.

9.5.2.5 FDI Impulse Response Function Interpretation

The findings indicate that innovations to employment decrease FDI in Uganda from the short-run to the long-run. FDI own shock and innovations from poverty are mixed, meaning impact is both negative and positive. First, findings indicate that a one standard deviation positive own shock will cause FDI to increase by 0.180 in the short-run, but FDI declines by -0.464 in the long-run. Second, one standard deviation positive shock to poverty causes FDI to decline by -0.005 in the short-run, but increases by 0.314 in the long-run. Third, innovations for employment to FDI are negative throughout the forecast period of 10 years. One standard deviation positive innovation to employment causes FDI to decline by -0.072 in the short-run, and accounts for a -0.922 decline in FDI in the long-run. However, a further review indicates that one standard deviation positive innovation to economic growth accounts for a 0.134 increase in FDI and a 0.297 increase in FDI inflows in the long-run. Finally, one standard deviation positive innovation to tourism causes FDI to increase by 0.009 in the short-run. A similar one positive standard deviation shock to tourism causes FDI to increase by 0.193 in Uganda in the long-run.

In conclusion impulse response first indicates that FDI and employment of Uganda's LF causes the country to experience declining economic growth. We found that the impact of FDI own innovations in the long-run will cause FDI to decline. Also, the impact of FDI innovations will, in the long-run, cause employment to decline, meaning that unemployment and poverty will increase. This could be attributed to declining fluctuating FDI in Uganda. As foreign capital, the country is expected to be experiencing increasing FDI. Also this could be attributed to low TFP. Uganda being a least developed nation technology is low and labour force is semiskilled.

9.5.3 Variance Decomposition

Variance decomposition is adopted to forecast the error variance effects for each endogenous variable within a system. In a simple linear equation, for any change in x at time (t) there is a corresponding change in y as a dependent variable. Forecasts from the variance decomposition test try to indicate the manner in which a one standard deviation shock creates variations in arithmetic terms from one period to another among the series. Considering a relationship between x and y, the variance of the dependent variable y is comprised of two relationships. First, in an equation, the relationship is indicated by the expected variance of the dependent variable y with respect to the independent variable. Second, the variance of y causes expected change of its own expected variance value. In a VAR model, variance decomposition attempts to explain the proportion of the variance of the forecast error in predicting $y_t$due structural shock or innovation expressed as: η_t. In this way, variance decomposition analysis tries to indicate the forecast error of a variable in proportion-attributed innovations (shocks) in each variable in the system, including its own internally induced innovations (Wickremasinghe 2011). In this study, based on the Monte Carlo procedure and ordering by Cholesky, the forecast is comprised of short-run (three years), medium-term (five years) and long-run (10 years). The results of variance decomposition forecast for endogenous variables are economic growth, employment, poverty, FDI and tourism.

Table 9.11: Variance decomposition

			Variance Decomposition of LNGDP:			
Period	S.E.	LNGDP	LNEMP	LNTOU	LNFDI	LNPOV
1	0.015	100.000	0.0000	0.0000	0.0000	0.0000
2	0.020	68.597	13.597	1.659	11.358	4.787
3	0.027	41.157	30.869	2.238	15.183	10.551
4	0.042	26.316	44.086	2.466	17.887	9.243
5	0.058	21.474	47.282	1.360	21.539	8.343
6	0.078	16.405	47.493	0.803	27.100	8.196
7	0.099	11.886	48.637	0.532	30.050	8.893
8	0.123	9.083	49.845	0.404	31.781	8.884
9	0.148	7.705	50.315	0.280	33.110	8.588
10	0.174	6.740	49.912	0.242	34.710	8.393
			Variance Decomposition of LNEMP:			
Period	S.E.	LNGDP	LNEMP	LNTOU	LNFDI	LNPOV
1	0.013	42.796	57.203	0.000	0.000	0.000
2	0.014	41.565	56.794	0.239	0.972	0.428
3	0.020	39.672	46.116	0.907	12.846	0.456
4	0.024	30.109	53.582	2.647	10.813	2.846
5	0.030	23.971	53.319	1.772	18.074	2.862
6	0.035	21.265	53.231	2.038	20.715	2.747
7	0.042	18.258	53.944	1.466	22.608	3.721
8	0.047	15.190	53.467	1.155	25.883	4.302
9	0.054	13.168	54.373	0.973	27.283	4.200
10	0.060	12.123	54.707	0.809	27.853	4.506
			Variance Decomposition of LNTOU:			
Period	S.E.	LNGDP	LNEMP	LNTOU	LNFDI	LNPOV
1	0.292	19.698	4.861	75.439	0.000	0.000
2	0.415	18.397	8.617	70.869	1.308	0.807
3	0.469	25.332	12.059	56.271	1.682	4.653
4	0.576	16.802	37.182	37.870	1.376	6.768
5	0.769	10.985	57.232	21.616	3.183	6.981
6	1.021	7.415	58.969	15.096	11.165	7.352
7	1.316	4.507	60.175	9.501	16.703	9.112
8	1.687	2.760	62.177	5.811	19.330	9.919
9	2.095	2.125	62.533	3.866	22.195	9.279
10	2.536	1.995	61.023	3.146	25.078	8.756
			Variance Decomposition of LNFDI:			
Period	S.E.	LNGDP	LNEMP	LNTOU	LNFDI	LNPOV
1	0.242	0.120	18.510	4.309	77.060	0.000
2	0.305	1.251	16.990	2.777	78.772	0.207
3	0.385	12.854	14.116	3.469	69.408	0.151
4	0.545	15.948	28.640	12.714	40.595	2.100
5	0.676	15.928	41.747	12.532	26.602	3.188
6	0.872	17.896	53.729	7.745	17.173	3.454
7	1.092	16.218	59.546	5.944	12.925	5.365
8	1.359	12.924	62.029	4.557	13.891	6.597
9	1.673	10.503	64.611	3.415	14.512	6.958
10	2.022	9.3506	65.023	2.500	15.950	7.173
			Variance Decomposition of LNPOV:			
	S.E.	LNGDP	LNEMP	LNTOU	LNFDI	LNPOV
1	0.072	14.006	33.849	0.0080	17.236	34.898
2	0.147	33.429	11.933	20.557	21.299	12.779
3	0.200	38.806	14.002	19.858	17.416	9.916
4	0.222	38.939	16.440	16.442	15.338	12.840
5	0.251	34.642	18.103	14.477	20.663	12.113
6	0.282	30.445	22.249	14.643	21.130	11.530
7	0.313	28.221	23.904	12.786	22.534	12.553
8	0.347	27.487	23.762	11.254	25.059	12.434
9	0.382	24.798	27.877	9.6750	25.285	12.363
10	0.413	22.630	29.625	8.8355	26.408	12.500

9.5.3.1 Economic Growth, Employment and Poverty Variance Decomposition Interpretation

In the short-run, impulses, innovations or shocks to economic growth account for 41.15% of fluctuations in economic growth own shock. However, the economic growth own shock fluctuations continuously decline to 6.74% in the long-run. Meanwhile, shocks to employment account for 30.86% of fluctuations of economic growth in the short-run. The fluctuations of economic growth due to employment innovations increase in the long-run to 49.91%. In the short-run, shocks to FDI account for 15.18%, poverty reduction accounts for 10.55% and tourism 2.2%. In the long-run, shocks to FDI account for 34.71%, poverty reduction accounts for 8.39% and tourism 0.24%. Shocks to economic growth account for 30.86% of fluctuations of economic growth own shock. Shocks to employment will account for the highest fluctuations in Uganda's economic growth, followed by FDI.

A review of the employment sector indicates that in the short-run, employment own shock accounts for 46.11% of fluctuations of employment in Uganda's LF, but increases in the long-run to 54.70%. Meanwhile, shocks to economic growth cause 39.67% variations of employment in the short-run. However, innovations to economic growth continuously cause declining fluctuations in employment, to 12.12% fluctuations in employment. The shocks to FDI account for 12.84%, tourism accounts for 0.9% and poverty reduction 0.45% of variations in employment respectively in Uganda. In the long-run, shocks to FDI account for 27.85% of fluctuations in employment. Shocks to poverty cause fluctuations of employment to increase to 4.5%. Also in the long-run, shocks to tourism cause employment to decline to 0.8%. Finally, shocks to employment own shock cause 54.7% of fluctuations in employment. As such, employment own shock account for the highest variation of employment in Uganda's LF, followed by FDI shocks.

In the short-run, innovations to poverty reduction own shock account for 9.9% of fluctuations in poverty in the country, but fluctuations increase in the long-run to 12.5%. Innovations to economic growth account for 38.8% of fluctuations in poverty in the short-run. However, shocks to economic growth cause fluctuations to decline continuously to 22.63%. Meanwhile, in the short-run, shocks to tourism account for 19.85%, FDI accounts for 17.41% and employment 14% of fluctuations in poverty in the short-run. In the long-run, shocks to employment cause 29.62% fluctuations in poverty in Uganda, FDI accounts for 26.4% and tourism causes an 8.8% fluctuation. Shocks to employment account for the highest fluctuations in poverty, followed by FDI. We found that innovations to employment cause the largest fluctuations in employment, economic growth and poverty. This is followed by FDI, and tourism causes the least fluctuations in economic growth, employment and poverty reduction.

9.5.3.2 FDI and Tourism Variance Decomposition Interpretation

In the short-run, impulses to FDI account for 69.4% of fluctuations in FDI in Uganda. In the short-run, shocks to employment account for 14.11% of fluctuations in FDI inflows. Also, in the short-run, shocks to economic growth account for 12.85%, tourism accounts for 3.46% and poverty reduction causes 0.15% of fluctuations. In the long-run, shocks to employment cause 65.02% of fluctuations in FDI in Uganda. In the long-run, shocks to economic growth account for 9.35%, poverty reduction accounts for 7.17% and tourism for 2.50% of fluctuations in FDI. Meanwhile, FDI own shocks account for 15.95% of fluctuations of FDI own shock. Shocks to employment account for the highest fluctuations of FDI in Uganda in the long-run. Finally, in the short-run, innovations in the tourism own shock account for 56.27% fluctuations in tourism in Uganda. Shocks to economic growth cause a 25.33% variation in Uganda's tourism in the short-run. Also, in the short-run shocks to employment account for 12.05%, poverty accounts for 4.55% and FDI causes 1.68% fluctuations in Uganda's tourism. In the long-run shocks to employment cause 61.02% fluctuations in tourism. Also, in the long-run, shocks to FDI account for 15.95%, economic growth accounts for 9.36% and poverty reduction causes 7.17% of fluctuations in Uganda's tourism. Meanwhile, shocks to tourism account for 2.5% of fluctuations in tourism own shock in the long-run. Shocks to employment account for the highest fluctuations in Uganda's tourism in the long-run, followed by FDI.

Innovations to employment followed by FDI (including FDI own shock) cause the largest fluctuations in tourism and FDI. The findings indicate that in the long-run, employment of Uganda's LF is important for economic growth, poverty reduction, FDI inflows and tourism. FDI growth in the country is far lower that economic growth. For the country to attain higher levels of economic growth, employment and poverty reduction, there is the need for increasing FDI, as its fluctuations are the second highest. Finally, we previously indicated that tourism is the single largest foreign exchange-earning commodity for Uganda. However, tourism causes the least fluctuations in economic growth, employment and FDI.

9.6 Concluding Remarks

This chapter examined the short and long-run relationships of the variables. This was done by first, checking whether or not cointegrating vectors exist. This was also done to check whether or not a long-run relationship exists among the cointegrating series. According to the findings, employing trace test statistic and Max-Eigen test statistic vectors do cointegrate. Employing the normalised cointegrating coefficients in the long-run relationship among series was interpreted. According to the findings, a long-run relationship among series exists. However, sometimes the signs of the coefficients are not consistent with the predicted signs.

Second, the study checked whether a short-run relationship exists among series. The first section of this chapter involved a cointegration analysis as a means of explaining the long-run and short-run relationships among the series. According to the findings, the series are cointegrated to the same order $[I(1)]$ and as such, a long-run relationship among the variables employed in this study exists. After cointegration simulation, the study examined the extent to which a long-run relation exists among the series. According to the findings, a long-run relationship exists among the variables, indicated by the normalised coefficients, but the results demonstrate some weaknesses. To this end, the long-run findings were validated employing VECM model simulation $t-statistic$ results.

Due to the need to valid the long-run relationship explained by the normalised coefficients of the cointegration simulation, a VECM system model was developed. Also, a VECM systems model was established for a short-run relationship among variables. To achieve these objectives, a VECM simultaneous systems model was established, comprising five endogenous variables and three exogenous variables. The endogenous variables include economic growth, employment, poverty reduction, FDI and tourism. Meanwhile, the exogenous variables employed in this study are CPI, openness and human capital. These variables have been identified as exogenous because of the extent to which government policy in Uganda influences their implementation.

After simulating the aforementioned VECM systems model, the long-run relationship is indicated by an error correction term section, while the second part indicates the short-run. However, before interpreting the results, the VECM systems model was validated for stability, absence of serial correlation and heteroscedasticity, as well as normality. According to the findings, the VECM system model was valid for policy analysis. The results for the error correction term coefficient indicate a long-run relationship between the dependent variables employment and tourism, and the independent variables. However, the $t-statistic$ critical value for employment is low, indicating insignificant long-run relationship with the explanatory variables, meaning the absence of a long-run causal relationship. Meanwhile, in the case of tourism, the $t-statistic$ being more than 2.48 in absolute terms indicates the existence of a long-run relationship with the explanatory variables.

To establish a short-run relationship among the endogenous variables, an F-/Wald test simulation was employed. According to the results, a short-run relationship exists among all endogenous variables. The main objective of this study is to measure the impact of FDI on economic growth, employment and poverty reduction. The findings indicate that FDI does Granger-cause economic growth, employment and poverty reduction with feedback in Uganda. Also, the findings indicate that tourism does Granger-cause poverty reduction and economic growth. Meanwhile, economic growth does Granger-cause poverty. Further, as a least-developed country with abundant LF, employment does Granger-cause economic growth and poverty reduction in Uganda.

Impulse response analysis indicates that FDI and LF employment will cause the Uganda's economic growth to decline. According to theory this is attributed to declining FDI inflows, TFP as wells as the skills for the country's LF. Tourism is indicates as a contributing to economic growth and poverty reduction is important for the country's future. Meanwhile, variance decomposition indicates that employment followed by FDI (including FDI own shock) cause the largest fluctuations in tourism and FDI. As such, employment of Uganda's LF is important for economic growth, poverty reduction, FDI inflows and tourism. Also due to the need to supplement the Uganda's private capital base foreign flows such as FDI are important for the country's future. This is because Uganda is a least-developed country; there is a need for increasing FDI and tourism as an export. However, impulse response indicates that FDI and human capital innovations will cause economic growth of Uganda to decline. Therefore measures that increase FDI are important as well as increasing the country's TFP. In sum, this chapter has simulated and examined the short-run and long-run relationship between the endogenous variables. FDI and tourism as foreign flows contribute to Uganda's economic growth, employment and poverty reduction. The study proceeds to measure the impact of FDI and other explanatory variables on economic growth, employment and poverty reduction in Uganda.

Chapter 10: Estimation of the Impact of Explanatory Variables on Economic Growth, Employment and Poverty in Uganda

10.1 Introduction

In the previous chapter, a simultaneous equation was established after conducting cointegration analysis. The simultaneous equation was the basis for establishing short-run dynamics among the series employing VAR through a VECM procedure. The residual of the model was tested for model stability, normality, constant error variance and autocorrelation of the error term. All the residual tests indicated that the model was valid and reliable. This followed by conducting ex-ante forecasting through impulse response and variance decomposition analysis among the endogenous variables, which are: economic growth, employment, poverty reduction, FDI and tourism.

This chapter measures the impact of the explanatory variables, including FDI on Uganda's economic growth, employment and poverty reduction. Testing the causality among variables was done simultaneously, to further the interrelations. The first section of this chapter conducts causality tests, followed by estimating the system's simultaneous equation using OLS. Later, individual simultaneous equation models are estimated separately using NLLS/ARMA, adopting the Gauss-Newton/Marquardt steps procedure. This procedure was used for easy of presentation, analysis and interpretation of the results. Through this approach, the study is in a position to validate each equation and conduct ex-post analysis in an easy stepwise approach. The study tests causality of some variables included in the systems equation.

10.2 Causality Testing Among Variables

This study previously explained that VECM opens an avenue through which causality can be tested among variables. The VECM Granger causality approach is used to test causality between endogenous variables (economic growth, employment, FDI, tourism and poverty), human capital and openness. This is because this study treats human capital and openness as policy variables in the simultaneous equation in the context of Uganda as a least-developed nation. In the Solow-Swan Model, these variables are exogenous to output. As such, the causality tests are simulated to take care of the concerns of the NGT by first examining the relationship between endogenous variables and human capital. Later, causality tests are simulated, involving endogenous variables and openness.

10.2.1 VECM Granger Causality for Endogenous Variables and Human Capital

This section establishes whether the endogenous variables do Granger-cause human capital, which is not treated as endogenous. Also, this section is intended to further examine the extent of causality among endogenous variables. Table 10.1 presents the results.

Table 10.1: Endogenous variables and human capital VECM Granger causality

Dependent Variable: Economic growth			**Dependent Variable: Employment**		
Lags Excluded	Chi-sq	Prob.	Excluded	Chi-sq	Prob.
D(LNEMP)	1.531	0.465	D(LNGDP)	2.146	0.341
D(LNFDI)	13.296	0.001*	D(LNFDI)	1.280	0.527
D(LNTOU)	6.658	0.035*	D(LNTOU)	0.001	0.999
D(LNPOV)	4.462	0.107	D(LNPOV)	0.007	0.996
D(LNHCAP)	11.887	0.002*	D(LNHCAP)	1.264	0.531
All	21.741	0.016*	All	8.107	0.618
Dependent variable: Poverty			**Dependent variable: FDI**		
Excluded	Chi-sq	Prob.	Excluded	Chi-sq	Prob.
D(LNGDP)	6.976	0.030*	D(LNGDP)	2.791	0.247
D(LNEMP)	0.056	0.972	D(LNEMP)	5.403	0.067**
D(LNFDI)	0.350	0.839	D(LNTOU)	6.118	0.046*
D(LNTOU)	10.663	0.004*	D(LNPOV)	1.016	0.601
D(LNHCAP)	3.043	0.218	D(LNHCAP)	0.202	0.903
All	20.691	0.023*	All	18.723	0.043*
Dependent variable: Tourism			**Dependent variable: Human capital**		
Excluded	Chi-sq	Prob.	Excluded	Chi-sq	Prob.
D(LNGDP)	0.937	0.625	D(LNGDP)	0.188	0.910
D(LNEMP)	2.080	0.353	D(LNEMP)	21.466	0.000*
D(LNFDI)	0.589	0.744	D(LNFDI)	20.736	0.000*
D(LNPOV)	0.183	0.912	D(LNTOU)	18.466	0.000*
D(LNHCAP)	0.080	0.960	D(LNPOV)	1.701	0.427
All	5.142	0.881	All	52.144	0.000*

Notes: *Significant at critical level 5%, **10%; Degrees of freedom for each = 2 while joint=10; in VECM all variables are transformed into logarithmic form

The main objective of this study is to measure the impact of FDI on economic growth, employment and poverty in Uganda. Findings of this simulation indicate that FDI Granger-causes economic growth only. However, tourism and human capital also do Granger-cause economic growth. Tourism also Granger-causes poverty reduction and human capital in Uganda while economic growth Granger-causes poverty reduction and employment Granger-causes human capital. The study further concludes that there are no variables that Granger-cause tourism and employment. Also, short-run causality exists from the independent variables to economic growth, poverty, FDI and human capital. Finally, the study observes that FDI influences poverty in Uganda through spill-over effects such as economic growth and human capital. After examining the causality between the endogenous variables and human capital, we now establish their relationship with openness.

10.2.2 VECM Granger Causality Estimation for Endogenous Variables and Openness

This section presents the causality between the endogenous variables in this study and openness. The results of the test are summarised in Table 10.2, below. The findings indicate that there are no variables that FDI does Granger-cause. However, economic growth, employment and openness do Granger-cause FDI inflow. This simulation also indicates that tourism does Granger-cause poverty and openness in Uganda and that employment does Granger-cause tourism.

Table 10.2: Results of VECM Granger causality tests of endogenous variables and openness

Dependent Variable: Economic growth			**Dependent Variable: Employment**		
Lags Excluded	Chi-sq	Prob.	Excluded	Chi-sq	Prob.
D(LNEMP)	3.550	0.169	D(LNGDP)	3.239	0.198
D(LNFDI)	2.011	0.365	D(LNFDI)	4.315	0.115
D(LNTOU)	2.611	0.271	D(LNTOU)	0.488	0.783
D(LNPOV)	1.088	0.580	D(LNPOV)	0.411	0.814
D(LNOP)	4.455	0.107	D(LNOP)	0.713	0.700
All	9.206	0.512	All	11.225	0.340
Dependent variable: Poverty			**Dependent variable: FDI**		
Excluded	Chi-sq	Prob.	Excluded	Chi-sq	Prob.
D(LNGDP)	2.864	0.238	D(LNGDP)	16.783	0.000*
D(LNEMP)	0.043	0.978	D(LNEMP)	8.5338	0.014*
D(LNFDI)	4.100	0.128	D(LNTOU)	0.3487	0.840
D(LNTOU)	10.286	0.005*	D(LNPOV)	0.2406	0.886
D(LNOP)	1.776	0.411	D(LNOP)	10.489	0.005*
All	19.811	0.031*	All	32.725	0.000*
Dependent variable: Tourism			**Dependent variable: Openness**		
Excluded	Chi-sq	Prob.	Excluded	Chi-sq	Prob.
D(LNGDP)	3.335	0.188	D(LNGDP)	1.014	0.602
D(LNEMP)	4.727	0.094**	D(LNEMP)	1.829	0.400
D(LNFDI)	4.179	0.123	D(LNFDI)	1.405	0.495
D(LNPOV)	0.400	0.818	D(LNTOU)	8.902	0.011*
D(LNOP)	1.167	0.557	D(LNPOV)	2.074	0.354
All	11.646	0.309	All	29.253	0.001*

Notes: *Significant at critical level 5%, **10%; Degrees of freedom for each = 2 while joint=10; in VECM all variables are transformed into logarithmic form

Based on these results, there are no variables that do Granger-cause economic growth and employment. We conclude that there is not short-run causality from the independent variables to tourism, economic growth and employment, as indicated by the insignificant Chi-square probability critical value. Finally, we conclude that there is a short-run causality from the independent variables poverty, FDI and openness. After understanding causality among variables, the study estimates the systems simultaneous equation, so as to understand the impact of FDI and explanatory variables on economic growth, employment and poverty reduction in Uganda.

10.3 Simultaneous Equation Estimation to Measure the Impact of FDI and Explanatory Variables on Economic Growth, Employment and Poverty in Uganda

In the previous chapter, a simultaneous equation was established and estimated by VAR through the VECM procedure. However, the simultaneous equation estimated under VAR through VECM procedure only provides the coefficients, standard errors and $t-statistics$ but there is no provision for probability values. Therefore, there is the need to estimate the simultaneous equation as a basis for measuring the impact of FDI and other explanatory factors on economic growth, employment and poverty in Uganda. This is because $t-test$ statistic is first appropriate for a study involving two samples and within-groups design. As such, this being a simultaneous model interpreting results based on $t-statistic$ results becomes inappropriate. Second, t-statistics are not appropriate for a sample size greater or equal to 30 $(n \geq 30)$ as in this study. The independent variables have the variances of the two groups but are not homogeneous. To establish the impact of the explanatory variables on Uganda's economic growth, employment and poverty, the study estimates the simultaneous equation by employing OLS. This is followed by validating the model and later estimating each simultaneous equation separately.

The simultaneous equation estimated under VAR through VECM systems procedure was validated. This means that the OLS estimator satisfies the properties of an efficient estimator that provides valid results for policy analysis. First, the series are non-stationary at level but stationary at first difference. Second, the series are cointegrated to the same order $[I(1)]$. Third, the roots of the companion matrix of the system lie inside the circle and are all less than one in absolute terms. The number of cointegrating vectors among all variables is equal to the number of endogenous variables. Considering the diagnostic tests conducted in the previous chapter's model specification, stability, normality, variance and covariance all indicate that data fits the model. All the equations in the system have the same exogenous variables. Finally, since only lagged values of the endogenous variables appear on the righthand side of each equation, there is no issue of simultaneity. Therefore, OLS is employed to estimate the five simultaneous equations (economic growth, employment, poverty, FDI and tourism) which provide sufficient results for policy analysis. Meanwhile, the exogenous variables are openness, inflation and human capital. The five equations are included in the system.

10.3.1 Results of the Systems Equation Estimated by OLS

The results of the simultaneous equation are presented in Annex 10.1. As previously mentioned, the results of the OLS estimator are based on the simultaneous equation developed under the VECM systems in Chapter Nine, and the model was validated. The residual is now checked for validity.

10.3.1.1 Systems Equation Residual Test Validation

Validation begins by presenting a graphical visual display.

Figure 10.1: Residual of the VECM systems simultaneous equation estimated by the OLS

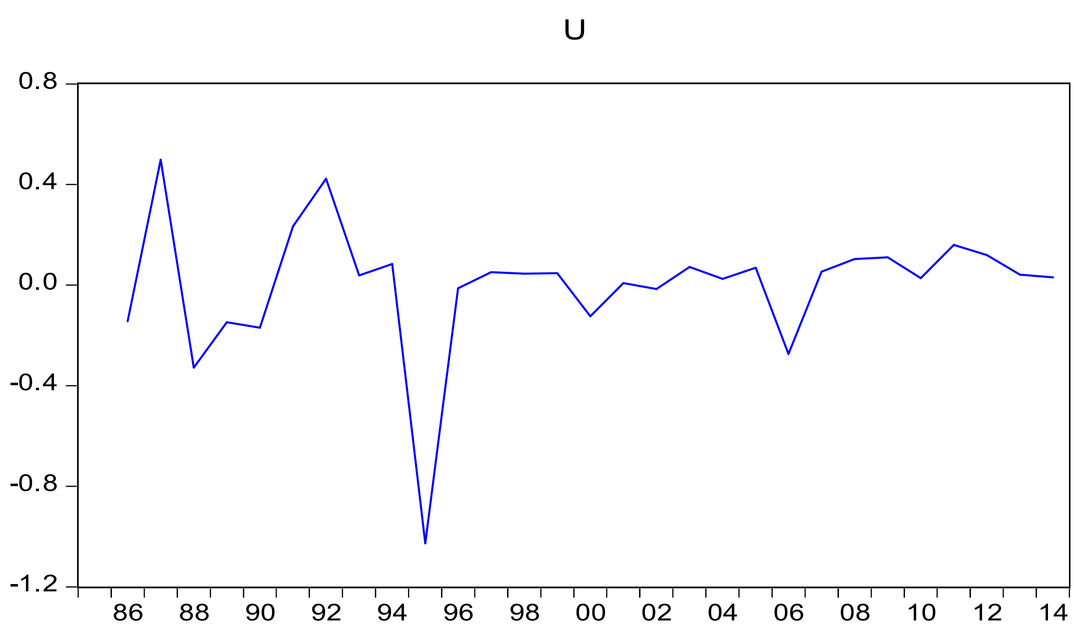


Figure 10.1 illustrates that the residual of systems equation estimated by OLS is stationary, meaning that the results are valid. To confirm validity, the residual is further checked for stationarity, employing the ADF validated by PP and KPSS unit roots tests. The results are presented below.

Table 10.3: Results of the residual unit roots tests for simultaneous equation

	Level			**Difference**		
	Constant	**Constant and Trend**	**None**	**constant**	**Constant and Trend**	**None**
ADF	-5.521	-5.455	-9.319	-9.142	-8.992	-9.319
PP	-7.951	-9.173	-8.349	-13.582	-13.512	-13.969
KPSS	0.500	0.500	N/A	1.786	1.348	N/A

The results indicate that the residual is stationary, meaning that the simultaneous equation is not spurious. Therefore, the study concludes that the whole model has a long-run relationship among the variables, and the results are valid for economic analysis. Since our systems equation results are valid, we now present a summary of estimate results and their corresponding interrelationships.

10.3.1.2 Estimated Results Summary and Interrelationships Among Variables

The results of the simultaneous equation are summarised below indicating only significant explanatory variables. The equations for each endogenous variable are indicated in the columns, while the corresponding explanatory variable is indicated by the rows.

Table 10.4: Summary display systems equation

Equation / **Independent Variable**		Eq_1	Eq_2	Eq_3	Eq_4	Eq_5
Endogenous		*Economic growth*	*Employment*	*FDI*	*Tourism*	*Poverty*
	Economic growth	$(-)\ -$				$(-)\ -$
	Employment	$(+)\ +$	$(-)$		$(-)\ -$	
	FDI	$(-)$	$(+)$			$(-)\ -$
	Tourism	$(-)$			$-$	$(-)\ -$
	Poverty			$(-)\ -$		$(-)\ -$
Exogenous	*Inflation*	$-$	$+$		$+$	$-$
	Openness			$-$		$-$
	Human capital	$-$				

Notes: $(+)$ Denotes that the coefficient during the first lag is significant and positive; $+$ denotes that the coefficient during the second lag is significant and positive; $(-)$ denotes that the coefficient during the first lag is significant and negative; $-$ Denotes that the coefficient during the second lag is significant and negative

Table 10.4 briefly summarises the results of the estimated systems equation. As per the procedure employed, the study now presents the results of each equation. Each equation is validated before the findings are interpreted.

10.4 Estimation, Analysis and Interpretation of the Simultaneous Equations

In this section, the study presents the results of the five simultaneous equations estimated by employing NLLS/ARMA for analysis and interpretation, as earlier explained by the method adopted by the study.

10.4.1 Economic Growth Systems Equation Analysis and Interpretation

The aim of estimating this equation is to measure the impact of FDI and other explanatory variables on Uganda's economic growth.

Table 10.5: Economic growth equation summary results

		Coefficient	Std. Error	t-Statistic	Prob.
Long-run	C(1)	0.022760	0.005201	4.375813	0.000*
Economic growth	C(2)	-0.464251	0.189931	-2.444309	0.030*
	C(3)	-0.527772	0.170069	-3.103278	0.009*
Employment	C(4)	1.040565	0.402160	2.587438	0.023*
	C(5)	0.653363	0.319615	2.044220	0.063
FDI	C(6)	-0.035941	0.014701	-2.444884	0.030*
	C(7)	-0.006618	0.011549	-0.573059	0.577
Tourism	C(8)	-0.054738	0.013332	-4.105826	0.001*
	C(9)	-0.006509	0.012162	-0.535153	0.602
Poverty	C(10)	-0.053630	0.035482	-1.511482	0.156
	C(11)	-0.029947	0.028791	-1.040125	0.318
constant	C(12)	1.610000	0.332517	4.841862	0.000*
Inflation	C(13)	-0.058236	0.015016	-3.878305	0.002*
Openness	C(14)	0.021167	0.037545	0.563763	0.583
Human capital	C(15)	-0.088062	0.021539	-4.088559	0.001*
R-squared		0.758089	Mean dependent var		0.065
Adjusted R-squared		0.475859	S.D. dependent var		0.020
F-statistic		2.686070	DW stat		2.060
Prob(F-statistic)		0.046982			

Notes: *Significant at critical level 5%,

The results indicate that the independent variables explain economic growth by 47.58% jointly, as indicated by the adjusted R-square. The F-statistics is significant, as indicated by $probability - value = 0.04$ meaning that that the independent variables jointly affect economic growth. We now conduct diagnostic tests to validate the equation.

10.4.1.1 Economic Growth Systems Equation Diagnostic Tests

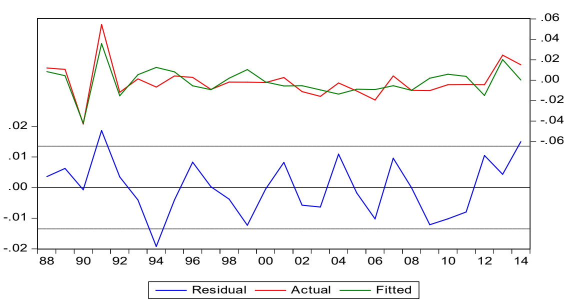
Residuals are tested for model stability, autocorrelation, constant variance and normality.

10.4.1.1.1 Stability Test

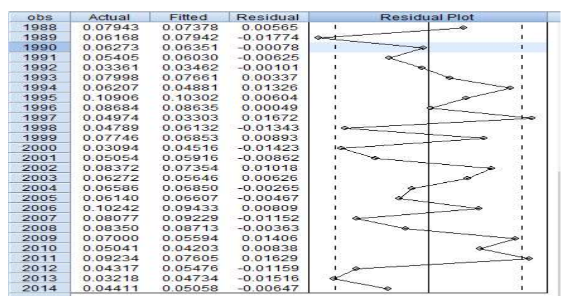
Stability of the residual for the economic growth equation is tested by conducting the actual and fitted table, as well as the CUSUM test and recursive coefficients stability test, indicated in Figure 10.2. According to Figures 10.2 (A) and (B), the actual and fitted graph and table, as well as the residual plot, indicate a good and balanced fitted equation, where values track the cyclical path. Also, the residual indicates that data is stationary, rotating around zero, meaning that the regression is not spurious. In addition, structural changes test employing recursive residual estimates, indicated by Figures 10.2 (C) and (D), which suggest the absence of any instability. This is because the CUSUM test statistic and the recursive coefficients are confirmed within the 5% critical bounds of parameter stability. As such, the null hypothesis is accepted and we conclude that the parameters are stable and without misspecification.

Figure 10.2: Residual stability test

(A) Residual actual and fitted graph

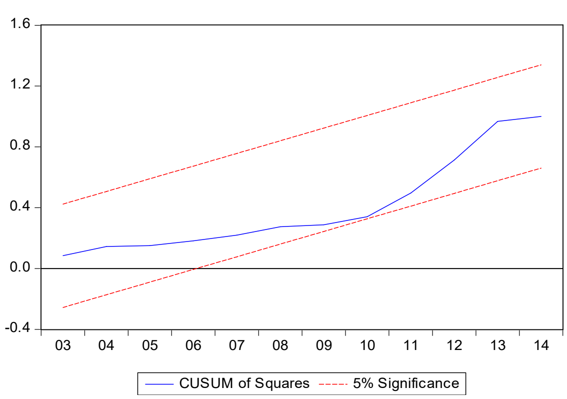


(B) Residual actual and fitted table

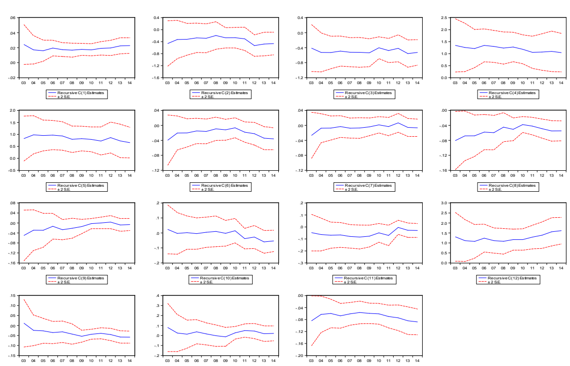


obs	Actual	Fitted	Residual	Residual Plot
1988	0.07943	0.07378	0.00565	
1989	0.06168	0.07942	-0.01774	
1990	0.06273	0.06351	-0.00078	
1991	0.05405	0.06030	-0.00625	
1992	0.03361	0.03462	-0.00101	
1993	0.07998	0.07661	0.00337	
1994	0.06207	0.04881	0.01326	
1995	0.10906	0.10302	0.00604	
1996	0.08684	0.08635	0.00049	
1997	0.04974	0.03303	0.01672	
1998	0.04789	0.06132	-0.01343	
1999	0.07746	0.06853	0.00893	
2000	0.03094	0.04516	-0.01423	
2001	0.05054	0.05916	-0.00862	
2002	0.08372	0.07354	0.01018	
2003	0.06272	0.05646	0.00626	
2004	0.06586	0.06850	-0.00265	
2005	0.06140	0.06607	-0.00467	
2006	0.10242	0.09433	0.00809	
2007	0.08077	0.09229	-0.01152	
2008	0.08350	0.08713	-0.00363	
2009	0.07000	0.05594	0.01406	
2010	0.05041	0.04203	0.00838	
2011	0.09234	0.07605	0.01629	
2012	0.04317	0.05476	-0.01159	
2013	0.03218	0.04734	-0.01516	
2014	0.04411	0.05058	-0.00647	

(C):CUSUM squares statistics for stability



(D) Recursive coefficients stability test

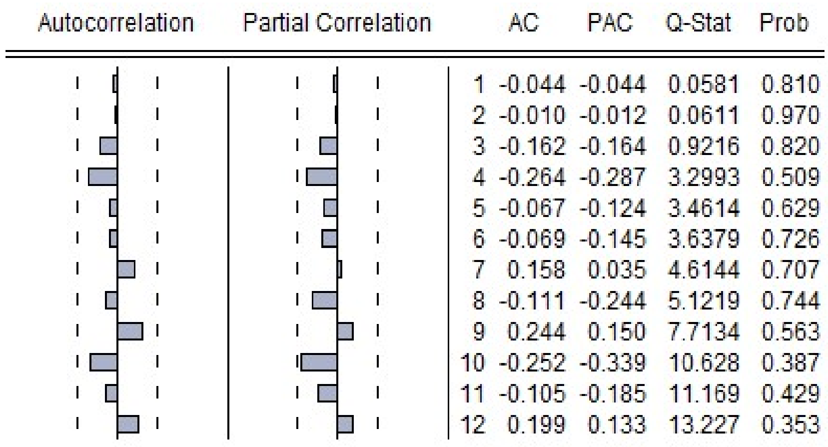


The study concludes that based on these two tests, the economic growth equation is valid and provides sufficient results.

10.4.1.1.2 Serial Correlation

To test the hypothesis for absence of autocorrelation, we employ the Q-Statistic tests to indicate whether the variables are correlated. The results of the test are presented below.

Figure 10.3: Results of the correlogram Q-Statistics



Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.044	-0.044	0.0581	0.810
		2	-0.010	-0.012	0.0611	0.970
		3	-0.162	-0.164	0.9216	0.820
		4	-0.264	-0.287	3.2993	0.509
		5	-0.067	-0.124	3.4614	0.629
		6	-0.069	-0.145	3.6379	0.726
		7	0.158	0.035	4.6144	0.707
		8	-0.111	-0.244	5.1219	0.744
		9	0.244	0.150	7.7134	0.563
		10	-0.252	-0.339	10.628	0.387
		11	-0.105	-0.185	11.169	0.429
		12	0.199	0.133	13.227	0.353

According to the results, the correlogram Q-Statistics are not significant at 5% critical level, meaning that the model does not have significant serial correlation. As such, our findings indicate an absence of autocorrelation based on this test. However, we now validate absence of serial correlation by conducting the Breusch-Godfrey serial correlation LM Test.

Table 10.6: Economic growth equation Breusch-Godfrey Serial correlation LM Test

F-statistic	0.028584	Prob. F(2,10)	0.9719
Obs*R-squared	0.153475	Prob. Chi-square(2)	0.9261

The results indicate that the observed R-squared Chi-square probability value is not significant at 5% critical values. We conclude an absence of serial correlation in the model. In this respect, the model is valid for economic analysis. We now proceed to test for homoscedasticity.

10.4.1.1.3 Test for Heteroscedasticity

The heteroscedasticity test indicates whether the variance is constant. We employ the Breusch-Pagan-Godfrey Test and ARCH.

Table 10.7: Economic growth equation tests for heteroscedasticity

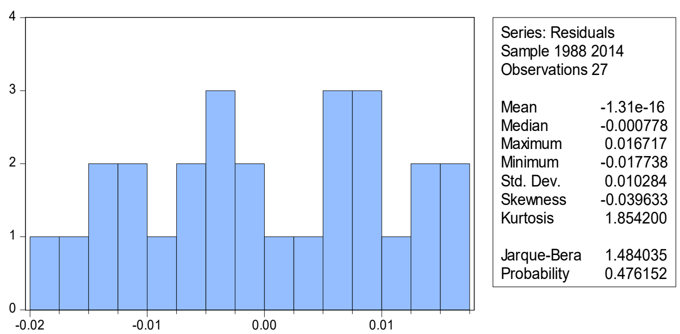
Heteroscedasticity Test							
Heteroscedasticity Test: Breusch-Pagan-Godfrey				ARCH			
F-statistic	0.733957	Prob. F(18,8)	0.7229	F-statistic	0.481216	Prob. F(1,24)	0.4945
Obs*R-squared	16.81672	Prob.Chi-square (18)	0.5357	Obs*R-squared	0.511070	Prob. Chi-square(1)	0.4747
Scaled explained SS	1.418749	Prob.Chi-square(18)	1.0000				

The observed R-square probability values for Breusch-Pagan-Godfrey Test and ARCH test are not significant at 5% critical value. This means that our model is homoscedastic. We therefore conclude that based on these two tests, our results are valid for economic analysis.

10.4.1.1.4 Normality Test

A normal model is indicated by residual skewness and kurtosis, and confirmed by JB test.

Figure 10.4: Normality test



According to our results, skewness is -0.03 while the kurtosis indicates 1.85. The JB is indicated by1.48, with a corresponding probability value not significant at 5% critical value. Based on this test, our model is normally distributed. The diagnostic tests conducted included stability, serial correlation, heteroscedasticity and normality, and suggested that our model is valid because all probability values for the tests are greater than 5%, meaning that our economic growth equation is valid for economic analysis.

10.4.1.2 Interpretation of the Results of the Economic Growth Systems Equation

The error correction term is significant, but the coefficient is positive 0.022, indicating that there is no long-run causality from the dependent variables to economic growth. However, the significant Wald test statistics $P - value = 0.004$ indicates that jointly, there is a short-run causality from the independent variables to economic growth. Findings first, indicate that employment of Uganda's LF is positively and significantly contributes to economic growth during the first lag. However, during the second lag though positive the contribution is insignificant. Despite this shortcoming, Wald test statistic indicates that employment contributes positively to economic growth. Second, inflation is significant and affects Uganda's economic growth as indicated by the -0.058236 negative coefficient. This means that when inflation decreases Uganda's economic growth increases by 5.82 percent. Third, though insignificant poverty negatives affects Uganda's economic growth as indicated by the negative lags of both coefficients. Fourth, findings further indicate that openness though positive the contribution is insignificant. This is not good for Uganda because the objective was that openness contributes to economic growth.

Finally, findings of this study indicate that FDI, tourism and human capital are significant to economic growth in Uganda. However, all coefficients for these factor inputs negatively affect economic growth. This is because the negative coefficients mean that FDI reduces economic growth by 3.59% in the first lag. In the second lag, the negative impact is nearly non-existent, as indicated by a 0.00% reduction in economic growth. Although significant, the negative coefficients for tourism mean that a unit increase in tourism reduces economic growth by 5.47% during the first lag, while the negative diminishes in the second, indicated by -0.00%. Finally, although human capital is significant, the negative coefficient means that a unit increase in human capital reduces economic growth in by 8.8%.

Following the ASSM first, the essentiality property means that due to huge physical capital deficiency, there is a need for increasing foreign capital flows, such as FDI and tourism expenditure, to bridge the gap in the private capital deficiency. Second, increasing returns-to-scale are required; otherwise a nation experiences declining TFP. With innovations such as government policy, human capital and technology, a nation cannot experience a steady state of growth. Third, though savings are not easily forthcoming to developing countries such as Uganda, nurturing a savings culture in the country is quite important. In this way SMEs can develop, which in turn increases economic growth, employment and poverty reduction. Finally, economic growth in a nation such as Uganda depends on the absorption capacity for goods and services in the country.

According to the theory, capital and labour as factor inputs are assumed to be positive but subject to diminishing returns. As such, due to the constant returns-to-scale, there is a decreasing marginal product to factor of capital, and thus the negative coefficient. Also, since

1995 when GDP growth rate was recorded at 11.551% per annum, the growth rate has been declining, with the lowest growth recorded in 2013, 3.27%. The Solow-Swan Model also indicates constant returns-to-scale, meaning that if inputs are multiplied by a specific factor, the output grows by the same factors. This is indicated by the line growth in Figure-5.1, with a visual display of constant economic growth. However, as indicated by the ASSM since, if the factor inputs are significant there is a need for adequate policy and innovation, to turn the negative coefficients into positive so the country can benefit from the factor inputs.

The negative coefficients also indicate that Uganda's experience is similar to the Dutch Disease. Agriculture, especially traditional cash-crops such as coffee, cotton, tea and tobacco, have now been replaced, yet 80% of Uganda's population is rural, surviving on the traditional cash-crops. Therefore, their contribution to foreign exchange-earning commodities has declined. Uganda's economic growth is export-biased towards these aforementioned traditional cash-crops, which are price inelastic and often affected by trends in the world market. For example, with any increase in coffee exports from Brazil, the world coffee price declines and so do exports from countries such Uganda. Uganda's exports are reliant on international trade within East Africa and outside the region. MNEs have often based their firms in Kenya, a country considered to be low-cost and efficient, in terms of production.

The Malign Model can further explain the situation of declining negative contribution of factor inputs to economic growth. The model indicates the negative effects of FDI, such as rent extraction and capital siphoning from Uganda. It is possible that the incentives given MNEs could be greater than the FDIs. As FDI and tourism increase, capital flight increases, yet the crowding-out effect increases. In Uganda, as a developing country, the high human capital growth rate is far beyond the economic growth rate, meaning that Uganda is labour-abundant. Further, the line graphs indicate that tourism and FDI is still inadequate to close the investment and foreign exchange gap. This phenomenon further indicates that there a gap in the nation's capital absorption capacity to exploit the anticipated backward linkages from FDI flows and increasing tourism.

Employment in Uganda contributes greatly to economic growth. However, the second lag indicates that the contribution of employment is insignificant to the country's overall economic growth. During the first lag, findings indicate that a unit increase in employment increases Uganda's economic growth by 104%. Since both lags are positive, we can conclude that employment contributes to the country's economic growth. Although insignificant, a unit decrease in poverty can lead to an increase in economic growth. Meanwhile, openness is insignificant to economic growth. This is contrary to our hypothesis, but as the coefficient is positive, it means that openness can lead to economic growth in the country, as long as the policies and innovations support economic growth.

In conclusion, the aim of estimating the economic growth equation was to examine the impact of FDI and other explanatory variables included in the systems equation on Uganda's economic growth. According to our findings, FDI, tourism and human capital contribute to Uganda's economic growth. However, the negative coefficients mean diminishing returns for the country, implying that there is a need for policy review and the introduction of innovations that promote economic growth. The findings also indicate that in Uganda, as a labour-abundant country, employment contributes to the nation's economic growth. As predicted by the hypothesis, inflation negatively affects Uganda's economic growth. Poverty in Uganda and openness are not significant to economic growth.

10.4.2 Employment Systems Equation Analysis and Interpretation

The aim of estimating the employment equation is to establish the impact of FDI and other explanatory variables included in the systems equation on Uganda's employment. The results of the economic growth equation are presented below.

Table 10.8: Employment equation summary results

		Coefficient	Std. Error	t-Statistic	Prob.
Long-run	C(16)	-0.006039	0.004624	-1.305822	0.216
Economic growth	C(17)	-0.072042	0.168865	-0.426623	0.677
	C(18)	-0.098265	0.151206	-0.649879	0.528
Employment	C(19)	-1.104207	0.357554	-3.088224	0.009*
	C(20)	-0.205484	0.284164	-0.723118	0.483
FDI	C(21)	0.008304	0.013070	0.635314	0.537
	C(22)	0.029818	0.010268	2.904028	0.013*
Tourism	C(23)	0.014699	0.011853	1.240065	0.238
	C(24)	0.008118	0.010813	0.750744	0.467
Poverty	C(25)	0.020639	0.031546	0.654254	0.525
	C(26)	0.031143	0.025598	1.216642	0.247
Constant	C(27)	-0.106217	0.295635	-0.359285	0.725
Inflation	C(28)	0.035929	0.013350	2.691228	0.019*
Openness	C(29)	0.064627	0.033381	1.936035	0.076
Human capital	C(30)	-0.000437	0.019150	-0.022835	0.982
R-squared		0.702348	Mean dependent var		-0.001371
Adjusted R-squared		0.355088	S.D. dependent var		0.016759
F-statistic		2.022540	DW stat		1.634545
Prob(F-statistic)		0.114162			

Notes: *Significant at critical level= 5%

The employment equation indicates that the independent variables explain employment by 70.23% jointly, as indicated by the R-square, while the adjusted R-square indicates 35.5%. Although the F-statistics probability value is indicated by a probability value greater than 5% critical value, the model is valid F-statistics. This is because other models generated from the VECM system equation used in this study are valid. Second, the R-square is less than the DW statistics value $(R - square = 0.70 < Durbin - Watson = 1.634)$. Third, we can observe that these findings are consistent with empirical studies on Uganda, discussed in Chapter Two. We now conduct diagnostic tests to validate the equation.

10.4.2.1 Employment Systems Equation Diagnostic Tests

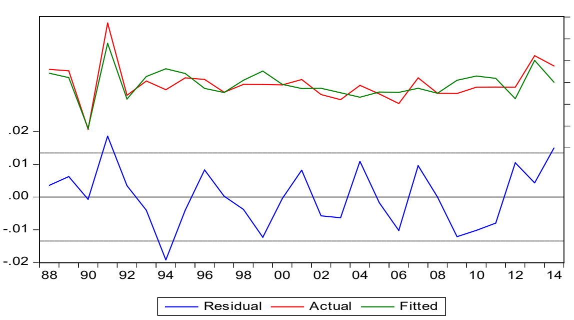
Residuals are tested for model stability, autocorrelation, constant variance and normality.

10.4.2.1.1 Stability Test

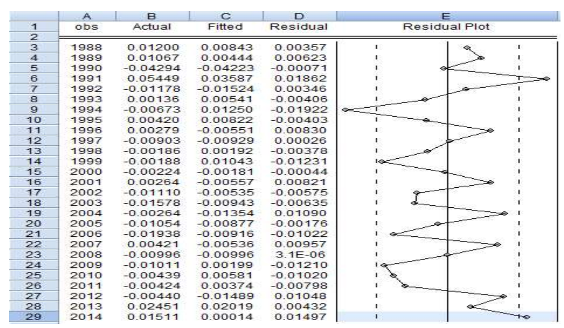
The employment equation residual is tested by employing the actual and fitted table, as well as the CUSUM test and recursive coefficients stability test, illustrated below.

Figure 10.5: Employment equation residual stability tests

(A) Residual actual and Fitted graph

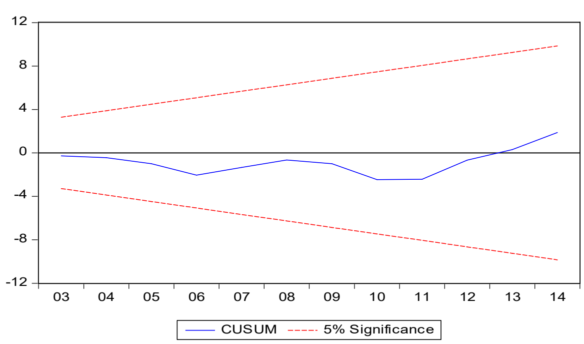


(B) Residual actual and fitted table



	A	B	C	D	E
1	obs	Actual	Fitted	Residual	Residual Plot
2					
3	1988	0.01200	0.00843	0.00357	
4	1989	0.01067	0.00444	0.00623	
5	1990	-0.04294	-0.04223	-0.00071	
6	1991	0.05449	0.03587	0.01862	
7	1992	-0.01178	-0.01524	0.00346	
8	1993	0.00136	0.00541	-0.00406	
9	1994	-0.00673	0.01250	-0.01922	
10	1995	0.00420	0.00822	-0.00403	
11	1996	0.00279	-0.00551	0.00830	
12	1997	-0.00903	-0.00929	0.00026	
13	1998	-0.00186	0.00192	-0.00378	
14	1999	-0.00188	0.01043	-0.01231	
15	2000	-0.00224	-0.00181	-0.00044	
16	2001	0.00264	-0.00557	0.00821	
17	2002	-0.01110	-0.00535	-0.00575	
18	2003	-0.01578	-0.00943	-0.00635	
19	2004	-0.00264	-0.01354	0.01090	
20	2005	-0.01054	-0.00877	-0.00176	
21	2006	-0.01938	-0.00916	-0.01022	
22	2007	0.00421	-0.00536	0.00957	
23	2008	-0.00996	-0.00996	3.1E-06	
24	2009	-0.01011	0.00199	-0.01210	
25	2010	-0.00439	0.00581	-0.01020	
26	2011	-0.00424	0.00374	-0.00798	
27	2012	-0.00440	-0.01489	0.01048	
28	2013	0.02451	0.02019	0.00432	
29	2014	0.01511	0.00014	0.01497	

(C) CUSUM Squares statistics stability test



(D) Recursive coefficients stability test

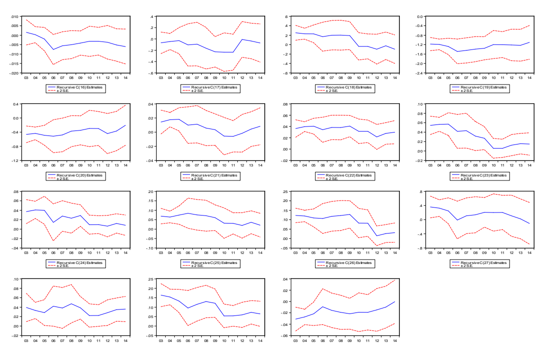
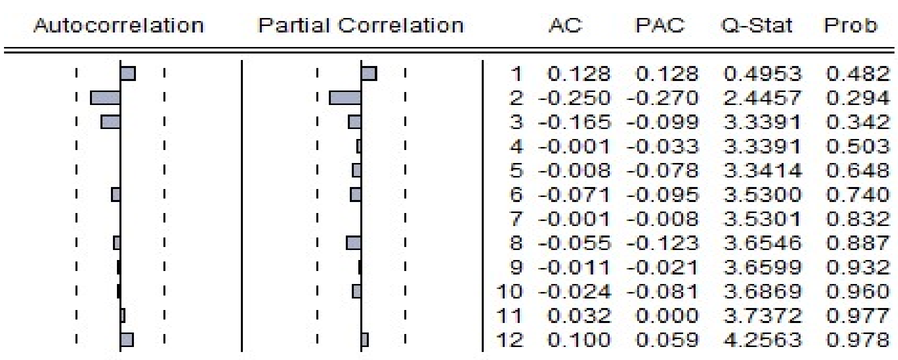


Figure 10.5 (A) and (B) indicate that the actual and fitted graph and table, as well as the residual plot, reflect that the model fits well. Our data is stationary; rotating around zero, meaning the regression is not spurious. Also, the residual is tested for structural change instability, employing recursive residual estimates. Our findings indicate the absence of any instability because the CUSUM test statistic and the recursive coefficients are confirmed within the 5% critical bounds of parameter stability. This means that we accept the null hypothesis and conclude that our parameters are stable, so are without misspecification. On the basis of our findings, we conclude that our employment equation is able to provide valid results for policy analysis.

10.4.2.1.2 Serial Correlation Test

We began testing for serial correlation by employing the Q-Statistics results, indicated below.

Figure 10.6: Q-Statistics test results



	AC	PAC	Q-Stat	Prob
1	0.128	0.128	0.4953	0.482
2	-0.250	-0.270	2.4457	0.294
3	-0.165	-0.099	3.3391	0.342
4	-0.001	-0.033	3.3391	0.503
5	-0.008	-0.078	3.3414	0.648
6	-0.071	-0.095	3.5300	0.740
7	-0.001	-0.008	3.5301	0.832
8	-0.055	-0.123	3.6546	0.887
9	-0.011	-0.021	3.6599	0.932
10	-0.024	-0.081	3.6869	0.960
11	0.032	0.000	3.7372	0.977
12	0.100	0.059	4.2563	0.978

The correlogram Q-Statistics are not significant at 5% critical level, meaning that the model does not have significant serial correlation. Therefore, on the basis of the Q-Statistics test, the equation indicates the absence of serial correlation. However, to confirm the absence of serial correlation, we also conduct the Breusch-Godfrey serial correlation LM Test. The results are indicated below.

Table 10.9: Economic growth equation Breusch-Godfrey serial correlation LM Test

F-statistic	1.282173	Prob. F(2,10)	0.3194
Obs*R-squared	5.510622	Prob. Chi-square(2)	0.0636

According to our results, the observed R-squared Chi-square probability value is not significant at 5% critical value. We therefore conclude an absence of serial correlation in employment equation. As such, the results are valid for economic analysis.

10.4.2.1.3 Test for Heteroscedasticity

The test for heteroscedasticity is intended to establish whether or not the variance of our data is constant. We employed the Breusch-Pagan-Godfrey Test and ARCH test, indicated below.

Table 10.10: Economic growth equation tests for heteroscedasticity

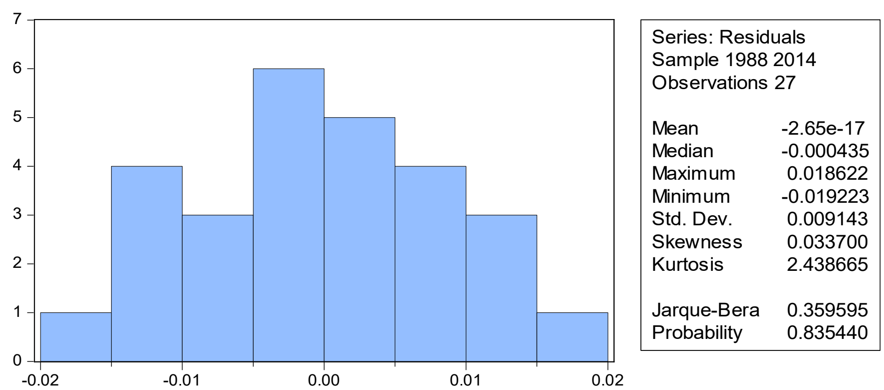
Heteroscedasticity Test							
Heteroscedasticity Test: Breusch-Pagan-Godfrey				ARCH			
F-statistic	1.379	Prob. F(18,8)	0.331	F-statistic	3.768	Prob. F(1,24)	0.064
Obs*R-squared	20.420	Prob. Chi-square(18)	0.309	Obs*R-squared	3.528	Prob. Chi-square(1)	0.060
Scaled explained SS	2.901	Prob. Chi-square(18)	1.000				

According to our results, both the observed R-square probability values for the Breusch-Pagan-Godfrey Test and the ARCH test are not significant, at 5% critical value. This means that our employment equation is homoscedastic. We can therefore conclude that our results are valid for policy analysis.

10.4.2.1.4 Test for Normality

Data normality is tested for skewness, indicated:$-1 > 0 < 1$ while kurtosis is $1 < 3$ and JB probability value greater than 5% critical value. Our results are indicated below.

Figure 10.7: Employment equation test for normality test



According to our results, skewness is 0.03 and kurtosis is indicated by 2.43. The JB test indicates 0.359 with a corresponding probability value not significant at 5% critical value. We therefore conclude that our data for the employment equation is normally distributed and valid for economics. Following the diagnostic tests, all probability values are greater than 5%, meaning that our employment systems equation is valid for economic analysis.

10.4.2.2 Employment Systems Equations Analysis and Interpretation

The employment systems equation indicates no insignificant long-run causality from the independent variables to employment, as the coefficient is negative, while the $probality\ value - 0.21$. Also, findings indicate that only employment own innovations, FDI and inflation explain employment creation In Uganda. Although inflation is significant, the coefficient$[C(28)]$ is positive, meaning that a unit increase in inflation increases employment by 3.59% per unit, contrary to theory. In Chapter Four we indicated that developing countries such as Uganda often have a budget deficit. We also indicated that the only available sources of revenue for a developing country are donor support and domestic revenue, which often are below the national budget. We further indicated that to finance the budget deficit, a developing country often resorts to *seigniorage* by printing money. By printing money, the government is able to hire employees and pay wages, and pay for public contracts, such as road construction and service delivery. Therefore, contracted firms can also hire employees. Also through *seigniorage*, the government can finance poverty reduction programmes, so employment increases. However, the money printed comes at a cost, as money supply often increases beyond the equilibrium, level leading to inflation. Therefore, printing money to increase employment risks triggering a cycle of inflation. As money supply increases, so does employment and service delivery but with a declining standard of living. This often is indicated by union action demanding higher wages. Public service delivery is often disrupted, especially education, health and in the private sector.

The findings for the effects of poverty are good for Uganda. This is because the though insignificant the coefficients is positive contrary to theory meaning that as poverty increases, employment increases. This is could be true since money expansion contributes to employment as previously explained. Furthermore the insignificant contribution of Uganda's economic growth to employment is worrisome. As Uganda has been experiencing economic growth, a positive contribution to employment could be expected, as per this study's hypothesis. According to empirical studies on Uganda, a number of issues are worth noting. First, the importance of TEs (coffee, cotton, tea and tobacco) has been declining, although it employs over 80% of Uganda's population in the rural sector. The main cause is the declining price of such crops, and the lack of marketing channels in the country. Second, arising from the declining trend of traditional cash-crops, communities often resort to NTE cash-crops. However, these are not reliable. For example, fish, an NTE, became significant in the early

1990s, but within 10 years had declined, leaving many people unemployed. The government looked to FDI as a safety net for employment, but its significance for economic growth was negative. The increasing population further exacerbates the situation of unemployment. Although the population of Uganda is increasing at over 3% per annum, employment is declining.

In conclusion, the objective of estimating this employment systems equation was to establish the impact of FDI and other explanatory variables on employment in Uganda. According to the findings of this study, only FDI and inflation are significant to employment in Uganda. However, the positive coefficient for inflation is inconsistent with that predicted by the hypothesis. This can be attributed to inflation, which is driven by printing money to finance the budget deficit.

10.4.3 Poverty in Uganda Systems Equation Estimation, Analysis and Interpretation

The aim of estimating this systems equation was to examine the impact of FDI and other explanatory variables on poverty in Uganda. The results are presented below.

Table 10.11: Poverty reduction equation summary results

		Coefficient	Std. Error	t-Statistic	Prob.
Long-run	C(61)	0.060434	0.024984	2.418924	0.0324
Economic growth	C(62)	-2.226285	0.912326	-2.440230	0.0311
	C(63)	-3.643387	0.816919	-4.459911	0.0008
Employment	C(64)	3.679193	1.931757	1.904584	0.0811
	C(65)	0.412997	1.535253	0.269009	0.7925
FDI	C(66)	-0.233220	0.070613	-3.302775	0.0063
	C(67)	-0.194379	0.055473	-3.503999	0.0043
Tourism	C(68)	-0.354115	0.064039	-5.529664	0.0001
	C(69)	-0.219286	0.058420	-3.753598	0.0028
Poverty	C(70)	-0.713330	0.170435	-4.185358	0.0013
	C(71)	-0.447903	0.138297	-3.238696	0.0071
Constant	C(72)	3.175724	1.597227	1.988274	0.0701
Inflation	C(73)	-0.181428	0.072128	-2.515349	0.0271
Openness	C(74)	-0.401095	0.180347	-2.224021	0.0461
Human capital	C(75)	-0.171569	0.103459	-1.658323	0.1231
R-squared		0.838950	Mean dependent var		-0.046586
Adjusted R-squared		0.651058	S.D. dependent var		0.123092
F-statistic		4.465069	DW stat		2.737598
Prob(F-statistic)		0.006668			

Notes: *Significant at critical level= 5%

Our findings indicate that independent variables explain poverty reduction by 83.89% jointly, as denoted by R-square, while the adjusted R-square is 65.1%. Also, the F-statistics is significant ($p - value = 0.00$) meaning that independent variables jointly determine poverty in Uganda. However, before interpreting our results, we must validate our equation for efficiency.

10.4.3.1 Poverty in Uganda Systems Equation Diagnostic Tests

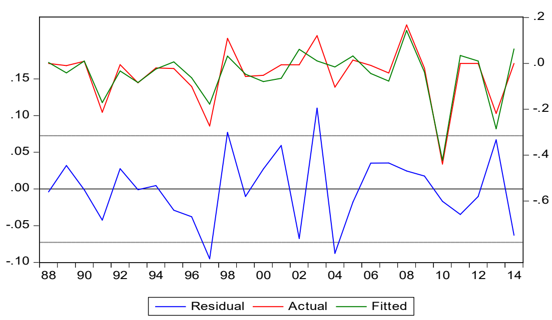
The residual is also tested for model stability, autocorrelation, constant variance and normality.

10.4.3.1.1 Stability Test

We test for stability of the residual for the equation, establishing the impact of FDI and other explanatory variables on poverty in Uganda, by conducting the actual and fitted table, as well as the CUSUM test and recursive coefficients stability test. The results are indicated below.

Figure 10.8: Residual stability tests results

(A): Actual and fitted graph residual

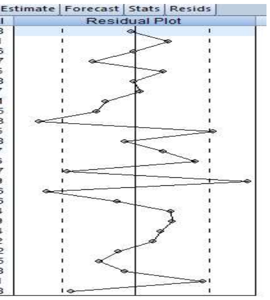


(B):Residual actual and Fitted Table

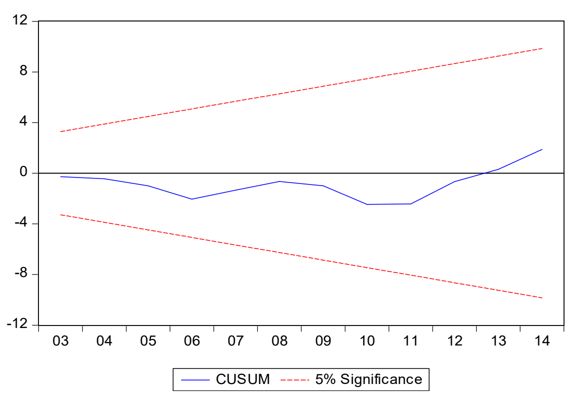
View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

obs	Actual	Fitted	Residual
1988	0.00000	0.00388	-0.00388
1989	-0.00942	-0.04143	0.03201
1990	0.00942	0.01059	-0.00116
1991	-0.21309	-0.17062	-0.04247
1992	-0.00537	-0.03302	0.02765
1993	-0.08424	-0.08326	-0.00098
1994	-0.01972	-0.02429	0.00457
1995	-0.02216	0.00676	-0.02891
1996	-0.10062	-0.06276	-0.03785
1997	-0.27278	-0.17765	-0.09513
1998	0.10920	0.03205	0.07715
1999	-0.05731	-0.04723	-0.01008
2000	-0.05188	-0.07915	0.02727
2001	-0.00593	-0.06520	0.05926
2002	-0.00597	0.06140	-0.06737
2003	0.12110	0.01091	0.11019
2004	-0.10330	-0.01554	-0.08776
2005	0.01460	0.03256	-0.01796
2006	-0.00873	-0.04397	0.03524
2007	-0.04180	-0.07729	0.03549
2008	0.16799	0.14345	0.02454
2009	-0.02057	-0.03829	0.01772
2010	-0.43918	-0.42245	-0.01672
2011	0.00000	0.03475	-0.03475
2012	-2.2E-16	0.01018	-0.01018
2013	-0.21805	-0.28517	0.06711
2014	0.00000	0.06298	-0.06298

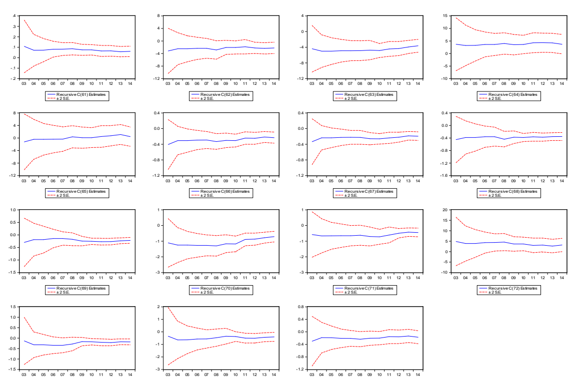
Residual Plot



(C) CUSUM statistics test for stability



(D) Recursive coefficients test

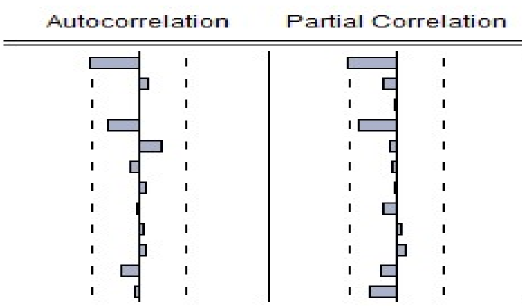


We can observe that the actual and fitted graph and table, as well as the residual plot, indicated by Figures 10.8 (A) and (B), fit the model well. According to our observations, the residual for our equation indicates that our data is stationary, rotating around zero, meaning the regression is not spurious. We later investigated the structural change instability, employing recursive residual estimates. Our findings indicate the absence of any instability because the CUSUM test statistic and the recursive coefficients are confirmed within the 5% critical bounds of parameter stability. This means that we accept the null hypothesis and conclude that our parameters are stable, and as such, are without misspecification. On the basis of these tests, we conclude that our equation is valid.

10.4.3.1.2 Serial Correlation Test

Similar to previous equations, we test our equation for serial correlation by employing the Q-Statistics. Our results are reflected below.

Figure 10.9: Q-Statistics test for serial correlation



	AC	PAC	Q-Stat	Prob
1	-0.400	-0.400	4.8227	0.028
2	0.075	-0.101	5.0001	0.082
3	-0.002	-0.011	5.0002	0.172
4	-0.259	-0.308	7.2825	0.122
5	0.180	-0.064	8.4325	0.134
6	-0.077	-0.043	8.6544	0.194
7	0.045	-0.022	8.7324	0.272
8	-0.023	-0.106	8.7548	0.363
9	0.035	0.030	8.8075	0.455
10	0.048	0.079	8.9157	0.540
11	-0.148	-0.129	9.9943	0.531
12	-0.027	-0.209	10.032	0.613

The correlogram Q-Statistics results are not significant at 5% critical level, meaning that the model does not have significant serial correlation. As such, we conclude that on the basis of the Q-Statistics test, our findings indicate the absence of autocorrelation. However, we continue by conducting the Breusch-Godfrey serial correlation LM Test. The results are presented below.

Table 10.12: Breusch-Godfrey serial correlation LM Test

F-statistic	2.770892	Prob. F(2,10)	0.1103
Obs*R-squared	9.627477	Prob. Chi-square(2)	0.0081

The LM Test result contradicts the findings of the Q-Statistics. According to our results, the observed R-squared Chi-square probability value is significant at 5% critical value. Though these findings are contradictory, we conclude the absence of serial correlation from the model. First, this equation is part of the VECM systems equation, estimated in Chapter Five. According to these findings, overall there is serial correlation in the systems equation. Second, the Q-Statistics indicate no serial correlation. On this basis, we can conclude that there is no serial correlation in the system.

10.4.3.1.3 Test for Heteroscedasticity

The test for heteroscedasticity is done by conducting the Breusch-Pagan-Godfrey Test and ARCH test, as in the previous equations. The results are indicated below.

Table 10.13: Economic growth equation tests for heteroscedasticity

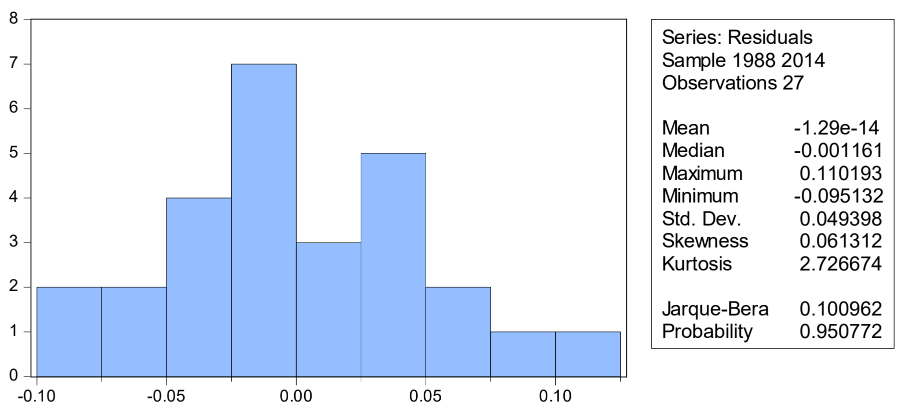
Heteroscedasticity Test							
Heteroscedasticity Test: Breusch-Pagan-Godfrey				ARCH			
F-statistic	0.733	Prob. F(18,8)	0.7229	F-statistic	0.481	Prob. F(1,24)	0.4945
Obs*R-squared	16.81	Prob. Chi-square(18)	0.5357	Obs*R-squared	0.511	Prob. Chi-square(1)	0.4747
Scaled explained SS	1.418	Prob. Chi-square(18)	1.0000				

According to our results, both the observed R-square probability values for the Breusch-Pagan-Godfrey Test and the ARCH test are not significant, at 5% critical value. This means that our model is homoscedastic. We therefore conclude that our equation is valid for economic analysis.

10.4.3.1.4 Test for Normality

The test for normality is indicated by skewness: $-1 < 1$ and kurtosis $1 < 3$ while the JB probability value is greater than 5% critical value.

Figure 10.10: Test results for normality



As indicated, our results show skewness as 0.06 and 2.7 for kurtosis. The JB test statistical probability value is insignificant, meaning that the data is normally distributed and valid for economic analysis. Finally, following the diagnostic tests conducted, all probability values are greater than 5%, meaning that our equation estimated to establish the impact of FDI and other explanatory variables on poverty in Uganda is valid for economic analysis.

10.4.3.2 Poverty in Uganda Systems Equation Interpretation

The results indicate that there is no long-run causality from the independent variables to poverty. This is because the error correction term coefficient $C(61)$ is positive and significant meaning that there is no long-run causality from the dependent variables to poverty reduction in Uganda. However, the F-/Wald test statistics indicate that there is a short-run causality from the independent variables to poverty reduction.

The coefficient indicators are consistent with those predicted, except in the case of employment. First, coefficients $C(62)$ and $C(63)$ are negative, meaning that as economic growth increases by one unit in Uganda, poverty reduces by 222.62% during the first lag, and 364% by the second lag. Second, coefficients $C(66)$ and $C(67)$ are negative, meaning that when FDI increases by a unit increase, poverty reduces by 23.32% during the first lag and 19.43% by the second lag. Meanwhile, coefficients $C(68)$ and $C(69)$ indicate that a unit increase in tourism expenditure leads to a 35.41% reduction in poverty by the first lag, and by 21.92 during the second lag. In this way, tourism leads poverty to reduce in wider proportion to FDI. Unlike FDI, which is often concentrated in urban areas, tourists go deep into villages. Also, towns in Uganda that had declined economically, such as Jinja and Mbale, have become leading tourist attractions. Business in such towns is dominated by selling merchandise to tourists.

The coefficient $C(73)$ for inflation is significant and negative, meaning that as inflation reduces so-does poverty by 18.14%. For poverty to reduce, the country should be experiencing stable and declining inflation. Additionally, the coefficient $C(74)$ for openness is significant and negative, meaning that as openness increases in Uganda, poverty reduces by 40.1%. This partly indicates that openness as a tool of poverty reduction is being implemented to the government's expectations.

However, coefficients $C(64)$ and $C(65)$ for employment, though insignificant, are positive, contrary to those predicted by theory. Moreover, the positive magnitude is quite high. This situation is worrisome for the country, as employment is anticipated to lead to poverty reduction. Finally, human capital is insignificant to poverty reduction but the coefficient is positive, as predicted by the hypothesis. In this respect, the insignificant contribution of human capital to poverty could partly be attributed to the declining employment in the country. Human capital usually is related to salaried employment, and as such, as long as employment reduces, salary earners reduce and the contribution to poverty reduction becomes insignificant. However, since the coefficient is negative, as long as conditions are good, human capital leads to poverty reduction in Uganda.

In conclusion, the aim of estimating this systems equation was to establish the impact of FDI and other explanatory variables of poverty in Uganda. Our findings indicate that among the variables included in this study, only employment and human capital are insignificant. Though insignificant, the coefficient for employment is positive, which is inconsistent with the predicted hypothesis. This can partly be attributed to Uganda being a least-developed country, where government programmes are often financed through money expansion. We have observed that openness leads to poverty to reduction. This is consistent with theory and some empirical studies. Often, developing countries are called upon to adopt openness-oriented policies in the anticipation that sectors such as tourism and investment from FDI will increase. As evident in this study, FDI and tourism, as well as economic growth, contribute to poverty reduction in Uganda.

10.4.4 FDI Systems Equations Estimation, Analysis and Interpretation

The aim of estimating the FDI systems equation is to examine the impact of explanatory variables included in the systems equation on FDI in Uganda. The results are presented as:

Table 10.14: FDI equation summary results

		Coefficient	**Std. Error**	**t-Statistic**	**Prob.**
Long-run	C(31)	0.132476	0.083345	1.589495	0.1379
Economic growth	C(32)	2.819274	3.043462	0.926338	0.3725
	C(33)	5.560996	2.725192	2.040589	0.0639
Employment	C(34)	9.146846	6.444220	1.419388	0.1812
	C(35)	9.562278	5.121508	1.867083	0.0865
FDI	C(36)	-0.363848	0.235562	-1.544595	0.1484
	C(37)	-0.187370	0.185056	-1.012506	0.3313
Tourism	C(38)	-0.450366	0.213630	-2.108155	0.0567
	C(39)	-0.154263	0.194886	-0.791555	0.4440
Poverty	C(40)	-1.256019	0.568560	-2.209124	0.0474*
	C(41)	-1.376359	0.461351	-2.983319	0.0114*
Constant	C(42)	-2.949699	5.328250	-0.553596	0.5900
Inflation	C(43)	-0.185028	0.240616	-0.768977	0.4568
Openness	C(44)	-2.253238	0.601626	-3.745250	0.0028*
Human capital	C(45)	0.096696	0.345134	0.280170	0.7841
R-squared		0.784992	Mean dependent var		0.072345
Adjusted R-squared		0.534150	S.D. dependent var		0.355386
F-statistic		3.129424	DW stat		1.876461
Prob(F-statistic)		0.027346			

Notes: *Significant at critical level= 5%

The FDI systems equation indicates that the independent variables explain FDI inflows into Uganda by 78.49% jointly, as indicated by the R-square. Also, the F-statistics is significant (P-value=0.02) meaning that the independent variables jointly influence FDI inflows. The findings further indicate that the error correction term parameter is positive and insignificant, with a probability value of 0.13, meaning that there is no long-run causality from the independent variables to FDI inflows. We now conduct diagnostic tests to validate the results for economic analysis.

10.4.4.1 FDI Systems Estimated Equation Diagnostic Tests

Residuals are tested for model stability, autocorrelation, constant variance and normality.

10.4.4.1.1 Test for Stability

Stability is tested by conducting the actual and fitted table, as well as the CUSUM test and recursive coefficients stability test. The results are indicated below.

Figure 10.11: Residual stability tests results

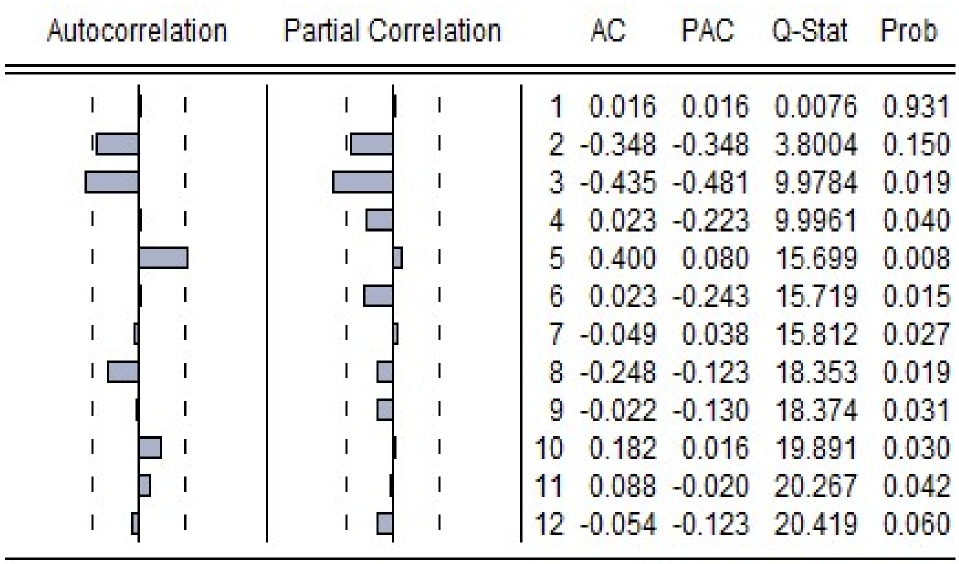
obs	Actual	Fitted	Residual
1988	-1.10905	-0.86449	-0.24456
1989	0.17734	0.02773	0.14961
1990	0.53116	0.32095	0.21021
1991	-0.05405	0.08707	-0.14112
1992	-0.03361	0.13225	-0.16587
1993	0.78456	0.92083	-0.13627
1994	0.41750	0.17244	0.24507
1995	0.20877	0.11445	0.09432
1996	-0.08849	-0.01105	-0.07744
1997	0.31925	0.34880	-0.02954
1998	0.13443	0.13926	-0.00483
1999	-0.02189	-0.22952	0.20763
2000	0.10372	-0.10425	0.20797
2001	-0.15415	0.01812	-0.17227
2002	-0.23373	-0.14286	-0.09088
2003	-0.03723	0.26430	-0.30152
2004	0.31333	0.30094	0.01239
2005	0.18987	0.01081	0.17906
2006	0.42607	0.23164	0.19443
2007	0.12602	0.20710	-0.08108
2008	-0.06275	0.22362	-0.28637
2009	-0.03043	-0.16788	0.13745
2010	-0.49457	-0.38076	-0.11381
2011	0.41371	0.30718	0.10653
2012	0.25437	0.32690	-0.07253
2013	-0.05411	-0.15662	0.10251
2014	-0.07272	-0.14364	0.07092

As indicated in Figures 10.8 (A) and (B), we observe that the actual and fitted graph and table, as well as the residual plot indicated by the model, fits well. Also, according to our observations, the residual for our equation indicates that our data is stationary, rotating around zero, meaning that the regression is not spurious. We later investigated the structural change instability by employing recursive residual estimates. Our findings indicate the absence of any instability, because the CUSUM test statistic and the recursive coefficients are confirmed within the 5% critical bounds of parameter stability. This means that we accept the null hypothesis and conclude that our parameters are stable, and as such are without misspecification. On the basis of these tests, we conclude that our equation is valid. We now test for autocorrelation.

10.4.4.1.2 Test for Serial Correlation

We test our equation for serial correlation by employing the Q-Statistics teats. The results are summarised below.

Figure 10.12: Q-Statistcis test for serial correlation



Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.016	0.016	0.0076	0.931
		2	-0.348	-0.348	3.8004	0.150
		3	-0.435	-0.481	9.9784	0.019
		4	0.023	-0.223	9.9961	0.040
		5	0.400	0.080	15.699	0.008
		6	0.023	-0.243	15.719	0.015
		7	-0.049	0.038	15.812	0.027
		8	-0.248	-0.123	18.353	0.019
		9	-0.022	-0.130	18.374	0.031
		10	0.182	0.016	19.891	0.030
		11	0.088	-0.020	20.267	0.042
		12	-0.054	-0.123	20.419	0.060

As indicated, the correlogram Q-Statistics are not significant at 5% critical level. This means that the model does not have significant serial correlation. We continue to test for absence of serial correlation by conducting the Breusch-Godfrey serial correlation LM Test. The results are summarised below.

Table 10.15: FDI equation Breusch-Godfrey serial correlation LM Test

F-statistic	1.309489	Prob. F(2,10)	0.3125
Obs*R-squared	5.603654	Prob. Chi-square(2)	0.0607

According to our results, the observed R-squared Chi-square probability value is not significant at 5% critical value. Following these tests, we conclude that there is an absence of serial correlation in the model, so based on serial correlation tests, our model is valid for economic analysis.

10.4.4.1.3 Test for Heteroscedasticity

The equation was tested for absence of heteroscedasticity by conducting the Breusch-Pagan-Godfrey Test and ARCH test. The results are indicated below.

Table 10.16: FDI equation tests for heteroscedasticity

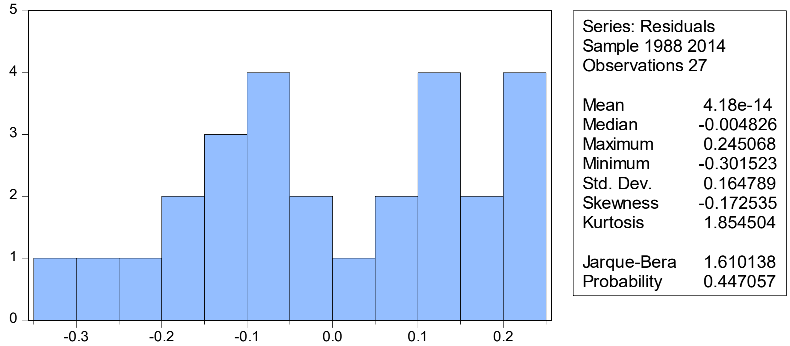
Heteroscedasticity Test							
Heteroscedasticity Test: Breusch-Pagan-Godfrey				ARCH			
F-statistic	0.391	Prob. F(18,8)	0.953	F-statistic		Prob. F(1,24)	
Obs*R-squared	16.637	Prob. Chi-square(18)	0.812	Obs*R-squared	0.511	Prob. Chi-square(1)	0.4747
Scaled explained SS	1.066	Prob. Chi-square(18)	1.000				

The heteroscedasticity tests indicate constant variance. Both the observed R-square probability values for the Breusch-Pagan-Godfrey Test and ARCH test are not significant at 5% critical value. This means that the FDI systems equation is stationary, homoscedastic and, as such, valid for economic analysis.

10.4.4.1.4 Test for Normality

The test for normality is indicated when the residual test results, skewness, is$-1 > 0 < 1$, and the kurtosis is $1 < 3$ and JB is < 5.99. According to the results, skewness as -0.172 and kurtosis is indicated by 1.8. Meanwhile, the JB test statistical probability value is 1.611 and insignificant, meaning that the data is normally distributed and valid for economic analysis.

Figure 10.13: Test results for normality



In conclusion, following the diagnostic tests conducted, all probability values are greater than 5% critical values, meaning that our estimated FDI equation is valid. We now present and interpret the results.

10.4.4.2 FDI Systems Equation Results Interpretation

Results indicate that there is no long-run causality from the independent variables to FDI. This is because the error correction term coefficient $C(44)$ is positive, though the probability value is less than 5%. However, the Wald test statistics join the Chi-square value (see Table 6.5), indicating that there is a short-run causality from the independent variables to FDI.

The findings of this study indicate that only openness and poverty explain FDI in Uganda. However, the coefficient $C(44)$ for openness is significant and negative, contrary to the predicted hypothesis. According to the results, a unit increase in openness reduces FDI by 225%, meaning that openness is not good for FDI in the country, though significant. This is partly explained by Figure 2.3, which suggests that although FDI has increased, the growth rate has been fluctuating with wide margins, and is sometimes negative. The main objective of introducing openness as a policy for the nation is to first promote investment in the country, leading to more FDI and exports. However, although significant, the negative parameter creates concerns for the nation.

Meanwhile, the coefficients for poverty in Uganda are significant, negative and consistent with the predicted hypothesis. This indicates that a one unit poverty decrease in the country causes FDI to increase by 125.6%, while during the second lag, 137.63%. This is consistent with theory based on FDI market size, capital and internal financing theory. According to the market size theory, a nation's GDP is related to sales and GDP per capita. As long as Uganda's GDP is low, the country is likely to be less attractive to FDI. Meanwhile, the Capital Theory indicates that capital moves from low to high-return countries. As long as GDP per capita is low, indicating limited sales and low returns to investment, poverty is likely to continue affecting FDI in Uganda. This partly explains the reasons for the closure of a number of firms and the subsequent relocation to Kenya, a country considered as a higher-income country. Regarding the internal financing theory, in situations of poverty, returns to investment are often low. As such, MNEs driven by internal financing are likely to find Uganda less attractive to investment. Considering these theories, poverty is a concern for the nation as FDI is determined by the extent to which poverty reduces in the country.

A further review indicates that although insignificant, the coefficients for economic growth, employment and human capital are positive and consistent with the predicted coefficients. Another review could mean that due to poverty, MNEs find Uganda a better destination for investment. Due to economic instability in Uganda in the 1970s, there was a need for import substitution industries such as sugar, soap and salt. As economic growth there is insignificant, Uganda became a better destination for market-seeking MNEs, and demand was high. The Internalisation Theory explains FDI in flows, in the sense that a nation's political and fiscal policies are main drivers of FDI. A wide package of incentives not provided to local investors, such as tax holidays and free land for industrialisation, are offered to investors. In this way, investors find Uganda a better destination for investment, as these incentives serve as subsidies.

The Eclectic Theory can partly explain poverty as a cause of FDI in Uganda. Chapter Two indicated that local investors lack the financial and technical capacity to invest in projects requiring heavy investment. Due to location-specific advantages, FDI comes to Uganda to conduct projects such as mining, road and rail construction and electricity generation.

The Kojima Japan model can also be partly applied to Uganda, as FDI is poverty driven. By Kojima categorising FDI as a resource, labour and market-seeking based on the comparative advantage, the theory becomes relevant to Uganda. Due to abundant natural resources, trade-oriented natural resource-seeking foreign investors often come to Uganda to exploit resources that otherwise are not. Only foreign investors have the capacity to invest in huge projects. Also, trade-oriented labour-seeking MNEs have found Uganda a better destination. Due to poverty, weak labour unions and no minimum wage legislation, Ugandans are often willing to accept any work. Salary earners, such as primary school teachers, are considered better paid, but they earn less than USD 100 per month. This study indicates that as wages increase in industrialised countries, Uganda gains a comparative advantage in labour-based import substitution manufacturing. This enables the country access to consumer goods such as soap, sugar, paraffin and salt at low-cost and on high-demand.

Our findings, according to the FDI systems equation, indicate that only openness and poverty explain FDI. However, the negative coefficient for openness creates concerns for government. Although insignificant, the positive coefficients for economic growth, human capital and employment create concerns for the need to reduce poverty.

10.4.5 Tourism Systems Equation Estimation, Analysis and Interpretation

The aim of estimating this equation was to understand the determinants of tourism in the perspective of the explanatory variables included in the VECM systems simultaneous equation. The results of our estimation equation are presented in Table 10.17.

Table 10.17: Tourism equation summary results

		Coefficient	Std. Error	t-Statistic	Prob.
Long-run	C(46)	-0.250308	0.100554	-2.489282	0.0285
Economic growth	C(47)	-3.782844	3.671892	-1.030216	0.3232
	C(48)	2.867304	3.287904	0.872077	0.4003
Employment	C(49)	-19.87340	7.774857	-2.556112	0.0252*
	C(50)	-22.39680	6.179024	-3.624650	0.0035*
FDI	C(51)	-0.149487	0.284202	-0.525987	0.6085
	C(52)	-0.250990	0.223267	-1.124169	0.2829
Tourism	C(53)	0.539136	0.257742	2.091767	0.0584
	C(54)	-0.524093	0.235127	-2.228977	0.0457*
Poverty	C(55)	0.892223	0.685959	1.300695	0.2178
	C(56)	0.448964	0.556614	0.806599	0.4356
Constant	C(57)	-5.857084	6.428455	-0.911119	0.3802
Inflation	C(58)	1.069174	0.290300	3.683003	0.0031*
Openness	C(59)	1.121433	0.725852	1.544988	0.1483
Human capital	C(60)	0.140438	0.416399	0.337269	0.7417
R-squared		0.805370	Mean dependent var		0.127815
Adjusted R-squared		0.578303	S.D. dependent var		0.450656
F-statistic		3.546827	DW stat		2.233114
Prob(F-statistic)		0.017023			

Notes: *Significant at critical level= 5%

The findings indicate that the independent variables explain tourism in Uganda by 57.83% jointly, as indicated by the adjusted R-square. Also the F-statistics is significant (P-value=0.017), meaning that the independent variables jointly influence tourism. Also, findings indicate that the error correction term is significant, and the coefficient $C(46)$ is negative (-0.25), indicating that there is long-run causality from the dependent variables to tourism in Uganda. With these observations, we now present diagnostic test results to validate our findings for economic policy analysis.

10.4.5.1 Tourism Systems Equation Diagnostic Tests

Residuals are tested for model stability, autocorrelation, constant variance and normality.

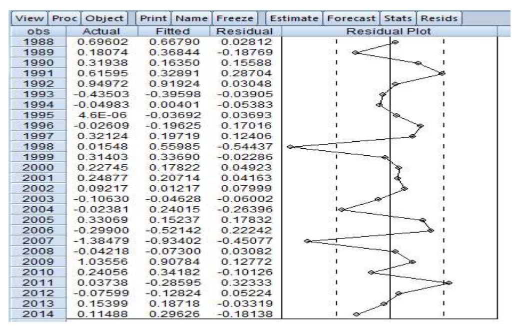
10.4.5.1.1 Test for Stability

Stability is tested by conducting the actual and fitted table, as well as the CUSUM test and recursive coefficients stability test. The results are indicated in Figure 10.14. All tests indicated that the tourism systems equation is valid and provides sufficient results for economic analysis. First, as indicated by Figure 0.86 (A) and (B), we can observe that the actual and fitted graph and table, as well as the residual plot, reflect that the model fits well. The residual for FDI indicates that our data is stationary, rotating around zero, meaning that the regression is not spurious. Second, we investigated the structural change instability employing recursive residual estimates. Our findings indicate an absence of any instability because the CUSUM test statistic and the recursive coefficients are confirmed within the 5% critical bounds of parameter stability. This means that we accept the null hypothesis and conclude that our parameters are stable, and as such are without misspecification.

Figure 10.14: Tourism systems equation stability tests

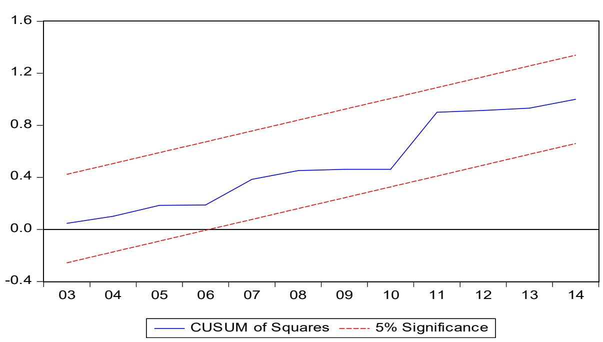
(A) Residual actual and fitted graph

(B) Residual actual and fitted table

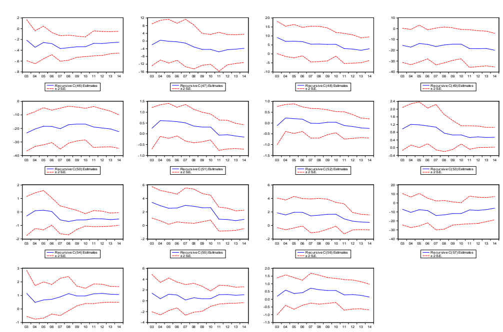


obs	Actual	Fitted	Residual
1988	0.69602	0.66790	0.02812
1989	0.18074	0.36844	-0.18769
1990	0.31938	0.16350	0.15588
1991	0.61595	0.32891	0.28704
1992	0.94972	0.91924	0.03048
1993	-0.43503	-0.39598	-0.03905
1994	-0.04983	0.00401	-0.05383
1995	4.6E-06	-0.03692	0.03693
1996	-0.02609	-0.19625	0.17016
1997	0.32124	0.19719	0.12406
1998	0.01548	0.55985	-0.54437
1999	0.31403	0.33690	-0.02286
2000	0.22745	0.17822	0.04923
2001	0.24877	0.20714	0.04163
2002	0.09217	0.01217	0.07999
2003	-0.10630	-0.04628	-0.06002
2004	-0.02381	0.24015	-0.26396
2005	0.33069	0.15237	0.17832
2006	-0.29900	-0.52142	0.22242
2007	-1.38479	-0.93402	-0.45077
2008	-0.04218	-0.07300	0.03082
2009	1.03556	0.90784	0.12772
2010	0.24056	0.34182	-0.10126
2011	0.03738	-0.28595	0.32333
2012	-0.07599	-0.12824	0.05224
2013	0.15399	0.18718	-0.03319
2014	0.11488	0.29626	-0.18138

(C) CUSUM statistics test for stability



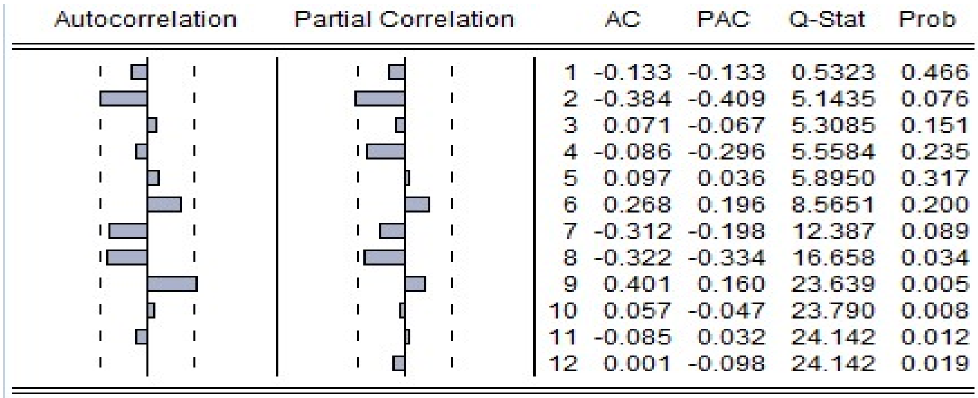
(D) Recursive coefficients test



10.4.5.1.2 Test for Serial Correlation

Test for the absence of autocorrelation was conducted by employing a correlogram Q-Statistics test. The results are indicated below.

Figure 10.15: Correlogram Q-Statistics test results



	AC	PAC	Q-Stat	Prob
1	-0.133	-0.133	0.5323	0.466
2	-0.384	-0.409	5.1435	0.076
3	0.071	-0.067	5.3085	0.151
4	-0.086	-0.296	5.5584	0.235
5	0.097	0.036	5.8950	0.317
6	0.268	0.196	8.5651	0.200
7	-0.312	-0.198	12.387	0.089
8	-0.322	-0.334	16.658	0.034
9	0.401	0.160	23.639	0.005
10	0.057	-0.047	23.790	0.008
11	-0.085	0.032	24.142	0.012
12	0.001	-0.098	24.142	0.019

The correlogram Q-Statistics results are not significant at 5% critical level, and as such are valid. Following these results, we conduct the Breusch-Godfrey serial correlation LM Test. The results are summarised below.

Table 10.18: Tourism equation Breusch-Godfrey serial correlation LM Test

F-statistic	1.309489	Prob. F(2,10)	0.3125
Obs*R-squared	5.603654	Prob. Chi-square(2)	0.0607

According to our results, the observed R-squared Chi-square probability value is not significant at 5% critical values. Following these findings, we conclude an absence of serial correlation in the model.

10.4.5.1.3 Test for Heteroscedasticity

We tested for heteroscedasticity by conducting the Breusch-Pagan-Godfrey Test and ARCH test. The results are indicated below.

Table 10.19: Tourism equation test for heteroscedasticity

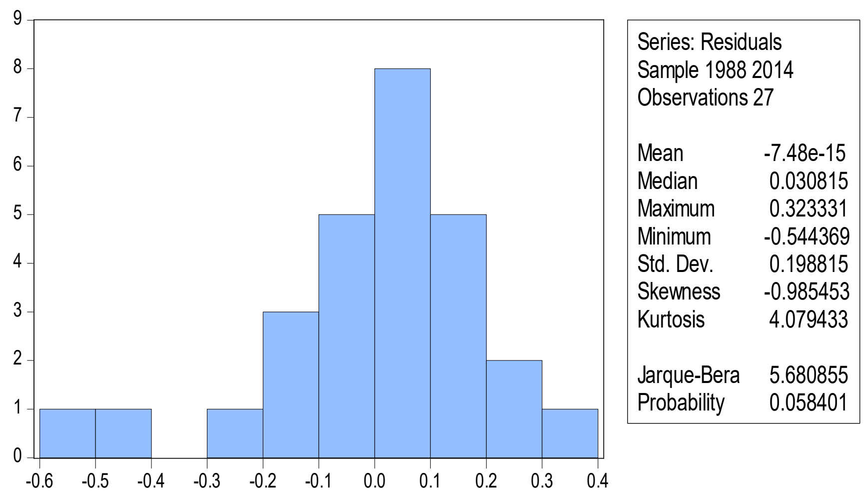
Heteroscedasticity Test							
Heteroscedasticity Test: Breusch-Pagan-Godfrey				ARCH			
F-statistic	0.391	Prob. F(18,8)	0.953	F-statistic		Prob. F(1,24)	
Obs*R-squared	16.637	Prob. Chi-square(18)	0.812	Obs*R-squared	0.511070	Prob. Chi-square(1)	0.4747
Scaled explained SS	1.066	Prob. Chi-square(18)	1.000				

Both the observed R-square probability values for Breusch-Pagan-Godfrey Test and ARCH test are not significant at 5% critical value. This means that our model is homoscedastic and valid for economic analysis.

10.4.5.1.4 Test for Normality

The test for normality, as previously investigated, is indicated by skewness: $-1 > 0 < 1$, and the kurtosis as $1<3$. The JB test that confirms normality is indicated by $1<5.99$. The results are indicated below.

Figure 10.16: Test results for normality



The results indicate that skewness is -0.985 and kurtosis is indicated by 4.07. Meanwhile, the JB test indicates 5.68 with a corresponding probability value not significant at 5% critical value. Though kurtosis is indicated as greater than three, according to visual graphical display, the data are normally distributed. Normality tests are usually confirmed by the JB test. In this respect, we can confirm that our model is normally distributed and valid. Following the diagnostic tests conducted, all probability values are greater than 5%, meaning that our estimated FDI equation is valid. We now present and interpret the results.

10.4.5.2 Interpretation of the Tourism Systems Equation Results

The findings of this study indicate that despite Uganda being attractive to tourism, employment and CPI are the only significant variables. However, the signs predicted are inconsistent with our findings, which indicate that a unit increase in inflation causes tourism to increase by 106%. Inflation enables Uganda to become a favourable destination for tourists. This can partly due to a *seigniorage* tax, which is linked to currency devaluation, explained earlier. Often governments devalue their currencies to boost exports. Considering tourism as an export, tourists find it cheaper to travel to Uganda than other countries in the region. As inflation increases in Uganda, tourist numbers increase and so does tourist expenditure. This could indicate that the country's monetary policy is export-biased, with costs to the country as other variables are insignificant to tourism.

Meanwhile, the coefficients $C(49)$ and $C(50)$ indicate that employment is significant and causes tourism to decrease as employment increases. This can partly be explained by Uganda being a least-developed, labour-abundant country. Due to diminishing marginal returns, as more labour turns to tourism, constant and positive diminishing returns can be seen in the tourism sector. Our findings could partly indicate that the tourism sector is underdeveloped. Maintaining tourism as a leading export commodity requires an attractive environment for tourists, including tourism sites, security, social services (i.e., well-equipped hospitals) and infrastructure (i.e., roads and air transport). Tourism in Uganda is underdeveloped, so attracts diminishing returns (explained earlier by the Solow-Swan Theory). The tourism sector requires policy direction and innovations. As employment is significant to the sector, with innovations come an increase in labour and more productivity, benefiting the whole country.

Though insignificant, the negative parameters FDI and economic growth in the first lag (moreover in large proportions) create concerns for the country. This can be attributed to diminishing returns. Though insignificant, poverty coefficients are positive, while openness (though positive) and innovation is insignificant. These findings suggest that Uganda, as a least-developed country, requires more resources, innovations and policy to make tourism a productive sector. In this way, tourism in Uganda is partly dependent on the country's economic growth and the extent to which poverty reduces in the country.

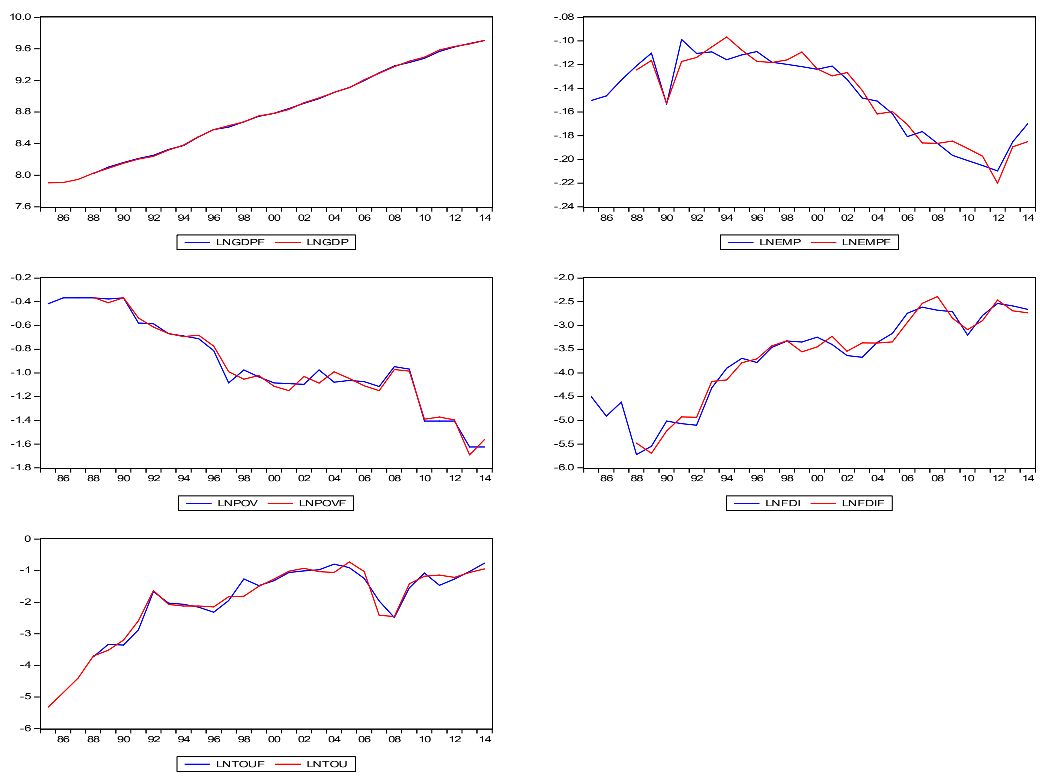
Our findings indicate that employment and inflation contribute to tourism in Uganda. However, the signs of the parameters are inconsistent with those predicted. In Uganda, as a least-developed country, the sector is underdeveloped, which in turn causes diminishing returns. Inflation, as a monetary policy instrument for the nation, can be considered to be export-biased. Costs arise as other variables, such as openness and human capital, are insignificant though positive, as predicted in the hypothesis.

10.5 Economic Growth, Employment and Poverty Reduction in Uganda Ex-Post Analysis

Ex-post analysis is conducted in this study to understand the impact of innovations on the endogenous variables between 1985 and 2014. This research focused on the main concerns of livelihood affecting developing countries, specifically Uganda, as an HIPC. This study focused on the impacts of FDI and tourism as a foreign private capital on Uganda's economic growth, employment and poverty reduction. Ex-post analysis enables us to determine the degree to which past changes and innovations have been successful, plus it enables us to understand the contribution of FDI and tourism in order to propose policy changes for the future.

The ex-post forecast in this study is based on five NLLS-ARMA regression equations. The models have undergone a series of diagnostic tests, first through the original VECM systems model and later through each equation estimated. The five models are free from heteroscedasticity, serial and autocorrelation, and are normally distributed. In addition, the R-square for each model is high and the F-statistics significant in all cases, except in the employment equation. However, this is taken care of by checking the trend of the actual values and the forecasted values, as indicated below.

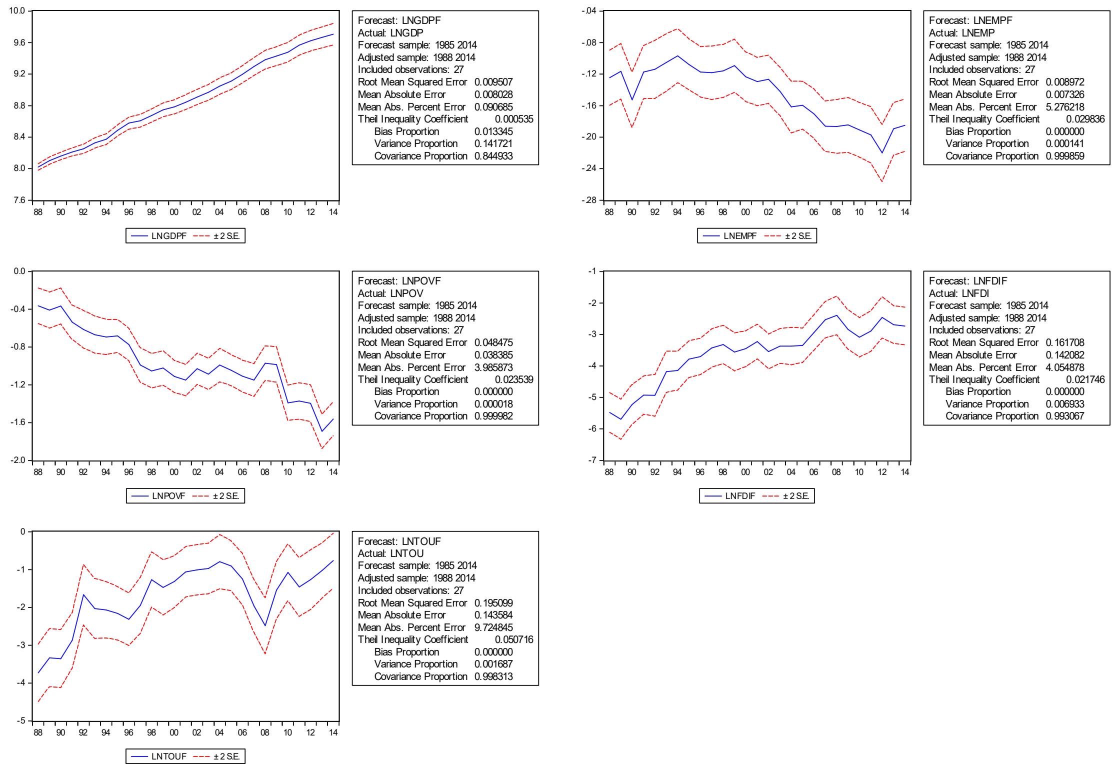
Figure 10.17: Equations ex-post forecast fitted graphs



Our forecast data indicates that the forecasting power of our regression models is quite satisfactory. In all equations, the line graph passes through the two lines within the standard deviation line $(\pm 2SE)$ limit or the 95% confidence interval. Also, the Root Mean-Square

Error (RMSE) is very small in all cases,[47] meaning that the actual values and the corresponding forecast values move together as a predictor for efficient forecast model. The actual values and the corresponding forecast move together, indicating reliable regression equations. As such, we can now interpret each equation and make conclusions for economic policy.

Figure 10.18: Endogenous variables ex-post forecast in Uganda, 1985–2014



The figure indicates that during the period 1985–2014, the endogenous variables suggest that Uganda's economic growth, employment and poverty reduction were promising. However, as a least-developed, highly indebted country, some shortcomings are indicated by the ex-post analysis. First, the country's economic growth was steady upward and nearly constant, with fluctuations. Although this seems good for the country, economic theory indicates that such growth is likely unsustainable. Since 1995, Uganda has experienced declining GDPGR with wide fluctuations, although it has maintained positive growth each year.

Regarding employment, Uganda's future looks dim, given the declining employment of the LF. This first indicates that Uganda is a labour developing country. Second, as a concern for

[47] RMSE: Economic growth Equation=0.00; Employment Equation= 0.00; Tourism Equation= 0.19; Poverty Reduction Equation=0.04; FDI Equation=0.16

the country, unemployment increases as the proportion continues to decline. Third, this could mean that economic growth is lower than employment growth, which confirms the insignificant contribution of economic growth to employment. In theory, as output increases, so does employment. However, in the case of Uganda, the growth of output is declining overall, with wide fluctuating margins to absorb the steadily increasing LF searching for employment.

A review of poverty reduction in Uganda indicates that poverty has been reducing, supported by economic growth, tourism, openness and FDI. However, the results indicate that the low employment growth rate is a threat to poverty reduction in Uganda. This impact is partly indicated by the insignificant contribution of human capital to poverty reduction. In theory, as human capital increases, poverty is expected to decline because as labour receives training, the availability of employment increases, poverty reduces and welfare increases through salary payment. However, this is not happening as unemployment increases. The contribution of human capital to poverty reduction is insignificant in the case of Uganda.

Finally, forecasts indicate that between 1985 and 2014, foreign private capital, FDI and tourism increased in Uganda. Uganda was a good destination for foreign capital, but the absorption of the increasing capital flows was the challenge for the nation.

10.6 Concluding Remarks

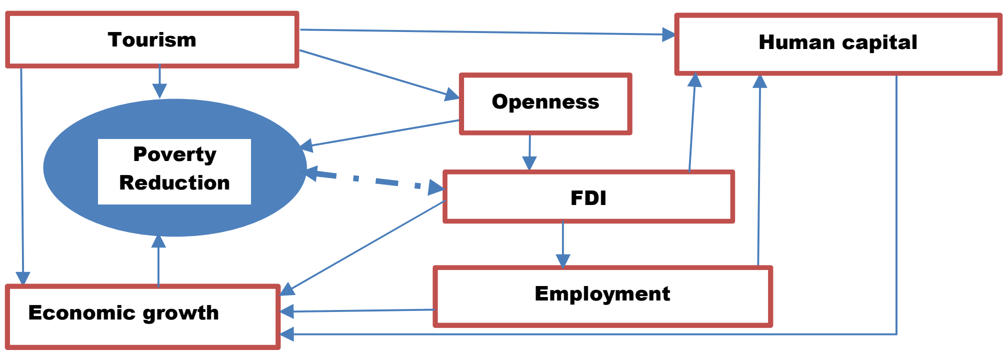
This chapter measured the impact of FDI and other explanatory variables on Uganda's economic growth, employment and poverty between 1985 and 2014. A simultaneous equation was developed based on five endogenous variables, including economic growth, employment, poverty reduction, FDI and tourism. The exogenous variables employed in this study are inflation, openness and human capital. Before estimating the simultaneous equation, causality was tested among related variables, especially human capital and openness, which are treated as exogenous. After understanding the causality among variables, the simultaneous equation was estimated by employing OLS. This was followed by checking the residual for stationarity.

Later we presented our findings on employing NLLS/ARMA adopting the Gauss-Newton/Marquardt steps approach for ease of presentation, interpretation, validation of each model and ex-post forecasting. This is first because the study found the OLS/NNLS/ARMA results to be similar. Second, we found the NLLS/ARMA approach to results presentation was easy and better for analysis, interpretation and validation.

A number of simulations were conducted to provide a better approach for establishing the impact of FDI and explanatory variables on economic growth, employment and poverty in Uganda (a summary of the simulations are illustrated in Figure 10.19).

Following our analysis of the results based on all simulations conducted, the study now summarises the findings in a schematic diagram, with the arrows indicating a causal direction flow. In this way, the study infers the chapter conclusions.

Figure 10.19: Role of tourism, FDI, openness and human capital on economic growth, employment and poverty reduction in Uganda



Notes: Significant with feedback; Significant with no feedback

The above figure indicates the relationship of explanatory variables on Uganda's economic growth and employment between 1985 and 2014. Accordingly, the explanatory direct and indirect relations play a role on economic growth and employment in Uganda, and in turn reduce poverty.

10.6.1.1.1 The Impact of FDI on Economic Growth, Employment and Poverty Reduction in Uganda

The objective of this study was to establish the impact of FDI on economic growth, employment and poverty in Uganda. Our findings indicate that FDI contributes to economic growth, employment and poverty reduction, as well as human capital. Second, we found endogeneity to exist between FDI and poverty. We can conclude that some FDI in Uganda is poverty-induced. After the international sanctions that crippled Uganda's economy, there was a high demand for consumer goods such as sugar, soap and salt. Investors rushed to Uganda to meet the existing demand in import substitution manufacturing industries. This situation is similar to humanitarian-induced foreign investments during colonialism.

However, the FDI-negative coefficient on economic growth raises policy implications. First, according to the Solow-Swan Model, this situation can be attributed to declining TFP. Second, as indicated by the Malign Model, Uganda's absorption capacity could partly explain the cause and policies that are more oriented towards FDI and stimulating international trade. Third, this could be attributed to the impact of inflation on economic growth, employment, poverty reduction and tourism, especially money expansion.

10.6.1.1.2 The Impact of Tourism on Economic Growth, Employment and Poverty Reduction in Uganda

To promote exports through the ELGS, openness was introduced as a policy. Tourism expenditure explains economic growth, poverty reduction, FDI inflows and human capital in the country. Also, though insignificant, the coefficient for tourism in the employment equation is positive and consistent with the predicted sign of the hypothesis. In this way, based on Figure 10.19, spill-over effects can be identified through the relationship between tourism, openness, FDI and employment. Spill-over effects are identified through tourism, economic growth, poverty reduction, FDI and employment. Through tourism, human capital, economic growth, poverty reduction and FDI relations, the study finds spill-over effects that contribute to employment in Uganda. In this way, the study findings are consistent with findings in the literature review. Tourism contributes to a nation as its largest single sector foreign exchange earner, and contributes towards FDI tourism-induced investment. Also, empirically, tourism contributes to employment in Uganda through spill-over effects. Nevertheless, the negative coefficient of tourism expenditure towards economic growth raises concerns similar to those of the situation with FDI. Tourism plays a central role directly on economic growth and poverty reduction, and employment though spill-over effects in Uganda.

10.6.1.1.3 The Impact of Inflation on Economic Growth, Employment and Poverty Reduction in Uganda

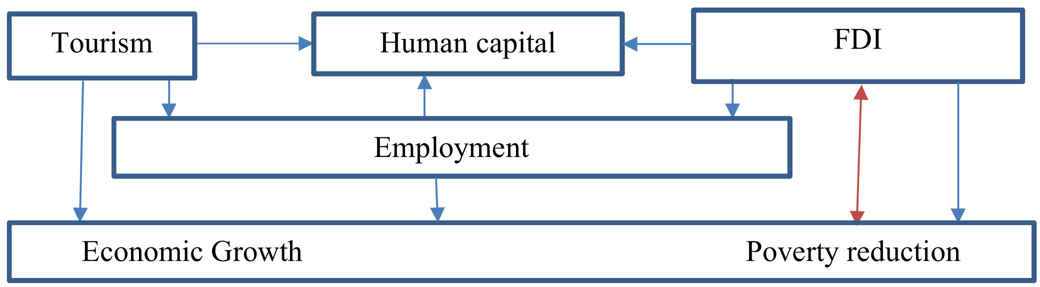
The findings indicate that inflation is significant and negative to economic growth and poverty. This means that reducing inflation in Uganda is important for the country's economic growth and poverty reduction. We find that the coefficient for inflation in the employment equation is positive and significant. This partly indicates that Uganda is a least-developed country that is often affected by a huge budget deficit. Through *seigniorage* that causes money expansion, the government is able to finance its programmes. This means that through money supply, the government is able to recruit employees who cannot be absorbed by the normal budget, and pay wages and salaries. Also through money expansion, the government can finance government programmes and projects, thus creating more employment. However, this is not good for the employed sector, as inflation is related to increasing prices while salaries and wages often remain the same. In-turn welfare reduces while poverty increases. This partly explains the high percentage of the insecure non-poor, who account for over 40% of Uganda's total population. This category is mainly comprised of the working class who would return to poverty if they lost their job, or upon retirement.

Finally, the findings indicate that when inflation increases, so does tourism, as indicated by the positive coefficients. This can be explained by devaluation as a government policy to increase exports. Despite this positive attribute, since inflation affects economic growth and poverty negatively, the benefits of job creation and tourism expenditure are eroded. Considering tourism as an export, tourists find Uganda to be a good destination. However, devaluation is linked to money expansion in the economy. As money expansion increases, so does inflation, but welfare decreases while poverty increases. Also, to reduce inflation, the government employs interest rates as a tool, but increasing interest rates discourages the borrowing of capital for investment. In turn, production reduces and so does economic growth. Therefore, tackling inflation becomes a better monetary policy.

10.6.1.1.4 The Contribution of Domestic Resources on Economic Growth, Employment and Poverty Reduction

The findings of this study indicate that economic growth contributes to poverty reduction and FDI, as well as the spill-over effects for employment creation in Uganda. As such, increasing economic growth is a tool for poverty reduction and employment creation in the long-run. Second, employment of Uganda's LF and resources is a tool for economic growth, poverty reduction through human capital, tourism and FDI. In Uganda, a least-developed country with abundant labour, employment becomes a tool for economic growth and poverty reduction, directly and through the spill-over effects of tourism and FDI. This is summarised below. Openness and inflation are direct innovations, affecting the whole system.

Figure 10.20: Summary causality among variables



Notes: ⟷ Significant with feedback; ⟶ Significant with no feedback

In sum, our findings indicate that tourism and foreign investments play a central role in Uganda's economic growth, employment and poverty reduction. The main objective for this thesis was to examine the impact of FDI on Uganda's economic growth, employment and poverty reduction. We conclude that FDI contributes to Uganda's economic growth, employment and poverty reduction. However, the negative coefficients for the contribution of FDI, tourists'' expenditure and human capital on economic growth are a concern for policy for the GOU. For the country to benefit more from foreign investment and tourists' expenditure inflows there are policy implications that require fiscal, monetary and commercial policy review. In particular, though the coefficient is positive openness insignificantly contributes to economic growth nor to employment in Uganda. This situation is not good for the nation since openness is intended to accelerate economic growth and employment creation in the country. As explained by empirical studies, this can be explained by immiserizing growth contribution of openness to Uganda. First, Uganda experiences increasing economic growth but poverty is still a concern for the country. Second, to promote exports, money expansion is the tool used by the GOU. The results indicate that due to money expansion the country experiences inflation but employment increases. This is the root for immiserizing growth in Uganda that comes at a cost. With no minimum wage, the salary earners are unable to earn a living wage. In turn, the insecure non-poor increase in Uganda as does income inequality. Meanwhile, peasants living on subsistence agriculture cannot earn the high price for agricultural products.

Chapter 11: Conclusions, Implications and Future Research

11.1 Introduction

The main objective of this thesis has been to investigate the impact of FDI on economic growth, employment and poverty reduction in Uganda. In Chapter Two, the study first examined the historical, political, governance and economic perspectives. In this chapter, the economy of Uganda was reviewed by exploring the trends in economic growth, as well as social indicators, including GDP, poverty and employment. This was followed Chapter Three which presented a literature review on FDI inflows into Uganda since 1845 when the first known non-African who visited the Kabaka of Buganda. The subsequent Chapter Four explored the theories that explain FDI phenomena across the globe. The literature review and exploration of this chapter set the basis for modelling economic growth, employment and poverty in Chapter Five. Upon this background, Chapter Six modelled FDI and other explanatory variable (openness, tourism, FDI, human capital, GE, telecommunication, inflation and civil war) on economic growth, employment and poverty.

Following literature, theory and modelling conducted; Chapter Seven established the theoretical framework and empirical analysis methods. Later, in chapters: eight to ten, simulations were conducted. Chapter Eight investigated the time series properties as well as conducting an investigation concerning the variables study. After, Chapter Nine the study conducted a number of simulations that included testing cointegration and establishing a long-run relationship among the series. Later, a simultaneous equation was developed, comprising of five endogenous variables: economic growth, employment, poverty, FDI and tourism. The exogenous variables are inflation, openness and human capital. Following the simultaneous equation, a short-run relationship was tested, based on the VECM systems approach. After this, ex-ante forecasting, involving impulse response and variance decomposition analysis was conducted. Finally, in Chapter Ten, the hypothesis was tested: the simultaneous systems equation was tested, employing OLS.

From the findings, the study concludes that FDI contributes to economic growth, employment and poverty reduction in Uganda. However, although FDI, tourism and human capital contribute to economic growth, the coefficient is negative, raising policy concerns.

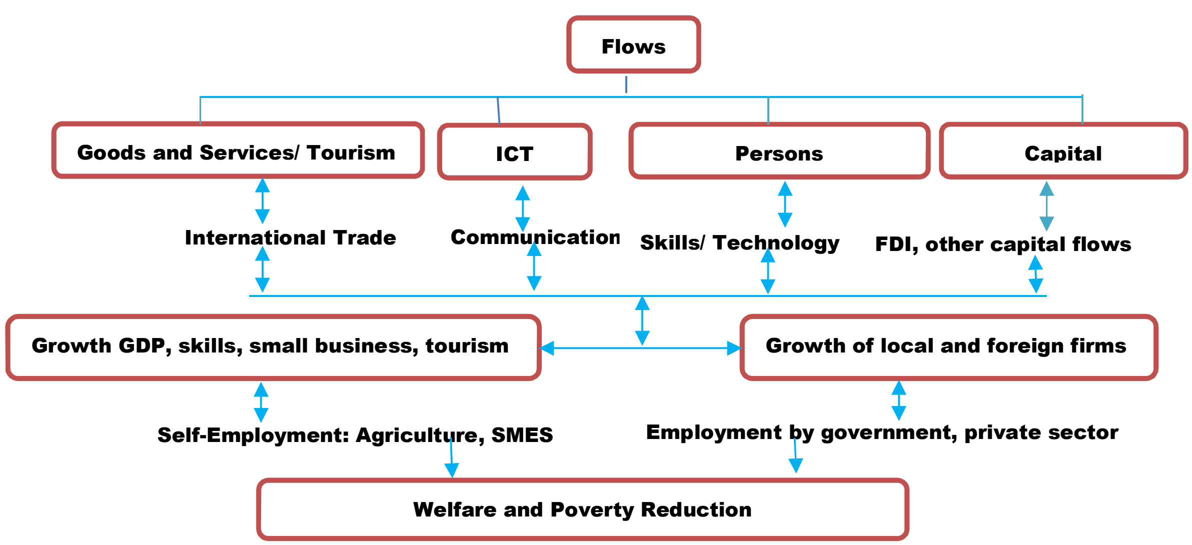
11.2 Overview of the Study

This overview is based on literature and theoretical review of this thesis.

11.2.1 Uganda's Economy and Economic Reforms

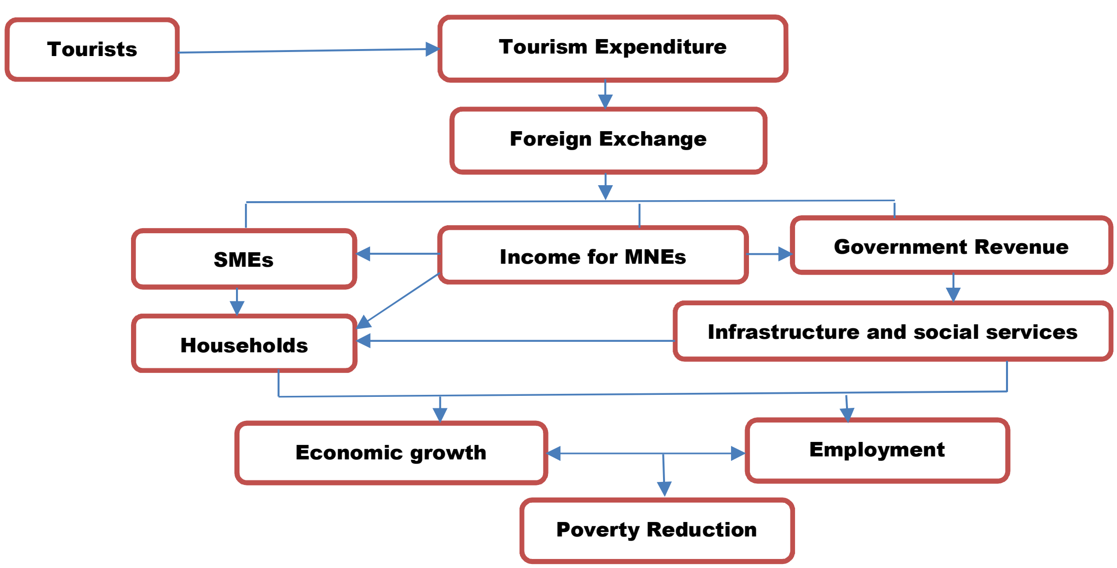
Uganda's economy and economic reforms overview is based on literature review conducted in Chapter Two. First, this chapter indicates that Uganda is a least-developed HIPC, although endowed with abundant labour and natural resources, including tourism attraction sites. Second, agriculture employs over 80% of Uganda's population, as the majority live in rural areas. Being an agricultural country, it still relies on four main traditional cash-crops, introduced to the country during colonialism in the early 1900s, namely coffee, cotton, tea and tobacco. Although the economy had been predicted to growth after Independence, the country went through civil wars. In particular, the review in Chapter Two indicates that since the overthrow of the first elected government of Sir Edward Mutesa in 1966, the economy of Uganda started to experience political and economic instability. This was exacerbated by international sanctions in the 1970s, and subsequent wars. Third, after the 1979 war, the GOU introduced monetary, fiscal and commercial policies, supported by donors. The initiatives included openness, the control of inflation and human capital development. Openness was introduced as a policy for promoting trade and investment to the country, through the ELGS, which enhances four main domestic and international flows: goods, services and tourism, ICT, movement of persons and capital. The benefits of these are illustrated under Figure 11.1.

Figure 11.1: The role of openness to Uganda's economy since the reforms



The flows illustrate that openness, directly and indirectly contributes to economic growth, employment and poverty reduction in Uganda. In the first instance, openness enhances the flow of goods and services, and in turn promotes international trade. The study finds that total trade increased from USD 1,012 million in 1985 to USD 12,908 million in 2014. However, although total trade has increased, the TOT continuously declined since 1985, from USD -45 million to USD -2,469 million in 2014. This could partly be attributed to the increasing need for intermediate goods, which are required in the growing manufacturing sector. Also, trends indicate that the importance of traditional cash-crops has declined. New products—such as fish, flowers, manufactured goods and service trades—have gained prominence. Meanwhile in the second instance, the study finds that openness promotes tourism in Uganda. As a result, tourism is the single largest export commodity for the country, upon which tangible benefits have been identified. To this extent inbound tourism expenditure increased from 1.003 million in 1985 to USD 1,157 million but declined to 1,039 million in 2014 representing a 10.2% decline. The tourism sector benefits as a foreign capital flow are illustrated in the figure below.

Figure 11.2: The role of tourism on Uganda's economic growth, employment and poverty reduction



Through tourists' expenditure, Uganda earns foreign exchange with tangible benefits. Most important, SMEs have been developed based on tourism-induced demand, such as craft and souvenir shops, hotels and restaurants at tourist sites and cruises and travel agencies. Further, MNEs earn income, and the study finds that tourism demand is a source of foreign investment in huge projects such as five star hotels and airlines. Consequently, both SMEs and MNEs become a source for households and employees. Finally, tourism is a source of government revenue directly from tourists and indirectly, through sources such as income tax from MNEs and PAYE from employees.

Furthermore, literature indicates that openness in Uganda is a tool for enhancing ICT as an indicator for technology. To this end, through the growth of telecommunications, this study finds telephones to be a pro-poor technology that facilitates production and communication through connectivity networks. The study finds that telephones as telecommunications tools enhance access to information and dissemination for social and economic purposes. During the same period, telephones per capita increased from 0.11 telephones per 100 persons in 1985 to 74.79 telephones per 100 persons in 2014. Finally, the study finds that openness in Uganda has enhanced the flow of humans and other foreign capital flows such as FDI, enabling the nation to access skills and technology.

Although Uganda registered such impressive achievements, poverty and unemployment are still concerns. According to findings of this study, more than 50% of the population is below the age of 18. Also, over 60% of the country's youths are unemployed. As such, findings indicate that as Uganda's population increases, the employment-to-LF ratio decreases, indicating declining employment and increasing unemployment. As unemployment increases, poverty also increases. For example, in terms of head count, the insecure non-poor increased from 6.03 million 1992 to 14.93 million 1993, out of a total population of 34.494 million. Income inequality index increased from 0.36 in 1993 to 0.40 in 2013. Therefore, poverty is still a critical subject since the poor, in general terms, comprise nearly half the population.

11.2.2 FDI Inflows and Investment Regulations in Uganda

Literature review in Chapter Three indicates that FDI as a source of physical capital has been in existence in Uganda for a long time. FDI origins in Uganda can be traced from Ibrahim's 1845 visit, from Oman. He was the first known non-African to visit the Kabaka of Buganda. Since then, Arabs started to establish trading links with natives. In particular, Arabs exchanged guns and cloth for slaves and precious commodities, such as ivory. Later, in 1862, Speke and Grant arrived at the Palace of the Kabaka of Buganda, opening Buganda's doors to Europe. As explained in Chapter Two, Uganda became a British Protectorate in 1894, following the Berlin Conference of 1884. To economically develop Uganda, a dual economic system was adopted, in which Europeans were invited to invest in plantation agriculture, such as coffee, tea, sugarcane, tobacco and cocoa. This policy marked the beginning of European FDI inflows into Uganda, building on the foundation that had been started by Arabs.

The literature of this chapter indicates that the first form of FDI from Europe was poverty-induced, mainly from missionaries in the form of humanitarian FDI. In addition to preaching Christianity, missionaries built schools and hospitals and invested in agriculture. In this way, missionaries played a role in transforming Uganda's agrarian communities. Building on this foundation, the colonial government constructed the UR and built roads. While Europeans were taking up commercial agriculture, Asians from India, China and Sri Lanka moved into the business sector, acting as middlemen for European exporters and importers. Following the 1946 Worthington Plan, other sectors—such as mining, energy and import substitution manufacturing—started to take shape.

Based on the British Government's foundation at Independence in 1962, the economy of Uganda was set to grow. The new government introduced initiatives such as attracting FDI, foreign aid and mobilising domestic tax revenue to lead to accelerated economic growth, create jobs and reduce poverty among communities. Regarding FDI, in 1963 the Uganda Industrial Act was enacted, followed by the 1964 FIPA. Following these initiatives, the economy of Uganda started to grow steadily, but these initiatives were disrupted following the overthrow of President Obote through a military coup, led by Amin. Following the coup, Asians of British origin were expelled from Uganda. The international community imposed sanctions on Uganda and foreign investments ceased. Uganda then started to experience political and economic instability until Amin was overthrown in 1979. After this, economic reforms were adopted. In particular, openness was adopted to promote trade and investment. The government then appealed to Asians to return to Uganda and repossess their property and investments. Later, in 1991, the FDI Investment Code and UIA were established. Since the reforms, FDI has increased from USD 30 million in 1985 to USD 1,205.54 million in 2012 though decreased to USD 1,146.13 million in 2014 representing 4.93 percent decline.

Despite the impressive improvement in FDI inflows into Uganda, achieving higher levels of economic growth, increasing employment and reducing poverty are still concerns for government. Knowledge about the impact of FDI on economic growth, employment and poverty in Uganda is limited. Regarding economic performance, previous studies have inconsistent findings on the contribution of FDI on Uganda's economic growth. Obwona

(1998, 2004) indicated that the contribution of FDI to Uganda is insignificant, although positively related. Meanwhile, Kiiza (2007) indicates a positive relationship. As far as this research is concerned, no economic analysis study has established the impact of FDI on Uganda's economic growth since then. Therefore, a question remains: what is the impact of FDI on the economic growth of Uganda? Despite the increasing FDI and planned employment, there is little or no knowledge about the impact of FDI on employment in Uganda. In particular, as far as this study is concerned, no economic analysis has investigated the impact of FDI on employment in Uganda. Finally, despite reducing poverty among communities, there is little or no knowledge about the impact of FDI poverty reduction in Uganda. As such, the need arose to measure the impact of FDI on economic growth, employment and poverty reduction in Uganda.

11.2.3 FDI Theories and Economic Importance

In Chapter Four, the study explored a number of FDI theories ranging from Hymer's IOT to market based theories such as the FDI capital theory, stage model theories and IPE theories. Considering these theories, internationalisation is based on four conditions, termed in this study as firm-home-host-IPE *(FHHIPE)* conditions that explain FDI inflows to a developing nation such as Uganda. This is observations is first, based on tendencies of firms to leap frog low-commitment modes, or to jump immediately to psychically distant markets, as explained by Vahlne and Nordstrom. Leap-frogging can be indicated to mean firms' decisions before investing abroad. FHHIPE conditions affect both the host and home country, and are key determinants for FDI inflows.

Second, the FHHIPE observation as explaining FDI inflows to a developing nation is based the behaviour and characteristics of FDI inflows into Uganda since independence in 1962. According to literature, during the period 1962-1971 when Uganda was peaceful, foreign investments dominated the economy except agriculture. When the country descended into political turmoil and economic instability during the period 1971-1979, FDI inflows as well as Uganda's economic growth became negative. Meanwhile, unemployment and poverty were at the peak as earlier explained. However, after overthrowing Idi Amin in 1979 with peace and the eventual adoption of economic reforms, FDI inflows have tremendously increased and the economy has improved. In-turn the nation has witnessed a commendable achievement in poverty reduction. To this end over 160 countries and representing 62% of WTO member countries have established FDI projects in Uganda since 1991.

Considering the trends of MNE investments into Uganda what is termed as the Frog-*leap Theory* in this study explains FDI inflows into the nation as a developing country. This is because first, MNEs that internationalise develop capacity as explained by theories such as the eclectic theory and the stage model theories. Second, even when MNEs have the capacity, to invest abroad depends on home and host country relations as well as role played by international actors such the UN, IMF and World Bank as explained by the IPE theory. In this regard, this study considers the behaviour of MNEs to the frogs' characteristics as amphibians. Frogs as amphibians the best habitant is the sea. When conditions are favourable on land frogs often leap to such environments especially during the rain-wet season. During drought when the environment is harsh, from land (unusual habitat), three options are possible. First, leap back to the sea. Second, frogs can leap to another rain-wet environment in the neighbourhood. Third, frogs hibernate if any of two options are not feasible to wait another wet season. This is characteristic of FDI inflows into Uganda since independence.

11.2.4 Modelling Economic Growth, Employment and Poverty

In Chapter Five, the study modelled economic growth, employment and poverty by employing theories that explain economic growth. Accordingly, three theories were examined: the Solow-Swan Neoclassical Growth Theory, Mankiw, MRW and NGT, building on the Harrod-Domer Model. The chapter first finds that the Solow-Swan Neoclassical Growth Theory indicates the importance of capital and labour to production. However, the MRW came into being due to ignoring the role of human capital in the Solow-Swan Model. By including human capital, the Solow-Swan Model was augmented. Despite the inclusion of human capital in the ASSM, the NGT proposed a solution to the steady state. Second, the study finds that the NGT explains that endogenous factors are important for a nation's growth. The theory internalises technology and human capital as well as government policy as endogenous factors that enable a nation attain increasing returns-to-scale, and in turn there is no convergence, as explained by the ASSM.

Although the NGT provided a new outlook, explaining the determinants of production in a nation, the model is noted to be inadequate. For example, the theory did not attempt to include increasing returns, explained by the ASSM. By augmenting the Solow-Swan Model, the study finds that the concerns of the NGT are taken care of by considering endogeneity, which exists among variables. This study employs the ASSM in modelling economic growth, employment and poverty.

The study finds that following the ASSM, as households engage in gainful employment through LFP due to increasing TFP, a nation's economic growth accelerates. In turn, as employment increases, poverty reduces, but subject to the properties of the Solow-Swan Model. First, the essentiality property means that due to huge physical capital deficiency, there is a need for increasing foreign capital flows, such as FDI and tourism expenditure, to bridge the gap in the private capital deficiency. Second, increasing returns-to-scale are required; otherwise a nation experiences declining TFP. With innovations such as government policy, human capital and technology, a nation cannot experience a steady state of growth. Finally, though savings are not easily forthcoming to developing countries such as Uganda, nurturing a savings culture in the country is quite important. In this way SMEs can develop, which in turn increases economic growth, employment and poverty reduction.

11.2.5 Major Findings from Modelling the Impact of FDI and Other Explanatory Variables on Economic Growth, Employment and Poverty in Uganda

Modelling the impact of FDI and other explanatory variables on Uganda's economic growth, employment and poverty was based on the Solow-Swan Model. In Chapter Two, the study explained that the GOU adopted openness as a key commercial policy for investment and international trade. This was intended to promote exports, including tourism, and to attract FDI into the country. Accordingly, the chapter started by modelling openness, demonstrated through the theory of comparative advantage. According to the theory, when a country specialises first, production increases in the commodity of comparative advantage, which in turn increases investment. Second, exports increase in the sector of specialisation, while the nation imports the commodity of comparative disadvantage. According to the findings, as the openness index increases, so do tourism and FDI flows. In the ASSM, openness is regarded as a government policy for trade and investment, and as such, innovation.

Tourism expenditure and FDI in the ASSM are treated as foreign capital flows. Tourism is regarded as an export commodity for Uganda, and tourists' expenditure is treated as a foreign capital flow that promotes economic growth, employment and poverty reduction. Accordingly, in the Solow-Swan Model, tourism is efficiency in three perspectives. First, tourism is income to the government and private sector. Second, tourism is an export commodity, through which the country earns foreign exchange. Third, tourism demand promotes FDI due to the private-sector capital gap. This relationship is in Chapter Two. If tourism and FDI are foreign capital flows, then human capital, LF and GE are local factor inputs or resources for the nation, used during production in the ASSM. In this way, GE contributes to production through infrastructure development, social service delivery and as a tool for employment creation in a nation. As a result, GE contributes to poverty reduction through its contribution to efficiency, production and employment. Meanwhile, human capital contributes to a nation through skills that enhance productivity. Therefore, as factor inputs, a nation attains accelerated economic growth, employment and poverty reduces among communities in the long-run. The study further modelled other variables, including inflation, telecommunications and civil war. In the ASSM, inflation is regarded as a government policy tool for macroeconomic stability. In this way, inflation affects economic growth and employment negatively, while it is positively related to inflation. Regarding telecommunications, the study finds that this is pro-poor technology that promotes efficiency through network connectivity.

However**,** the contribution of factor inputs (FDI, tourists' expenditure and human capital) on economic growth, job creation and poverty is subject to the assumptions of the ASSM. First, constant returns to scale. This means that *ceteris paribus* with stable macroeconomic conditions, even if factor inputs do not increase, a nation experiences increasing economic growth. Second, positive and diminishing returns to factor inputs meaning that capital and labour factors are assumed to be positive but subject to diminishing returns. Therefore increasing TFP is a precondition for the nation to benefit positively from factor inputs, both local and foreign flows, such as FDI and tourism expenditure. Second, due to private capital deficiency, the essentiality property demonstrates that increasing foreign capital flows in form of FDI and tourists' expenditure are important for Uganda. Therefore, government policies that stimulate economic growth are important innovations for the country.

11.3 Hypotheses Tests Major Findings

To test the hypotheses the study first modelled economic growth, employment and poverty by employing theories that explain economic growth. In this respect, this study is based on the ASSM neoclassical growth theory. According to the theory, this study finds that production in a nation depends on factor inputs such as physical capital, human capital, labour and efficiency. In this regard, as households engage in gainful employment through LFP due to increasing TFP, a nation's economic growth accelerates. In turn, as employment increases, poverty reduces, but subject to the properties of the Solow-Swan Model previously explained.

Therefore, accelerated economic growth and employment in a developing nation such as Uganda depends on the assumptions of ASSM.

To test the hypotheses, a theoretical framework and empirical analysis procedure was established. The theoretical framework presented the relationship among variables. After, the variables were defined and the methods of measurement were provided. Meanwhile the procedure for hypotheses tested was based on four milestones each representing a chapter whose findings are presented under the subsequent sections. According to the procedure, the first milestone of analysis involved time series properties investigation. This section presented in Chapter Eight involved: data transformation, preliminary variables investigation, correlation analysis, unit root tests and endogeneity simulations.

The second part of the procedure is presented in Chapter Nine. This involved estimating the long-run and short-run relationship among the series as well as conducting ex-ante forecasting. To test for the long-run relationship among series cointegration analysis was conducted. This also provided the study with an opportunity to investigate that the series are cointegrated to same order$[I(1)]$. To establish the existence of a short-run relationship, the study first established a simultaneous equation because in a VAR model employed in this study all variables are treated as endogenous. As such, a simultaneous equation becomes the basis upon which some variables are considered as endogenous or exogenous. Later, the established simultaneous equation was estimated as a VECM. Before estimating the short-run relation, the study validated the model for stability, autocorrelation and normality. After, employing VECM Granger causality approach, the model was simulated and followed by ex-ante forecasting was conducted.

In Chapter Ten, the procedure for hypotheses testing involved estimating the simultaneous equation using OLS. The study findings demonstrate that using OLS provides efficient results. This is because first, the simultaneous equation is estimated based on the results of estimated by VAR, using VECM systems approach. Second, the series are non-stationary at level but stationary at first difference. Third, the series are cointegrated to the same order $[I(1)]$. Fourth, the roots of the companion matrix of the system lie inside the unit circle and are all less than one in absolute terms. Fifth, the number of cointegrating vectors among all variables is equal to the number of endogenous variables. In addition, the residual is tested for model stability, normality, variance and covariance. The results all indicate that data fits the model. Finally, all the equations in the system have the same three exogenous variables.

In this regard, the study finds that the OLS estimator is equivalent to the generalised least square estimator when all equations have identical regressors to all equations in the system.

After validation of the VECM systems simultaneous equation residuals, this study then estimated the five systems equations individually. This is because systems equations estimated under OLS have limited validation tests. Also, the study found that validating the OLS system equation is similar to the validation approaches. As such, the study validated the systems equation estimated under OLS by estimating each of the five equations separately. This was intended to confirm that the findings and conclusions are sufficient for policy analysis. Moreover, under OLS systems, equation ex-post analysis is not application. The only option available is to estimate each equation separately, and then conduct ex-post analysis. To this end, the five VECM model equations were estimated separately by employing the NLLS/ARMA and adopting the Gauss-Newton/Marquardt Method of estimation.

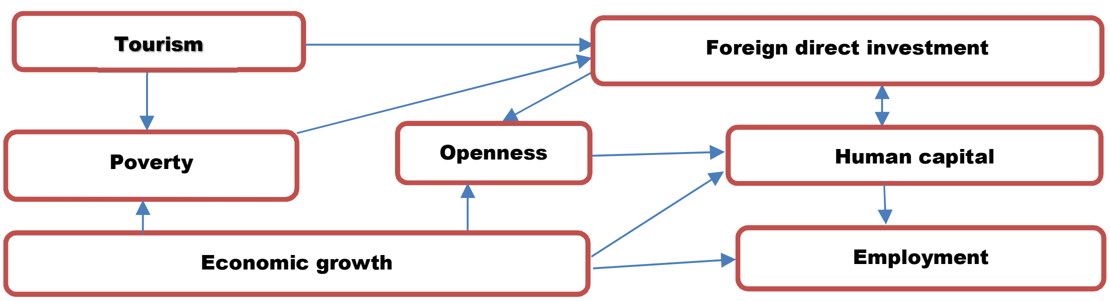
Before estimating the five simultaneous equations by VECM Ganger causality approach, two models are estimated first, endogenous variables including human capital. Second, VECM Granger causality test comprising of endogenous variables and openness. This was intended as a means of understanding the nature of causality among variables of the simultaneous equation. Finally, results the simultaneous equations were tested for stability, serial correlation, stability and heteroscedasticity. This was followed by interpreting the findings of the simulations for each equation and later ex-post analysis was conducted.

The final procedure for hypotheses tests involves presenting the findings and making conclusions. In sum, this study conducted a number of simulations presented in Chapters Eight to Ten. The findings are presented in the sections below upon which first, the main contributions of this thesis are presented. Second, based on these findings, policy implications and policy recommendations are provided. Third, the study also presents the study limitations on which areas for future study are based followed by the study conclusions.

11.3.1 Major Findings Arising from the Series Properties Investigation of the Variables

Although the trend demonstrates that GDP, FDI and tourism expenditure have increased, the growth in output indicated by GDP growth is low, sometimes constant and *de minimis* (only by 0.78 units). This can be explained by assumptions of the Solow-Swan growth model which demonstrates the role of physical capital to nation and TFP as well as the absorptive capacity of the country. The graphical investigation demonstrates that both GDPGR and growth in output has been constant during the period 1985–2014. In this respect, economic growth has fluctuated by around 3.3 units, while GDPGR by 6.11 during the period under study. This is worrying for the nation because employment of a nation's LF largely depends on the rate at which the economy grows *ceteris peribus*. First, the growth in employment is greater than growth in production, meaning increasing unemployment. This is an indicator that Uganda is a least-developed country, with low technology and abundant unskilled labour, and thus low TFP. Second, the trend indicates that Uganda's population is growing faster than LF. Finally, endogeneity tests among variables were investigated, employing pairwise causality tests. The results are summarised below.

Figure 11.3: Summary of findings of the causality pairwise simulations



Notes: ⟷ Causality with feedback; ⟶ Significant with no feedback

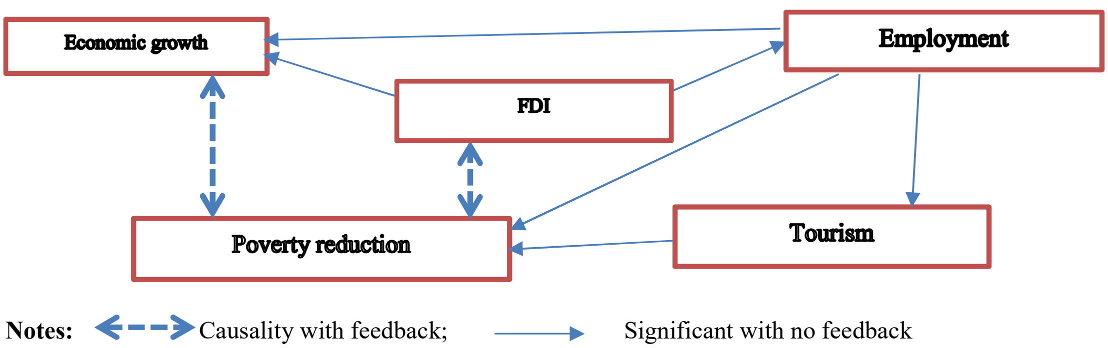
On the basis of the simulation the study concluded that FDI does not Granger-cause economic growth, employment and poverty reduction. However, causality exists between FDI and human capital with feedback. Also, FDI does Granger-cause openness. In addition, the review indicates that there is no variable that explains economic growth. However, economic growth does Granger-cause employment, human capital, openness and poverty. Further, findings indicate that tourism does Granger-cause poverty reduction and FDI, demonstrating that tourism is an important export commodity for Uganda. Since poverty does Granger-cause FDI, some foreign investments are humanitarian-induced, similar to foreign investment during colonialism and soon after Independence.

Finally, the findings of the preliminary investigation indicated that there is little relationship between FDI and economic growth, employment and poverty reduction. We can observe that conditions mainly favour FDI inflows in Uganda because, due to the need to attract tourism, reduce poverty and develop human capital, FDI increases. We can observe that FDI has little impact, except on human capital, and a spill-over effect on employment. We can also observe that conditions are biased towards openness. Due to the need for accelerated economic growth and FDI, the GOU made openness a policy. Similarly, openness Granger causes human capital, with a spill-over effect towards employment. Furthermore, on the basis of this Pairwise Granger causality test, the study concluded employment Uganda local resources is important. This is because according to this simulation as Uganda experiences higher levels of economic growth so does openness. In turn, the nation experiences increasing employment of the LF and human capital development while poverty reduces in the long-run.

11.3.2 Major Findings Arising from the Estimation Short-Run and Long-Run Relationship Among Endogenous Variables

Short-run and long-run simulations were conducted in Chapter Nine, as well as an ex-ante forecast, through impulse response and variable decomposition simulations. The findings of the short-run simulation is illustrated below.

Figure 11.4: Summary of relationship among variables based on Short-run test



On the basis of the short-run simulation among endogenous variables first, the study found that FDI does Granger cause economic growth, employment and poverty reduction in Uganda. Also, the study found that there is feedback between poverty reduction and FDI in Uganda. This is similar to the Pairwise Ganger causality results, which indicate that poverty does Granger cause FDI in Uganda. Second, Employment of Uganda's LF does Granger Cause tourism, economic growth and poverty reduction. Third tourism does Granger cause poverty reduction in Uganda. Finally, the study found that economic growth in Uganda with feedback. This means that there is strong relationship between Uganda economic growth and poverty reduction.

The objective of this study was to establish the impact of FDI on Uganda's economic growth, employment and poverty. Though on the basis of the Pairwise Granger causality, we concluded that FDI does not Granger-cause economic growth, employment and poverty reduction these results indicate the contrary. First, the Pairwise simulation was preliminary investigation. Second, theory and literature indicate that FDI contributes to economic growth, employment and poverty reduction. In this respect, based on the short-run Granger Causality simulation, the study concludes that FDI does Granger cause economic growth, employment and poverty reduction in Uganda. Also the study concludes that tourism contributes towards poverty reduction and FDI, with spill-over effects.

Impulse response indicates that FDI and employment will cause declining economic growth. FDI being physical capital and employment as labour are factors of production that generate output. As such, as output increases, so does economic growth which is contrary to our findings. This could be attributed to the factors highlighted in our preliminary investigation in Chapter Eight. First, literature indicates that Uganda's FDI declined from to USD 1,205.54 million in 2012 to USD 1,146.13 million in 2014. Uganda as a least developed nation, increase of FDI as foreign capital is essential to bridge the gap of private capital deficiency. As a result, if FDI continues to decline in future the nation might continue to experience declining economic growth. Second, FDI and LF employment as factor inputs cause increasing economic growth when the returns to scale are positive. In this respect, Uganda as a least developed nation the declining economic growth could arise from low productivity of factor inputs. This could also mean that Uganda's technology could be low as a least developed nation and labour is not highly skilled. In this way if the trend continues, the nation will experience declining economic growth in the next 10 years.

Third, negative economic growth from factor inputs means that Uganda experiences declining returns to scale. According to the ASSM, the property of constant returns to scale demonstrates that even if factors inputs do not increase a nation can experience increasing returns to scale with stable macroeconomic conditions. This could be attributed to Uganda's macroeconomic instability. Literature indicates that Uganda's terms of trade continue to worsen into the future as explained by Figure 2.7. Also, CPI indicates a key measure for macroeconomic stability indicates that inflation increased from 154 percent per annum in 1985 to 216.05 percent per annum in 2014. This trend if it continues into the future the country is likely to experience declining economic growth as indicated by the simulations.

Furthermore, impulse response function indicates that reducing poverty in the future is a tool for Uganda's economic growth and employment. This is because impulse response function indicates that first, as poverty will decrease the country experience increasing economic growth and FDI in the long-run. Second, due to poverty in Uganda employment and tourism will decline in the country. Regarding employment, due to increasing inflation caused by *seigniorage* incentives to work might reduce and in-turn rising unemployment. Also, tourism is likely to decline due to poverty considering tourism growth demand. According to literature, tourism demand requires heavy investment in infrastructure and at tourism sites as a base for increasing tourists. As such, due to poverty, the government might not have the capacity to invest in tourism and hence a decline in the sector. Third, poverty reduction shocks indicate that poverty will increase in the future. This can be partly explained by the impact factor inputs (human capital and foreign flows) on economic growth where the coefficient is negative. Also, Uganda as a least developed nation and HIPC, the increasing poverty can also be explained by the VCP phenomenon. Therefore, reducing poverty is important for the country to break through the VCP. In this way, increasing the absorption capacity of Uganda is key component in determining the absorption of goods and services

Finally, variance decomposition indicates that innovations to employment followed by FDI (including FDI own shock) cause the largest fluctuations in tourism and FDI. The findings indicate that in the long run, employment of Uganda's LF is important for economic growth, poverty reduction, FDI inflows and tourism. However, FDI growth in the country is far lower than economic growth. For the country to attain higher levels of economic growth, employment and poverty reduction, there is the need for increasing FDI, as its fluctuations are the second highest. Though is indicated that tourism is the single largest foreign exchange-earning commodity for Uganda; tourism causes the least fluctuations in economic growth, employment and FDI.

11.3.3 Major Findings on the Impact of FDI and Other Explanatory Variables on Economic Growth, Employment and Poverty Reduction in Uganda

In Chapter Nine, a simultaneous equation was developed, comprising of five endogenous variables and three exogenous variables. Later, the systems model was estimated using OLS findings to indicate that FDI contributes towards economic growth, employment, poverty and human capital. The study found that employment of Uganda's LF employment contributes to economic growth, tourism, FDI and human capital. The results indicate that tourism contributes towards economic growth, poverty and human capital, and that openness contributes towards economic growth, poverty and FDI. Human capital only contributes to economic growth according to our findings. Finally, inflation is significant to all endogenous variables included in the systems simultaneous equation, except FDI.

Furthermore, the coefficients for openness in the FDI and economic growth equations create policy implications for the country. The GOU intends that openness contributes positively to FDI inflows into the country. However, findings indicate that though significant, openness contributes negatively to FDI inflows into Uganda. This can partly be attributed to the declining terms of TOT. As explained by theory, with declining TOT a nation can experience immiserizing growth ELGS due heavy reliance on export-bias strategy. In the case of Uganda, this is partly true, because the country is now dependent on exports, especially tourism and agricultural exports such as coffee, cotton, tobacco and tea. Also, we find that although openness does Granger-cause FDI, the policy does not Granger-cause tourism as an export. This means that through the ELGS, openness can be indicated as heavily export-biased. However, the shortcomings stayed, and openness is a pillar to tourism and FDI, with direct and indirect spill-over effects for economic growth, employment and poverty reduction. Through FDI, tourists' expenditure human capital contributes positively to Uganda's economic growth though the coefficients for these factor inputs are negative.

The negative coefficients of FDI, tourism expenditure and human capital can be explained by the preliminary investigation conducted in Chapter Eight, empirical findings, Solow-Swan growth model and literature. According to the preliminary investigation, Uganda's economic growth is *de minimis* characterised with wide declining fluctuations. First, foreign capital is essential for Uganda's economic growth to bridge the gap in the private capital deficiency. However, Uganda's FDI and tourism expenditure though increasing often decline and fluctuate with wide margins. This means that Uganda's economic growth is dependent on foreign capital flows without which the nation experiences declining economic growth. In this respect, as foreign capital declines, so does economic growth.

Second, productivity of factor inputs is important for a nation to experience positive returns to scale even if factor inputs do not increase. In this respect, as explained the preliminary investigation Uganda experiences low TFP. This means that as a least developed nation, the country lacks modern technology such as irrigation for agriculture and in-turn causing low factor productivity. Also, the findings indicate low human capital skills. For example Figure

2.17, there is a huge gap between primary school enrolment and secondary school enrolment. This gap widens further considering tertiary institutions enrolment. In 2014, out of 8,773 million enrolled in primary schools in Uganda only 1,391 million is enrolled in secondary school. The situation worsens where only 202, 000 students were enrolled in 2014 in Uganda's tertiary institutions including universities. This means that the bulk of Uganda's labour force is either semi-skilled or unskilled and in-turn low TFP. As a result, low technology and abundant unskilled LF for Uganda as a least developed nation can explain the negative coefficients for the factor inputs (FDI, tourism expenditure and human capital).

Third, increasing returns-to-scale are required; otherwise a nation experiences declining TFP. With innovations such as government policy, human capital and technology, a nation cannot experience a steady state of growth. This means that even if factor inputs do not increase Uganda can experience increasing economic growth. However, due to macro-economic instability for example increasing inflation the country cannot experience increasing returns to scale. As demonstrated by Figure 2.5, CPI decreased from 154 percent per annum in 1985 to 103.20 percent per annum in 2006 but increased to 216.05 percent per annum in 2014. Also, as explained by Figure 2.7, terms of trade have worsened from USD -412.98 million in 1985 to -1,690.24 million in 2014. Fourth, though savings are not easily forthcoming to developing countries such as Uganda, nurturing a savings culture in the country is quite important. In this way SMEs can develop, which in turn increases economic growth, employment and poverty reduction.

Finally, economic growth in a nation such as Uganda depends on the absorption capacity for goods and services in the country. Absorptive capacity for Uganda could be a concern for the nation due to poverty. In this respect, consumption of goods and services produced is important otherwise, a nation experiences declining economic growth. Finally, preliminary investigation also demonstrates that the growth in employment is greater than growth in production. This could indicate that Uganda is a least-developed country, with abundant LF. Further, considering demographic factors, Uganda's population is growing faster than LF, and LF is growing faster than employment, which confirms the increasing unemployment among youths.

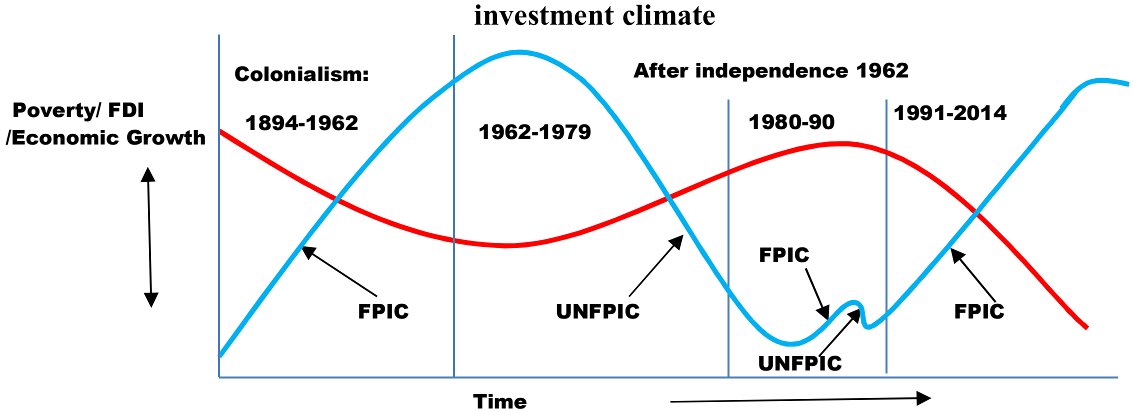
11.4 Contribution of the Thesis

This thesis makes a direct theoretical and methodological contribution to understanding FDI, and other explanatory variables on economic growth, employment and poverty in Uganda.

11.4.1 Theoretical and Empirical Contributions

This study has developed a theory that has been termed as the *Frog-leap Theory* as the theory explaining FDI inflows into a developing nation such as Uganda. As previously explained the favourable natural habitat for frogs is the sea but can leap to land when conditions are good. During harsh conditions, frogs hibernate, but when the climate is favourable, they begin to jump. This behaviour explains FDI inflows to a developing country such as Uganda, based on the conditions before and after independence during the period 1972–1979, when FDI inflows became negative. First, soon after independence MNEs enjoyed the good political and economic environment in Uganda. Second, between 1972 and 1979, FDI became negative, meaning that Uganda was not a favourable destination due to the harsh conditions. Some investors relocated their investments to their home countries (jumped back), while others located (leaped) to third countries, mainly Britain and Kenya. Also, new investors who may have desired Uganda as a first destination located investment elsewhere. Meanwhile, MNEs that remained in Uganda went underground or hibernated, as sanctions meant that FDI cease. Third, after the reforms in 1980, FDI inflows have increased from USD 30 million in 1985 to over USD 1,146 million in 2014. In this way, building on Vahlne and Nordstrom, what is termed as the *Frog-leap Theory*, explains FDI, considering Uganda's experience and that of other developing countries in similar conditions as explained by Figure 11.5

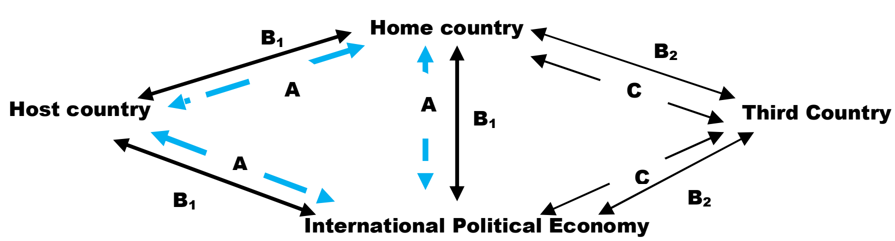
Figure 11.5: Demonstration of trends in Uganda's politics, economy, FDI and investment climate



Notes: FPIC=Favourable politics and investment climate; UNFPIC= Unfavourable political and investment climate; Economic growth and FDI; Poverty

Following Figure 11.5, as FDI increases so-does the Uganda's economic growth and in-turn poverty reduction in the country. To this end, foreign investments experience in Uganda can be explained by the *Frog-leap Theory* based on theory and empirical findings. Empirical findings indicate that FDI significantly contributes to poverty reduction and economic growth in Uganda. Regarding theory, the ASSM demonstrates that physical capital, human resource and technology are key factors required during production that enable a nation to achieve accelerated economic growth. In this regard, empirical findings indicate that though FDI as a foreign flow has increased and significantly contributes to economic growth, the coefficient is negative. This confirms that Uganda is a least developed nation with low technology, low skilled labour force and thus, the factor inputs diminishing returns. Also, as explained by the VCP, Uganda is a poor nation with low absorption capacity. To this end, coupled with poverty and low TFP, when Uganda experiences political instability and poor investment climate, FDI declines. In this way, Figure 11.6 can further explain FDI flows in Uganda based on the proposed *Frog-leap theory*.

Figure 11.6: Demonstration of the *Frog-leap Theory* of FDI inflows into Uganda



The figure represents three FDI flows, marked A, B and C. First, the flows marked A are broken lines, signifying that MNEs, before investing abroad, consider prevailing conditions in the home, host and international political environment as a first priority. In this way, B_1 mean decision-marking flows. Second, if the conditions indicated in a triangular B_1 feedback flows are satisfactory, MNEs invest in the host, such as in Uganda after the reforms, or before the 1970s. Third, flows marked C signify that once decision flows B_1 do not favour the first host country, such as Uganda during the sanctions, and either the MNE does not internationalise (no leaping) or considers a third country. In sum, once the conditions indicated with B_1 are met, then a subsidiary can be established in a host country. However, in case the conditions are not met, then the home country or any third country that meets the conditions marked B_2 becomes the investment-favourable destination. This is the *Frog-leap Theory* explained by literature and empirical findings in the context of Uganda as a developing country during international sanctions, and after the wars, as well as the eventual reforms. Similarly, countries such as Venezuela and Zimbabwe are experiencing this situation.

11.4.2 Methodological Contributions

This thesis increases knowledge of the impact of FDI, tourism, inflation, openness and human capital on economic growth, employment and poverty in Uganda. The study increases the knowledge of the impacts of these variables, brought together in a system of endogenous and exogenous variables. By bringing these variables into one conceptual framework, this study is pioneering. No quantitative study has examined the role of FDI in Uganda since Kiiza (2007), the first being Obwona (1996, 1998, 2004). Therefore, this research has created a new quantitative account of FDI since 2007 and other explanatory variables such as tourism's contribution to Uganda's economy. In addition, previous studies covered a scope of less than 20 years but this study covers the period 1985–2014.

As earlier indicated, there was previously little or no knowledge of the impact of FDI on economic growth, employment and poverty in Uganda. Therefore, this gap in empirical work was the motivation for this research. Further, previous studies adopted a linear regression model specification approach. As a departure from the previous studies, first new variables are included in this study. Second, a multi-equation system model specification based on VAR through VECM procedure was used. Third, the VECM procedure enabled the study to capture the long-run relationships and evaluate the effects by innovations introduced by the GOU.

11.5 Policy Implications

The GOU introduced monetary, fiscal and international trade policies to increase economic growth, employment and poverty reduction. In some aspects these policies are providing the expected results. As indicated in Figure 8.1, the findings indicate that Uganda is a least-developed country experiencing diminishing returns. In turn, the diminishing returns cause the economy to grow at a slow steady rate. As such, there is a need for policies that prompt the economy into growth.

The findings indicated in Figure 8.2 demonstrate that Uganda is a least-developed nation short on financial resources for investment, but with abundant human capital resources. This is indicated by the low line graphs for the growth of FDI and tourism as foreign capital, lying below the line graph from economic growth, while the growth line graph for human capital is above. All the factor inputs combined then cause diminishing returns since the economy is not growing proportionally to the factor inputs. The policy implication is for more financial resources to be provided to bridge the financial capital deficit into an excess of abundant human capital.

The diminishing returns arising from factor inputs such as capital from FDI and tourism, and human capital as skilled labour, raise concerns for their policy implications. The findings indicate that Uganda's openness policy is significant, and negatively contributes to FDI, while insignificant to economic growth, although it contributes to poverty reduction. In addition, economic growth is not significant to employment. A further review indicates that although currency devaluation partly explains why inflation boosts exports, the extent is wide and not good for the country. Although Uganda's monetary policy leads to poverty reduction as exports increase, the cost is high. First, the findings indicate that inflation reduces economic growth, and negative welfare employment increases. Second, although insignificant, inflation reduces FDI. Such shortcomings are policy implication indicators, requiring innovations in order to cause accelerated economic growth, employment creation and poverty reduction.

The findings indicate that Uganda's monetary policy is biased towards export promotion. This is because to increase exports, a nation devalues its currency, which also related to money expansion in the case of Uganda. This is indicated first, by a positive coefficient and significant coefficient for inflation in the tourism equation. This means that the greater the currency devaluation, the more exports; for example, increasing tourists into the country, compared to other countries in the region. Second, the significant and positive coefficient for employment means that with currency devaluation, coupled with a lack of minimum wage legislation in Uganda, the cost of production declines, making exports cheap. As inflation increases, efforts to reduce poverty and economic growth are undermined. Moreover, although inflation is insignificant for FDI, the negative coefficient indicates that inflation affects FDI. This is the case when considering the transaction exposure for multinationals and imports.

Also, openness was aimed at increasing trade and investment for Uganda. However, findings indicate that first; openness though significant decreases FDI inflows into the country.

Second, though positive the contribution of openness to Uganda's economic growth, employment and tourism is insignificant. As previously explained, theory indicates that declining TOT lead to immiserizing growth. As a result, due worsening TOT openness affects economic growth, LF employment and foreign flows (FDI and tourism).

In addition, the study finds that tourism is the single largest export commodity for Uganda. However, in all simulations conducted tourism neither Granger causes employment nor possesses significant impact on employment. Also, impulse response function indicates that the impact of tourism on economic is *deminimis* as indicated by the 0.0009 units as a result of positive innovations in the tourism sector. Also due to poverty, tourism is likely to decline in the country. The study partly attributes this to tourism demand, which requires huge investment in the sector yet Uganda is a least developed nation. These findings pose policy implications for the GOU since tourism is important for the country as an export commodity.

Furthermore, the ultimate objective for a least-developed country such as Uganda is to reduce poverty. In this regard, impulse response indicates that reducing poverty in Uganda causes increasing economic growth. However, impulse response function (see Table 9.10) indicates that in future, due to poverty in Uganda employment, FDI and tourism will decline in the country. This means that as explained by the VCP phenomenon for developing nations, Uganda will sink into poverty again. Therefore, reducing poverty is important for Uganda's future and is a major concern for GOU since there is need to break the VCP in which the country is trapped.

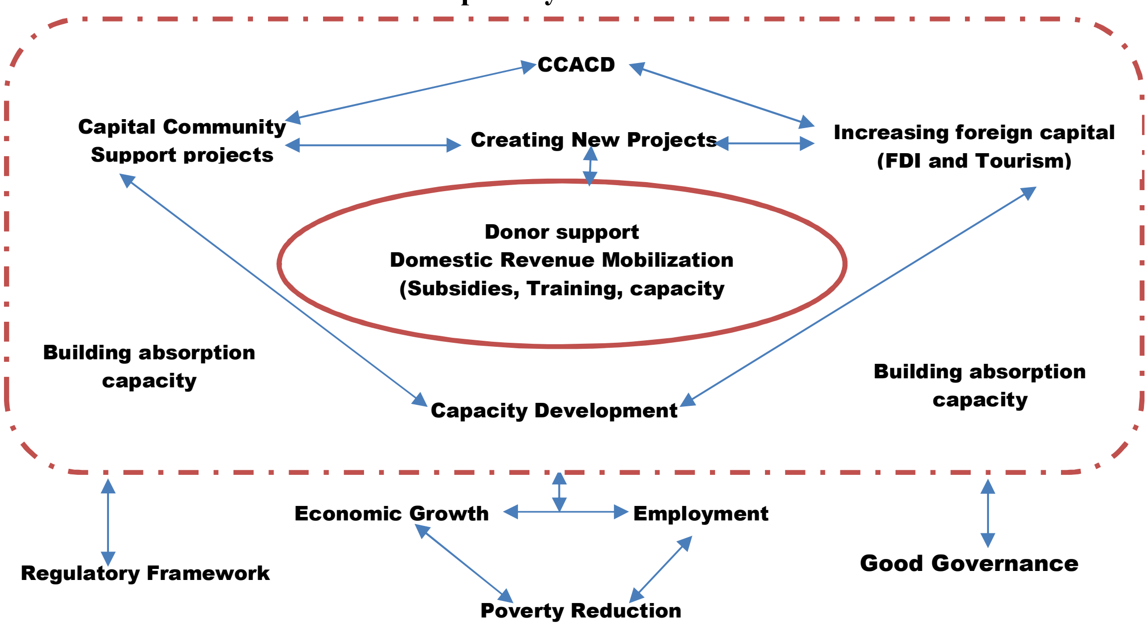
The results from the variance decomposition (see Table 9.11) reflect that in the long-run, employment of Uganda' LF will account for the largest fluctuations in all the variables studied. As indicated, employment in the long-run will account for 49.91% of fluctuations in economic growth, whereas own fluctuations account for 54.7%. In the tourism sector employment fluctuations account for 61.02, and fluctuations in FDI will account for 65.02 of fluctuations, while for poverty, employment of human capital accounts for 29.62%. The second largest fluctuations will be caused by FDI. Therefore, appropriate policies are necessary to utilise Uganda's human labour, and capital may determine Uganda's accelerated economic growth, job creation and poverty reduction. Additionally, attracting more FDI and tourists is a way to access more financial resources not otherwise available in Uganda, as an HIPC.

11.6 Policy Recommendations

It was previously mentioned that the empirical findings of the study demonstrate that FDI, tourism and factor inputs, such as human capital, are significant to Uganda's economic growth, employment and poverty reduction. However, the study finds that factor inputs (FDI, tourists' expenditure and human capital) though significant, the contribution is negative. Also the study finds that according to impulse response forecast indicates that due to poverty FDI and tourists'' expenditure will decline in Uganda.

Following the findings of this study and the policy implications, pro-poor projects and policies that stimulate economic growth and increase employment are important for poverty reduction Uganda. First, the study proposes that Community Capital Absorption Capacity Development (CCACD) would be suitable for a least-developed country such as Uganda. This study recommends CCACD because increasing factor inputs such as FDI, tourism and human capital is not enough, but increasing absorption capacity is quite important. This is CCAD is illustrated by Figure 11.7.

Figure 11.7: Recommended CCACD for accelerated economic growth, employment and poverty reduction



The findings indicate that diminishing returns affect Uganda's economic growth, employment and poverty reduction. Overcoming this situation requires CCACD, resting on two pillars: Capacity Community Support (CCS) and increasing foreign capital in the form of FDI and tourism. The CCS could be implemented in form of Micro Community Projects

(MCPs) where communities participated in various income generating activities. The MCPs would spur increased production of goods and services through SMEs that would enhance the growth of entrepreneurial skills. To avoid diminishing returns, CCACD involves building capacity through community investments in rural and urban areas, as a means of supporting disadvantaged households. In this respect, absorption capacity for foreign capital from FDI and tourism is achieved. Supporting community investment implies creating jobs, and as such, factor inputs, including abundant human capital and natural resources, are utilised. In turn, a nation achieves a spiral of accelerated economic growth with limited stagnation, since jobs are continuously created and poverty continues to decline in the long-run.

From either side of the two pillars, the proposed CCACD model will enable Uganda increase the absorption capacity from the foreign capital flows (FDI and tourists' expenditure) as well as from the CCS. In this way, capacity development will be created in Uganda in the form of increasing production and consumption. Consequently, Uganda will experience accelerated economic growth and job creation, causing the country to break the VCP as poverty reduces in the long-run.

The CCACD rests on three preconditions (critical success factors), following the findings of this study. First, the findings in Chapter Two indicate that Uganda's economic growth, employment and poverty reduction is supported by financial resources from donors and domestic revenue. Domestic revenue mobilisation through efficiency of the tax body is essential. Also, Uganda is not only a least-developed nation but is also an HIPC. Thus, donor support could finance the domestic financial resources gap.

Second, findings indicate that the monetary, fiscal and international trade policies cause GOU's initiatives to decelerate economic growth, employment and poverty reduction in the long-run. In particular, the openness policy is negative to FDI and insignificant in the case of tourism, economic growth and employment creation. The findings also indicate that inflation in Uganda affects economic growth, and the economy is biased towards export promotion. These findings require a review of the regulatory framework and provisions for enforcement. Finally, since Uganda experienced civil war for a long time, governance is a precondition for success, requiring, rule of law, reduction of corruption, institutional capacity building and increased infrastructure development.

Third, the study recognizes that tourism is important to Uganda's economy. To this extent, a study is recommended to establish avenues through which tourism can be promoted in the country. In particular the study would consider the tourism demand constraints for Uganda.

In Chapter Three, findings indicated unbalanced regional distribution of FDI in Uganda due to concentration of FDI projects in Kampala and the central region surrounding the city. In this way, the impact of factor input (FDI, tourism and human capital) concentration in Kampala could be overwhelmed, causing total negative impacts. Hence, we recommend decongesting Kampala city to first, cause more balanced regional economic and social growth. Second, decongesting Kampala would lead to reduced rural-urban migration, as people would not need to migrate in search of better-paying jobs. Third, as more jobs are created elsewhere, income inequality would reduce through job distribution across the regions, as well as more balanced poverty reduction programmes.

11.7 Limitations of the Study

This study examined the impact of FDI, tourism and human capital as factor inputs, as well as innovations, including openness and inflation in Uganda's economic growth, employment and poverty reduction. During the study, some limitations arose that can provide opportunities for future research. First, the study was limited by scope. This is because during the years of political and economic instability, data was not available. During the 1970s, most institutions collapsed and data from UBOS was not available. Even UBOS acknowledged that they did not have most of the data from before 1985. Data insufficiency arose because since the overthrow of Mutesa, the first President of Uganda, in 1966, the country remained in a state of war. This was exacerbated by international sanctions and numerous rebellions, which caused political and economic instability and the breakdown of institutions. Therefore, this study obtained most of its data from the World Bank database. In situations where data could be obtained from UBOS, this was the main second option.

Following the issue of limited data, the model sample size was limited, although longer than any other study conducted on a similar subject before. Our sample size was comprised of 30 annual observations for each variable in the system, ranging from 1985 to 2014. The main issue in sample size was the constrained degree of freedom in estimation considering the number of variables and lags. During estimation, sometimes issues of small samples arise that can affect the accuracy of results. To this end, the researcher wanted to extend the sample to the 1970s, but there were no data on most of the variables, especially on poverty and FDI, due to international sanctions. This data limitation issue remained, but the 30 annual observations provided sufficient results to explain the impact of FDI on Uganda's economic growth, employment and poverty reduction. Several simulations were conducted, and comparisons were made in an effort to cover such shortcomings.

The second limitation relates to modelling. This limitation arises based on the study observation in Chapter Two. Literature indicates that during the period 1991–2014, UIA recorded about 5562 established projects in Uganda, originating from over 160 countries and representing 62% of WTO member countries. Questions arise that requires further study. First are the projects registered by UIA operational? Second, where are they located? Third, is the target planned employment registered and published by UIA in existence? These questions would be answered through a mixed method study comprising time series and in survey that is beyond the scope of this study.

The third limitation is related to the contribution of tourism on employment. According to theory tourism expenditure contributes to employment. Also, findings indicate that tourism is the single largest export for Uganda, and that contributes to: FDI, economic growth, openness and human capital, as well as being a tool for poverty reduction. However, despite the importance, tourism does not contribute to employment in all simulations. The study would have required a survey to measure the direct importance of tourism on actual jobs in the sector. The measure of direct tourism induced employment from the tourism sector was not possible due to unavailability of data from neither UBOS nor World Bank database. Such a limitation requires a survey, which is beyond the scope of this study.

Fourth, literature indicated that government adopted fiscal, monetary and international trade policy reforms. Due to scope limitations, the study could not evaluate the effects of financial and commercial liberalisation polices on economic growth, employment and poverty. In this regard questions that require further study arise that include: a) What are the effects of foreign exchange fluctuations on the transaction exposure for MNEs in Uganda, as well as the impacts on openness as a policy of liberalisation in the country? b) The study indicates that inflation promotes exports through currency devaluation, and as such, makes the country competitive. What is the effect of monetary policy variables, such as interest rates on economic growth, employment and poverty reduction in Uganda?

11.8 Recommendations for Future Studies

First, his study recommends a survey to be conducted to evaluate projects recorded by UIA since 1991 with specific reference to issues such as:

(i) UIA only records planned employment before implementation of projects. As such, the survey would evaluate actual employment created in Uganda after establishing the projects. Findings indicate that though FDI contributes to employment, the coefficient is negative meaning low TFP. Therefore, through a survey the skills of Uganda's labour force would be evaluated as well as the technology used in production. This would be a basis for further human capital development in the country and indicate to MNEs the level of technology that would be required in production for a developing nation such Uganda.

(ii) The survey would also consider the life-span of projects in Uganda. In particular, the existing projects would provide some solutions for the survival of future projects that locate their business to Uganda. Also, the survey would establish the nature of FDI projects as well as their sectoral distribution in the country.

Second, as previously explained though theory and literature indicate that tourism contributes to employment, the impact is insignificant but positive. In this way, tourism makes a positive contribution to employment in the country, as indicated by the hypothesis. In addition, the variance decomposition results indicate that the tourism-induced positive fluctuations in the tourism sector will be 80% in the long-run. Considering such findings, more investigation would be conducted to establish the media though which tourism would make significant contribution to employment in Uganda.

Third, fiscal, monetary and international trade policies were adopted to implement liberalisation. A study is necessary to evaluate the effects of financial and commercial liberalisation on FDI, economic growth, employment and poverty. Specific study reference would be to investigate the effects of exchange rate fluctuations and their effects on transaction exposure for MNEs in Uganda, as well as the impacts on openness as a policy of liberalisation in the country. Also the effects of *seigniorage* since it is a major contributing factor to currency devaluation and money expansion would be investigated. Finally, investigation is necessary to establish the effect of monetary policy variables, such as interest rates on economic growth, employment and poverty reduction in Uganda.

11.9 Conclusions

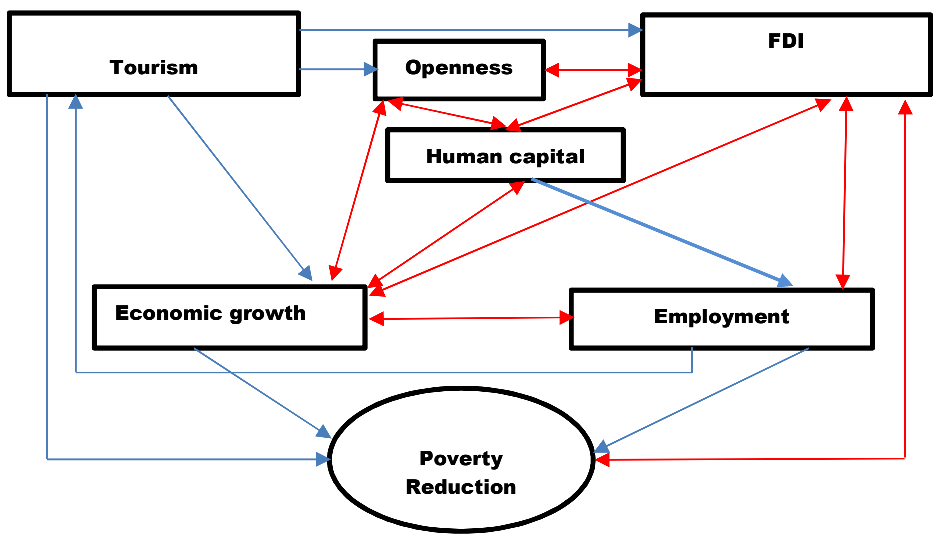
This study is comprised of five endogenous variables: FDI, tourism, economic growth, employment and poverty. The exogenous variables include inflation, openness and human capital. In Chapter Two we identified that the government introduced the ERP after the overthrow of Amin in 1979. This is because economic indicators became negatives due the international sanctions. This situation was exacerbated by civil wars, especially the 1979 war. During this period, institutions broke down and poverty was at its highest, with over 65% of Uganda's population living below the poverty line. After the war, there was the need to rebuild the country. Supported by donors, the ERP was introduced as a rehabilitation and reconstruction package for the country. Later, the PEAP programme was introduced to tackle poverty implemented by introducing openness, human capital development and controlling inflation. Among the key objectives of these initiatives were to attract FDI and promote exports, such as tourism. Through these initiatives, it was anticipated that Uganda would attain higher levels of economic growth, employment and poverty reduction, in the long-run. This study conducted a number of simulations, including Pairwise Granger causality, VECM systems causality tests, short-run and long-run as well as forecast simulations and simultaneous equation estimation.

Regarding forecast simulations, the study concludes that reducing poverty in Uganda is a tool for economic growth and employment generation as explained by the impulse response function. First, as poverty will decrease economic growth and FDI will increase. Second, poverty is not good for employment and tourism growth in the country. Third, poverty reduction shocks indicate that poverty will increase in the future. This can be partly explained by the impact factor inputs on economic growth where the coefficient is negative. In addition, the increasing poverty can also be demonstrated by the VCP phenomenon. Therefore, reducing poverty is important for the country to break through the VCP. In this way, increasing the absorption capacity of Uganda is key component in determining the absorption of goods and services.

Furthermore, regarding variance decomposition the study concludes that using local factors of production and foreign flows is important for Uganda's future. The findings indicate that in the long-run, employment of Uganda's LF is important for economic growth, poverty reduction, FDI inflows and tourism. Also Uganda to attain higher levels of economic growth, employment and poverty reduction, there is the need for increasing FDI, as its fluctuations are the second highest. Also, we previously indicated that tourism is the single largest foreign exchange-earning commodity for Uganda. However, tourism causes the least fluctuations in economic growth, employment and FDI.

The findings from Pairwise Granger causality, VECM systems causality tests, and simultaneous equation estimation as summarized are under Figure 11.8.

Figure 11.8: The schematic summary of the impact FDI and other explanatory variables on economic growth, employment and poverty reduction in Uganda



Notes: Impact/causal relationship: ←→ Feed-back impact between two variables; ——→ No feedback

Following the simulations and forecasts a number of conclusion are made. First, the endogeneity and short-run simulations indicate that poverty does Granger cause. Meanwhile the simultaneous equation estimation indicates that poverty reduction is significant to FDI inflow into Uganda. Since there is a feedback relationship between FDI and poverty in Uganda, this study observes that foreign investments in Uganda are humanitarian driven and import substitution. Also the study notes that FDI projects in Uganda market seeking. This is based on the significant and negative coefficient of FDI on its impact to economic growth. This can also be based on the changing export structure for Uganda. Fish and flowers exports as well as consumer goods exports as NTEs are now more important than the TEs. This situation is similar to the Dutch disease phenomena affecting the country since over 80% of the population are peasants living on subsistence farming whose importance in the country is declining. Moreover youth unemployment is estimated to be over 60 percent. Also this situation is an indicator of immiserizing growth explained by the worsening TOT.

Second, a further review indicates that Uganda is faced with the Stiglitz criticisms of openness and FDI. This is so because there is no minimum wage indicating labor exploitation and low standard of living for employees as explained by high by the 43.3% insecure non-poor in the country. As such, since the poor are 19 percent in general terms the poor in Uganda are over 60 percent since the insecure non-poor sink back into poverty an moment. Thus, vulnerability among Ugandans is high despite decreasing poverty. The negative coefficient for FDI with no adequate regulation could mean capital flight since the FDI projects are market seeking. Thus capital repatriation could high compare to what the nation retains and in-turn a slow and declining economic growth since 1995.

Third, all simulations indicate poverty reduction in Uganda is a tool for economic growth and FDI flows into Uganda. Also, the study observed the central role of human capital and openness. Human capital can be identified as contributing to openness, FDI and economic growth, with feedback, and to employment, leading to poverty reduction. As per government policy, openness contributes to FDI, human capital and economic growth with feedback, and later with spill-over effects causing poverty reduction. Controlling inflation can be identified as a macroeconomic stability tool in the way it contributes to economic growth, employment, tourism promotion and poverty reduction. In addition, the study finds that as explained in Chapter Two, tourism is the single largest foreign exchange-earning commodity in Uganda, because tourism directly contributes to openness, FDI, economic growth and poverty reduction. Indirectly through spill-over effects, tourism contributes to human capital and employment, too. In this way, the findings of this study indicate that the current government policy of first promoting international trade and investment is appropriate.

Fourth, according to the impulse response function, the findings indicate that in the long-run, compared to other variables, tourism will have the greatest impact on employment, FDI and poverty reduction in the country. However, for policy implications, economic growth and tourism will decline in the long-run. The policy implications stayed, and the GOU adopted openness partly to promote international trade, in particular exports. Considering tourism to be an export, the policy positively engenders economic growth and employment with spill-effects and poverty reduction.

The overarching objective of this study was to establish the impact of FDI on economic growth, employment and poverty reduction in Uganda. Following Figure 11.8, the findings indicate that FDI contributes to Uganda's economic growth, employment, poverty reduction, openness and human capital development with feedback. Fiscal, monetary and commercial policy in the country are good for promoting investment, as in turn, the country will experience economic growth, employment creation and poverty reduction. Withstanding the positive impact of FDI, the negative coefficient to economic growth raises policy implications. Also, considering the impulse response function, further policy implications arise since FDI may lead to increasing unemployment and poverty.

Based on domestic resources, government policies were successful in the countries attaining higher levels of economic growth, employment and poverty reduction. First, economic growth contributes to poverty reduction and FDI, as well as causes spill-over effects for employment creation in Uganda. Increasing economic growth is a tool for poverty reduction and employment creation in the long-run. Second, the employment of Uganda's LF and resources is a tool for economic growth, poverty reduction through human capital, tourism and FDI. In Uganda, as a least-developed country with abundant labour, employment becomes a tool for economic growth and poverty reduction directly and through the spill-over effects of tourism and FDI.

In sum, first our findings indicate that tourism and FDI play a central role in Uganda's economic growth, employment and poverty reduction, but with policy concerns. To this extent, for the country to benefit more from foreign investment and tourism, there are policy implications requiring fiscal, monetary and commercial policy review. Second, the findings of this study indicate that FDI, tourists' expenditure and human capital as factor inputs have increased in Uganda during the period 1985–2014. Also, economic growth and employment have increased and poverty has reduced overall. Third, the study finds that the GOU adopted openness as a policy to promote FDI and tourism as exports. Meanwhile, to maintain macroeconomic stability, controlling inflation has been the main monetary policy. The overall objective of this study was to measure the impact of FDI on Uganda's economic growth, employment and poverty reduction. The study concludes that FDI contributes to Uganda's economic growth, employment and poverty reduction, as well as openness and human capital. Also, the study concludes that tourism significantly contributes to Uganda's economic growth, poverty reduction, human capital and openness, but not employment.

Following these conclusions, the study further found that GOU monetary policies, fiscal policies and commercial policies are contributing to the nation's economic growth, employment and poverty reduction. However, this is due to the negative coefficient of FDI, tourism and human capital as factor inputs. First, based on the Solow-Swan Model, this is caused by declining TFP, which in turn cause diminishing returns. Second, based on the Malign Model, this could partly be caused by Uganda's absorption capacity as a least-developed country. The study recommends that CCACD model could be a probable policy solution for the country. The study also recommends reviewing the commercial, fiscal and monetary policies.

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Appendices

Appendix 1.1: Trends and Distribution of Global FDI Flows 1988-2014 (USD billions)

	World	Developed Countries	Developing Countries	Africa
1988	158.00	129.00	30.00	4.80
1989	200.60	171.70	30.00	4.80
1990	211.40	176.40	35.00	2.20
1991	158.40	115.00	41.00	2.90
1992	170.30	111.00	55.00	3.20
1993	208.30	129.00	73.00	3.00
1994	225.90	145.10	105.00	56.30
1995	331.90	205.70	111.90	47.00
1996	377.50	219.80	145.00	55.20
1997	473.00	276.20	178.80	69.00
1998	690.90	472.50	194.00	91.10
1999	1,086.70	828.40	231.90	115.90
2000	1,387.90	1,108.00	252.50	87.28
2001	817.60	571.50	219.70	196.20
2002	678.80	489.90	157.60	117.80
2003	559.80	366.60	172.00	150.30
2004	742.10	418.80	293.00	110.00
2005	982.50	619.10	332.30	38.16
2006	1,461.80	977.80	429.40	57.65
2007	1,970.90	1,306.80	573.00	69.17
2008	1,818.83	1,032.39	668.76	87.64
2009	1,221.84	618.60	532.58	56.04
2010	1,422.26	703.47	648.21	47.03
2011	1,700.08	880.41	724.84	48.02
2012	1,403.00	679.00	639.00	56.00
2013	1,647.00	697.00	671.00	57.24
2014	1,228.00	499.00	681.00	54.00

Source: UNCTAD Annual World Investment Reports 1988-2015

Appendix 2.1: Trends of Uganda's Economic Growth 1960-2014

	GDP	GDPGR	GDS % of GDP
1960	423.01	3.20	16.48
1961	441.52	(1.10)	12.95
1962	449.01	4.10	13.81
1963	516.15	11.70	17.22
1964	589.06	7.50	18.89
1965	884.87	0.50	12.46
1966	925.77	6.30	11.74
1967	967.65	5.10	14.37
1968	1,037.82	3.20	14.41
1969	1,169.05	11.70	15.20
1970	1,260.08	0.70	17.24
1971	1,417.79	(0.20)	11.96
1972	1,491.60	1.00	14.25
1973	1,702.52	(0.10)	12.12
1974	2,100.14	(2.00)	11.29
1975	2,359.56	(2.00)	5.79
1976	2,447.30	1.00	8.03
1977	2,936.47	(1.60)	7.40
1978	2,420.26	(5.50)	3.07
1979	2,139.03	(11.00)	8.45
1980	1,244.61	(3.40)	(0.43)
1981	1,337.30	4.00	(0.37)
1982	2,657.83	6.60	(0.05)
1983	2,810.51	5.74	2.43
1984	2,800.83	(0.34)	6.51
1985	2,708.22	(3.31)	7.46
1986	2,718.78	0.39	6.02
1987	2,826.50	3.96	(0.08)
1988	3,060.17	8.27	0.59
1989	3,254.85	6.36	1.00
1990	3,465.58	6.47	0.58
1991	3,658.06	5.55	0.70
1992	3,783.10	3.42	0.41
1993	4,098.10	8.33	1.13
1994	4,360.52	6.40	4.32
1995	4,863.00	11.52	3.37
1996	5,304.18	9.07	8.71
1997	5,574.69	5.10	10.74
1998	5,848.14	4.91	5.68
1999	6,319.15	8.05	8.03
2000	6,517.69	3.14	8.04
2001	6,855.54	5.18	7.01
2002	7,454.22	8.73	6.37

	GDP	GDPGR	GDS % of GDP
2003	7,936.75	6.47	7.17
2004	8,477.02	6.81	10.08
2005	9,013.83	6.33	11.72
2006	9,985.95	10.78	8.05
2007	10,826.01	8.41	8.76
2008	11,768.83	8.71	15.28
2009	12,622.19	7.25	16.84
2010	13,274.80	5.17	15.79
2011	14,558.90	9.67	13.35
2012	15,201.13	4.41	15.20
2013	15,698.32	3.27	19.25
2014	16,406.24	4.51	19.55

Source: World Bank database 1960-2014 (Constant market prices 2005)

Appendix 2.2: Some macro-economic indicators after economic reforms 1985-2014

	Some Economic Indicators (USD Millions)								Inflation %age		
	GDP	FDI	GC	TOU	EXP	IMP	GDPGR %age	GDP Per capita	UCPI	Hdline	Money Growth
1985	2,708.22	30.00	483.68	1.00	204.60	617.58	-3.31	185.10	154.00	95.00	127.43
1986	2,718.78	20.00	464.48	1.60	208.03	637.70	0.39	179.65	135.00	96.00	174.43
1987	2,826.50	28.00	546.22	2.52	204.91	751.27	3.96	180.40	225.00	110.00	153.39
1988	3,060.17	10.00	517.52	5.25	212.71	834.92	8.27	188.58	164.00	109.00	117.66
1989	3,254.85	12.70	477.74	6.66	225.15	815.89	6.36	193.72	143.15	48.00	68.57
1990	3,465.58	23.00	562.82	9.62	236.38	804.81	6.47	199.35	122.30	29.00	60.24
1991	3,658.06	23.00	574.94	16.84	223.33	766.97	5.55	203.53	156.30	25.00	51.66
1992	3,783.10	23.00	611.32	50.26	257.89	754.93	3.42	203.70	241.50	42.00	66.49
1993	4,098.10	54.60	654.91	31.08	246.45	729.29	8.33	213.69	253.90	6.00	57.22
1994	4,360.52	88.20	709.12	38.90	324.19	813.51	6.40	220.33	279.40	9.00	35.80
1995	4,863.00	121.20	774.52	48.75	417.02	1,264.21	11.52	238.23	101.20	8.00	13.94
1996	5,304.18	121.00	839.39	85.52	530.53	1,429.17	9.07	252.08	101.10	7.00	19.35
1997	5,574.69	175.00	898.15	112.46	687.01	1,457.14	5.10	257.14	107.70	8.17	19.42
1998	5,848.14	210.00	970.00	144.00	584.61	1,502.23	4.91	261.82	114.05	0.60	22.94
1999	6,319.15	222.00	978.27	151.00	738.17	1,635.46	8.05	274.43	121.00	5.78	13.56
2000	6,517.69	254.00	933.18	165.00	578.68	1,665.62	3.14	274.34	108.10	3.39	18.14
2001	6,855.54	229.00	1,050.21	187.00	746.84	1,783.37	5.18	279.42	110.20	1.87	9.79
2002	7,454.22	197.10	1,151.37	194.00	871.46	1,951.25	8.73	293.98	109.80	(0.29)	24.53
2003	7,936.75	202.19	1,209.93	185.00	900.23	1,961.12	6.47	302.72	119.40	8.68	17.93
2004	8,477.02	295.42	1,254.62	268.00	1,113.53	1,986.83	6.81	312.64	123.80	3.72	8.77
2005	9,013.83	379.81	1,306.35	382.00	1,278.13	2,236.75	6.33	321.44	134.20	8.60	17.18
2006	9,985.95	644.30	1,370.30	347.00	1,377.36	2,673.28	10.78	344.33	103.20	7.20	16.92
2007	10,826.01	792.31	1,382.75	402.00	1,544.56	3,110.55	8.41	360.96	110.10	6.10	21.97

	Some Economic Indicators (USD Millions)								Inflation %age		
	GDP	FDI	GC	TOU	EXP	IMP	GDPGR %age	GDP Per capita	UCPI	Hdline	Money Growth
2008	11,768.83	808.92	1,364.67	536.00	2,848.78	3,650.82	8.71	379.46	123.50	12.10	30.82
2009	12,622.19	841.57	1,414.51	683.00	2,914.99	4,266.14	7.25	393.62	139.60	13.00	17.49
2010	13,274.80	539.75	1,610.12	802.00	2,416.00	4,160.69	5.17	400.45	145.18	4.00	38.08
2011	14,558.90	895.29	2,348.00	977.00	2,427.43	4,752.66	9.67	424.95	172.29	18.70	12.40
2012	15,201.13	1,205.54	1,644.07	1,157.00	2,821.18	5,093.81	4.41	429.40	196.43	14.00	14.91
2013	15,698.32	1,179.40	1,575.54	1,204.00	3,043.87	5,099.90	3.27	429.23	207.17	5.50	9.46
2014	16,406.24	1,146.13	1,794.76	1,039.00	3,215.35	4,905.60	4.51	434.22	216.05	4.30	15.19

Source: Global Coalition Africa; UWIR; UBOS; UIA; WDI (1985-2014)

Appendix 2.3: Total Government of Uganda Consumption (USD Million) and Sector percentage share 1985-2014

	PA		Educ		Health		A AF/F		R/T		Def		I O		ECSS		Total
	USD	%	USD	%	USD	%	USD	%	USD	%	USD	%	USD	%	USD	%	USD
1985	87.54	18.10	97.23	20.10	16.23	3.36	31.40	6.49	37.27	7.71	182.85	37.80	28.76	5.95	2.38	0.49	483.68
1986	86.25	18.57	71.66	15.43	13.94	3.00	36.18	7.79	38.23	8.23	171.17	36.85	45.01	9.69	2.04	0.44	464.48
1987	80.00	14.65	121.55	22.25	15.83	2.90	29.06	5.32	41.97	7.68	213.11	39.01	43.52	7.97	1.16	0.21	546.22
1988	94.16	18.20	88.68	17.14	22.69	4.38	28.43	5.49	25.66	4.96	219.66	42.45	35.75	6.91	2.47	0.48	517.52
1989	96.60	20.22	66.15	13.85	18.40	3.85	14.29	2.99	38.37	8.03	198.55	41.56	44.26	9.26	1.11	0.23	477.74
1990	173.90	30.90	67.61	12.01	30.12	5.35	21.83	3.88	53.47	9.50	169.14	30.05	39.35	6.99	7.37	1.31	562.82
1991	279.95	48.69	76.28	13.27	23.97	4.17	15.93	2.77	26.63	4.63	109.67	19.07	38.58	6.71	3.93	0.68	574.94
1992	361.68	59.16	66.75	10.92	23.23	3.80	13.76	2.25	13.97	2.29	96.91	15.85	32.40	5.30	2.61	0.43	611.32
1993	218.15	33.31	90.88	13.88	34.70	5.30	15.84	2.42	37.12	5.67	169.45	25.87	80.01	12.22	8.73	1.33	654.91
1994	182.57	25.75	167.26	23.59	55.37	7.81	21.46	3.03	36.85	5.20	166.09	23.42	74.91	10.56	4.58	0.65	709.12
1995	232.93	30.07	169.89	21.93	58.18	7.51	13.31	1.72	39.36	5.08	170.23	21.98	88.13	11.38	2.49	0.32	774.52
1996	222.45	26.50	210.46	25.07	62.92	7.50	13.29	1.58	65.17	7.76	176.74	21.06	83.72	9.97	4.64	0.55	839.39
1997	256.01	28.50	241.83	26.93	69.05	7.69	13.30	1.48	57.86	6.44	173.03	19.26	85.26	9.49	1.80	0.20	898.15
1998	227.71	23.48	178.37	18.39	55.93	5.77	12.00	1.24	27.75	2.86	120.74	12.45	67.54	6.96	279.98	28.86	970.00
1999	68.90	7.04	188.91	19.31	51.30	5.24	13.24	1.35	40.56	4.15	138.06	14.11	56.14	5.74	421.15	43.05	978.27
2000	161.77	17.34	214.74	23.01	52.23	5.60	18.54	1.99	56.75	6.08	123.93	13.28	60.07	6.44	245.15	26.27	933.18
2001	104.74	9.97	263.58	25.10	81.91	7.80	32.03	3.05	93.60	8.91	153.10	14.58	73.75	7.02	247.50	23.57	1,050.21

2002	177.42	15.41	168.08	14.60	60.16	5.23	22.36	1.94	61.45	5.34	89.86	7.80	50.24	4.36	521.80	45.32	1,151.37
2003	201.02	16.61	269.21	22.25	161.11	13.32	33.89	2.80	78.90	6.52	134.71	11.13	79.72	6.59	251.35	20.77	1,209.93
2004	210.03	16.74	242.91	19.36	151.32	12.06	40.69	3.24	147.84	11.78	138.87	11.07	69.59	5.55	253.37	20.19	1,254.62
2005	198.26	15.18	252.43	19.32	151.53	11.60	46.06	3.53	172.28	13.19	163.38	12.51	79.67	6.10	242.74	18.58	1,306.35
2006	258.58	18.87	258.43	18.86	200.70	14.65	49.32	3.60	140.62	10.26	157.99	11.53	87.97	6.42	216.70	15.81	1,370.30
2007	457.24	33.07	281.62	20.37	91.00	6.58	36.00	2.60	68.77	4.97	162.77	11.77	105.87	7.66	179.47	12.98	1,382.75
2008	564.17	41.34	215.48	15.79	85.10	6.24	39.34	2.88	51.06	3.74	160.17	11.74	95.71	7.01	153.64	11.26	1,364.67
2009	436.70	30.87	197.70	13.98	106.03	7.50	73.12	5.17	160.16	11.32	168.13	11.89	90.64	6.41	182.03	12.87	1,414.51
2010	503.91	31.30	216.82	13.47	114.92	7.14	110.64	6.87	149.62	9.29	151.90	9.43	123.25	7.65	239.07	14.85	1,610.12
2011	737.01	31.39	253.14	10.78	145.68	6.20	77.50	3.30	277.08	11.80	539.76	22.99	170.82	7.28	147.00	6.26	2,348.00
2012	492.26	29.94	205.74	12.51	117.04	7.12	60.27	3.67	209.60	12.75	194.95	11.86	114.36	6.96	249.83	15.20	1,644.07
2013	565.97	35.92	254.35	16.14	132.03	8.38	64.13	4.07	216.12	13.72	114.38	7.26	129.40	8.21	99.15	6.29	1,575.54
2014	597.37	33.28	266.78	14.86	138.59	7.72	77.61	4.32	244.21	13.61	159.63	8.89	141.97	7.91	168.60	9.39	1,794.76
T GED/S	8,335.28		5,464.51		2,341.22		1,074.81		2,708.30		5,088.92		2,316.35		4,143.86	338.87	
AAGE / % S	277.84	26.01	182.15	17.82	78.04	6.82	35.83	3.43	90.28	7.78	169.63	19.28	77.21	7.56	138.13	11.30	-

Source: WDI 1985-2014 (Constant market prices 2005); UBOS (Sectoral distribution 1985-2014); Own calculations

Note: PA=Public administration; Def=Defence; Educ=Education; ECSS=Economic and social services; R/T=Road and Transport; AAF/F=Agriculture, animals, fisheries and forestry; I/O=Internal order; TGED/S= Total GE distribution per sector; AAGED/%S= Annual Average GE and Percentage share per Sector

Appendix 2.4: The Growth of Uganda' Trade Sector 1980-2014 (USD millions)

	Exports			Imports			EBT		TT
	USD	AGR	% GDP	USD	ARG	% GDP	USD	% GDP	
1985	483.55	-3.46	13.74	528.24	-0.10	15.01	- 45	-1.27	1,012
1986	502.57	1.68	12.81	597.83	3.26	15.24	-95	-2.43	1,100
1987	517.05	-1.50	8.25	1,131.23	17.81	18.04	-614	-9.80	1,648
1988	492.90	3.80	7.57	1,157.12	11.13	17.78	-664	-10.20	1,650
1989	419.71	5.85	7.95	954.69	-2.28	18.09	-535	-10.14	1,374
1990	311.67	4.99	7.24	833.71	-1.36	19.37	-522	-12.13	1,145
1991	247.95	-5.52	7.46	728.71	-4.70	21.94	-481	-14.47	977
1992	250.34	15.48	8.76	694.11	-1.57	24.29	-444	-15.53	944
1993	227.44	-4.44	7.06	682.00	-3.40	21.18	-455	-14.11	909
1994	348.78	31.55	8.74	762.13	11.55	19.10	-413	-10.36	1,111
1995	678.73	28.63	11.79	1,199.00	55.40	20.83	-520	-9.04	1,878
1996	723.00	27.22	11.96	1,415.91	13.05	23.42	-693	-11.46	2,139
1997	837.55	29.50	13.36	1,303.96	1.96	20.80	-466	-7.44	2,142
1998	634.71	-14.91	9.64	1,343.62	3.09	20.40	-709	-10.77	1,978
1999	734.92	26.27	12.25	1,426.05	8.87	23.77	-691	-11.52	2,161
2000	659.67	-21.61	10.65	1,368.56	1.84	22.10	-709	-11.45	2,028
2001	672.71	29.06	11.52	1,390.73	7.07	23.81	-718	-12.29	2,063
2002	692.82	16.69	11.21	1,548.63	9.41	25.06	-856	-13.85	2,241
2003	721.54	3.30	11.39	1,596.78	0.51	25.20	-875	-13.81	2,318
2004	1,008.18	23.69	12.70	1,807.48	1.31	22.76	-799	-10.07	2,816
2005	1,278.13	14.78	14.18	2,236.75	12.58	24.81	-959	-10.63	3,515
2006	1,518.77	7.76	15.28	2,819.51	19.52	28.36	-1,301	-13.08	4,338
2007	2,055.98	12.14	16.73	3,694.28	16.36	30.05	-1,638	-13.33	5,750
2008	3,457.26	84.44	24.28	4,553.37	17.37	31.98	-1,096	-7.70	8,011
2009	3,367.04	2.32	19.81	5,078.83	16.85	29.89	-1,712	-10.07	8,446
2010	3,282.59	-17.12	17.46	5,354.81	-2.47	28.48	-2,072	-11.02	8,637
2011	3,440.50	0.47	18.44	6,258.63	14.23	33.54	-2,818	-15.10	9,699
2012	4,723.39	16.22	19.91	7,810.90	7.18	32.92	-3,088	-13.01	12,534
2013	4,999.08	7.89	20.24	7,533.62	0.12	30.50	-2,535	-10.26	12,533
2014	5,219.66	5.63	19.84	7,688.32	-3.81	29.22	-2,469	-9.38	12,908

Source: UCTAD, World Bank and UBOS, own calculations

AGR= Annual Growth Rate; EBT= External Balance of Trade; OP= Openness; TT= Total Trade

Appendix 2.5: Trends of Uganda's Exports 1990-2014 (Percentage Share of Total Exports)

	Traditional cash crops (Agriculture exports)							Merging growing sectors				Summary	
	Agriculture Exports							Fish	MP	Min	OP	T. E	NTE.
	Traditional					NT	Total						
	Cof	Cot	Tea	Tob	Total								
1990	80.30	3.30	1.50	0.80	85.90	11.20	97.10	0.80	0.50	-	1.60	85.90	14.10
1991	64.20	6.40	3.30	2.50	76.40	13.40	89.80	2.90	0.70	5.30	1.30	76.40	23.60
1992	65.00	5.60	5.20	2.90	78.70	12.30	91.00	4.40	1.40	-	3.20	78.70	21.30
1993	53.10	2.70	5.50	3.50	64.80	24.40	89.20	4.40	1.40	-	5.00	64.80	35.20
1994	74.60	0.80	2.60	1.80	79.80	12.60	92.40	2.30	1.10	-	4.20	79.80	20.20
1995	66.70	1.70	1.50	1.30	71.20	10.40	81.60	5.60	1.20	4.70	6.90	71.20	28.80
1996	59.60	2.30	2.50	1.10	65.50	8.50	74.00	5.90	1.00	7.40	11.70	65.50	34.50
1997	52.00	4.90	5.20	2.10	64.20	7.30	71.50	4.70	2.40	13.60	7.80	64.20	35.80
1998	55.10	1.40	5.20	4.20	65.90	6.00	71.90	7.40	2.80	3.60	14.30	65.90	34.10
1999	60.10	3.60	4.50	3.10	71.30	5.80	77.10	5.20	3.40	7.60	6.70	71.30	28.70
2000	31.20	5.50	9.20	6.70	52.60	8.60	61.20	7.70	7.80	13.00	10.30	52.60	47.40
2001	21.60	3.00	6.60	7.10	38.30	14.90	53.20	17.30	5.80	13.70	10.00	38.30	61.70
2002	20.70	2.00	6.70	9.70	39.10	11.10	50.20	18.80	5.60	15.40	10.00	39.10	60.90
2003	18.80	3.30	7.10	8.10	37.30	12.90	50.20	16.50	3.70	15.10	14.50	37.30	62.70
2004	18.70	6.40	5.60	6.10	36.80	11.40	48.20	15.50	4.80	14.10	17.40	36.80	63.20
2005	21.30	3.50	4.20	3.90	32.90	10.50	43.40	17.60	3.30	12.90	22.80	32.90	67.10
2006	19.70	2.10	5.30	2.80	29.90	8.50	38.40	15.20	3.20	16.50	26.70	29.90	70.10
2007	19.90	1.50	3.50	5.00	29.90	8.10	38.00	9.30	3.10	7.80	41.80	29.90	70.10
2008	23.40	0.80	2.60	3.90	30.70	7.40	38.10	7.20	3.00	5.70	46.00	30.70	69.30
2009	17.90	1.50	3.80	3.60	26.80	8.30	35.10	6.60	2.30	7.80	48.20	26.80	73.20
2010	17.50	1.20	4.30	4.20	27.20	10.40	37.60	7.90	20.20	11.30	23.00	27.20	72.80
2011	21.60	4.00	3.30	2.50	31.40	9.00	40.40	6.30	21.50	10.90	20.90	31.40	68.60
2012	15.80	3.20	3.10	3.00	25.10	10.80	35.90	5.40	23.80	12.30	22.60	25.10	74.90
2013	17.70	1.30	3.50	5.00	27.50	13.70	41.20	5.30	21.80	7.40	24.30	27.50	72.50
2014	18.10	1.00	3.80	2.90	25.80	16.50	42.30	6.00	21.70	6.70	23.30	25.80	74.20

Source: UBOS Various

NT= Traditional exports; NTE = Non-traditional exports; Cof = Coffee; Cot= Cotton; Tob =Tobacco; MP= Manufacturing products; Min=Mining

Appendix 2.6: Some Social-Economic and Demography Indicators After Economic Reforms 1985-2014

	Persons '000									
	INTOU	TEL	PSEN	SSEN	TER	LF	EMP	PHC	POP	ARG
1985	N/As	26	450	51	5	7,295	6,277	9,662	14,661	3.25
1986	N/As	26	495	56	5	7,525	6,500	10,520	15,181	3.38
1987	N/As	59	524	58	5	7,693	6,735	10,783	15,561	3.47
1988	22.62	60	553	238	31	7,871	6,974	11,053	15,950	3.51
1989	28.55	56	2,417	238	32	8,058	7,217	11,223	16,348	3.48
1990	30.43	45	2,533	223	24	8,134	6,978	11,441	16,510	3.41
1991	37.15	28	2,282	235	43	8,169	7,401	9,336	16,672	3.33
1992	78.06	30	2,540	227	54	8,525	7,633	9,732	17,473	3.27
1993	98.41	23	3,972	231	50	8,774	7,866	9,237	18,042	3.21
1994	129.53	63	4,067	247	54	9,040	8,050	9,352	18,629	3.15
1995	159.90	73	4,195	255	65	9,323	8,338	9,444	19,235	3.09
1996	167.49	77	4,324	290	61	9,582	8,593	8,818	19,861	3.03
1997	175.07	77	4,475	446	78	9,865	8,767	6,931	20,507	2.99
1998	194.79	86	5,304	266	65	10,169	9,021	7,983	21,175	2.99
1999	189.35	170	5,806	410	93	10,492	9,289	7,784	21,864	3.04
2000	192.35	253	6,559	514	134	10,830	9,568	7,630	22,575	3.13
2001	205.29	395	6,901	540	102	11,173	9,897	7,832	23,310	3.22
2002	254.22	568	6,576	656	114	11,531	10,101	8,038	24,067	3.29
2003	305.72	979	6,708	684	149	12,022	10,366	9,459	25,089	3.34
2004	512.38	8,660	7,377	698	108	12,398	10,663	8,792	25,860	3.36
2005	467.73	5,304	7,224	728	124	12,838	10,925	9,226	26,741	3.36
2006	538.59	2,876	7,224	814	137	13,271	11,077	9,449	27,629	3.36
2007	641.74	1,722	7,363	954	155	13,750	11,525	9,375	28,581	3.36
2008	843.86	1,451	7,538	1,089	165	14,269	11,841	11,482	29,593	3.35
2009	806.66	9,806	7,964	1,194	169	14,825	12,179	11,654	30,661	3.34
2010	945.90	13,724	8,375	1,226	174	15,415	12,609	7,787	31,785	3.32
2011	1,151.36	17,476	8,098	1,211	180	16,015	13,044	8,070	32,940	3.30
2012	1,196.77	16,944	8,329	1,252	198	16,648	13,499	8,362	34,131	3.27
2013	1,206.33	18,341	8,460	1,362	201	16,888	14,034	6,795	34,494	3.26
2014	1,266.05	26,069	8,773	1,391	202	17,141	14,461	6,867	34,857	3.25

Source: World Bank database, UBOS, UIA,

Appendix 2.7: Selected indicators of employment of Uganda's labour force

	TLF	TEMP	% Employment in selected sectors						
			%	Agriculture		Selected paid emp. Sectors			%EMP
	MN	MN		MN	% Temp	CS	FPEMP	Total	
1985	6,671	3,810	57.11	3,215	84.40	274,047	557	274,604	0.007
1986	6,908	4,035	58.41	3,393	84.08	273,205	371	273,576	0.007
1987	7,157	4,208	58.79	3,527	83.82	239,500	520	240,020	0.006
1988	7,411	4,550	61.40	3,806	83.65	298,000	186	298,186	0.007
1989	7,669	4,850	63.24	4,048	83.47	239,528	236	239,764	0.005
1990	7,550	5,324	70.52	4,656	87.46	320,000	341	320,341	0.006
1991	7,781	5,889	75.69	5,141	87.30	269,000	427	269,427	0.005
1992	8,020	6,242	77.83	5,433	87.04	229,000	6,359	235,359	0.004
1993	8,268	6,631	80.20	5,748	86.68	217,200	24,074	241,274	0.004
1994	8,524	6,811	79.90	5,873	86.23	176,600	17,003	193,603	0.003
1995	8,791	7,068	80.40	6,053	85.64	156,600	2,372	158,972	0.002
1996	9,026	7,293	80.80	6,224	85.34	159,000	17,771	176,771	0.002
1997	9,277	7,468	80.50	6,341	84.91	149,782	13,523	163,305	0.002
1998	9,544	7,683	80.50	6,483	84.38	154,219	7,177	161,396	0.002
1999	9,826	7,920	80.60	6,641	83.86	166,460	4,948	171,408	0.002
2000	10,133	8,167	80.60	6,804	83.31	178,080	9,279	187,359	0.002
2001	10,441	8,447	80.90	7,010	82.99	191,120	17,198	208,318	0.002
2002	10,768	8,636	80.20	7,140	82.68	204,184	12,530	216,714	0.003
2003	11,017	8,792	79.80	7,307	83.12	223,895	18,713	242,608	0.003
2004	11,247	8,930	79.40	7,480	83.76	240,119	14,424	254,543	0.003
2005	11,447	8,997	78.60	7,618	84.67	243,338	26,244	269,582	0.003
2006	11,798	9,120	77.30	7,706	84.50	239,318	46,313	285,631	0.003
2007	12,173	9,458	77.70	7,984	84.41	255,560	57,294	312,854	0.003
2008	12,750	9,830	77.10	8,154	82.95	274,237	48,923	323,160	0.003
2009	12,985	9,947	76.60	8,338	83.83	259,650	71,002	330,652	0.003
2010	13,419	10,266	76.50	8,570	83.48	263,854	88,359	352,213	0.003
2011	13,851	10,596	76.50	8,817	83.21	275,149	47,930	323,079	0.003
2012	14,306	10,944	76.50	9,071	82.89	281,830	60,619	342,449	0.003
2013	14,785	11,325	76.60	9,343	82.50	294,116	77,545	371,661	0.003
2014	15,285	11,708	76.60	9,607	82.05	292,535	69,091	361,626	0.003

Source: World Bank, UNCTAD, UBOS, UIA

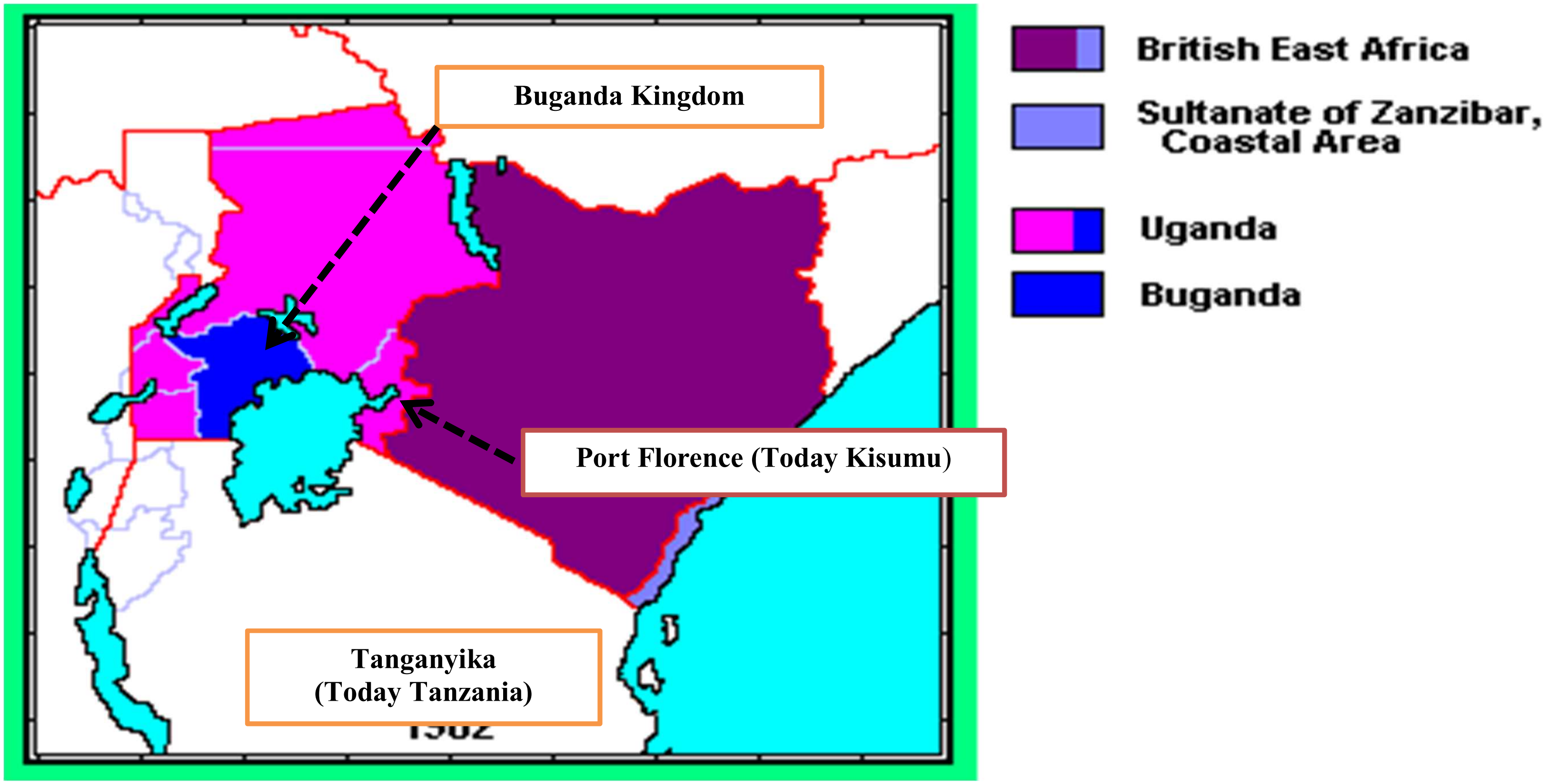
Appendix 2.8: Selected Poverty Indicators During the Period 1985-2014

	PD	HFCE %ARG	CBR	CDR	IMR	LE	ADR	Rural population Total	ARG	%age	INP	GNC
1985	73.23	-3.35	49.44	16.59	117.20	49.21	100.97	13,319	2.87	90.85		
1986	75.74	0.49	49.52	16.68	115.70	49.00	101.74	13,737	2.98	90.49		
1987	78.42	2.66	49.60	16.80	114.70	48.71	102.27	14,023	3.06	90.12		
1988	81.22	8.54	49.68	16.94	114.00	48.35	102.64	14,312	3.08	89.73		
1989	84.09	6.69	49.75	17.09	113.00	47.94	102.87	14,605	3.03	89.34		
1990	87.00	5.43	49.80	17.25	111.40	47.50	102.98	14,681	2.94	88.92		
1991	89.95	4.82	49.81	17.39	109.30	47.06	104.08	14,781	3.04	88.66		
1992	92.95	2.62	49.78	17.51	106.80	46.64	104.96	15,478	3.18	88.58		0.36
1993	95.98	7.09	49.69	17.58	104.50	46.30	105.63	15,967	3.12	88.50	33.40	0.37
1994	99.05	5.04	49.55	17.59	102.50	46.06	106.08	16,471	3.06	88.42		
1995	102.16	15.30	49.37	17.51	101.00	45.97	106.31	16,992	3.00	88.34		0.36
1996	105.31	7.00	49.16	17.33	99.60	46.05	107.27	17,528	2.94	88.25	40.20	0.41
1997	108.50	2.63	48.94	17.04	98.10	46.32	107.89	18,081	2.89	88.17		
1998	111.79	6.91	48.71	16.65	96.00	46.76	108.23	18,652	2.89	88.09		
1999	115.24	7.81	48.48	16.18	93.40	47.36	108.39	19,241	2.94	88.00		
2000	118.90	1.98	48.25	15.63	90.00	48.11	108.45	19,848	3.03	87.92	43.90	0.37
2001	122.79	2.29	48.02	15.03	86.00	48.97	108.63	20,474	3.12	87.83		
2002	126.90	8.30	47.76	14.41	81.60	49.91	108.71	21,118	3.19	87.75		
2003	131.21	3.61	47.48	13.79	76.90	50.89	108.70	21,957	3.08	87.52	39.90	0.43
2004	135.70	2.45	47.16	13.19	72.20	51.87	108.57	22,561	3.05	87.25		
2005	140.35	5.48	46.81	12.62	67.60	52.84	108.30	23,257	3.05	86.97		
2006	145.14	12.36	46.43	12.09	63.40	53.79	108.19	23,951	3.04	86.69	40.20	0.41
2007	150.10	9.42	46.01	11.59	59.20	54.72	107.87	24,694	3.03	86.40		
2008	155.22	1.13	45.57	11.11	55.40	55.62	107.39	25,482	3.01	86.11		
2009	160.49	13.63	45.12	10.66	52.30	56.49	106.83	26,311	2.99	85.81		
2010	165.32	6.30	44.64	10.24	49.50	57.30	106.19	27,178	2.97	85.51	42.90	0.26
2011	170.86	7.77	44.15	9.87	46.30	58.02	105.68	28,065	2.94	85.20		
2012	176.54	9.92	43.65	9.53	42.50	58.65	105.02	28,972	2.90	84.89		
2013	182.39	-0.23	43.15	9.25	41.60	59.19	104.25	29,169	2.88	84.56	43.30	0.40
2014	188.42	0.27			39.10		103.35	29,361	2.86	84.23		

Source UBOS and World Bank Databases

A: 6-14 = Ages 6-14 (Primary school age group); ARG = Annual Growth Rate; CBR = Crude Birth Rate; CDR = Crude Death Rate; GNC = Gini Coefficient; **GPC**= GDP per capita; **GPCARG**= GDP per capita annual growth rate; HFCE = Household Final Consumption Expenditure; HC = Head count; IMR = Infant Mortality Rate; INP = Insecure Non-poor; LE = Life Expectancy; PSEN = Primary School Enrolment; Sec = Secondary School Enrolment; Ter = Tertiary Institution Enrolment

Appendix 3.1: Historical map of Uganda and other EAC countries 1902



Source: www.zum.de/whkmla/histatlas/eastafrica/haxuganda.html

Note: By 1902, the map of Uganda had been redrawn close to Port Florence

Appendix 3.2: Employment trends 1991-2014

	Total Planned Employment	Uganda Local investor Planned Employment	Net FDI Planned Employment
1985	0	0	0
1986	0	0	0
1987	0	0	0
1988	0	0	0
1989	0	0	0
1990	0	0	0
1991	427	208	219
1992	6359	3721	2638
1993	24074	20032	4042
1994	17003	10032	6971
1995	2372	1441	931
1996	17771	7418	10353
1997	13523	5951	7572
1998	7177	3016	4161
1999	4948	1467	3481
2000	9279	4056	5223
2001	17198	3607	13591
2002	12530	5811	6719
2003	18713	7523	11190
2004	14424	6337	8087
2005	26244	10331	15913
2006	46313	12502	33811
2007	57294	32177	25117
2008	48923	21957	26966
2009	71002	34686	36316
2010	88359	49700	38659
2011	47930	30607	17323
2012	60619	14334	46285
2013	77545	16961	60584

Source: UIA 1991-2013

Appendix 3.3: Structure of regional FDI projects

	Africa	Europe	Austrasia	Latin America	North America	
1985	0	0	0	0	0	0
1986	0	0	0	0	0	0
1987	0	0	0	0	0	0
1988	0	0	0	0	0	0
1989	0	0	0	0	0	0
1990	0	0	0	0	0	0
1991	1	1	0	0	1	3
1992	11	21	7	0	3	42
1993	22	35	14	1	10	82
1994	30	38	18	1	9	96
1995	9	9	5	0	3	26
1996	30	48	26	1	14	119
1997	31	35	34	0	11	111
1998	19	20	12	1	5	57
1999	14	8	14	1	4	41
2000	20	9	27	0	3	59
2001	23	19	33	1	6	82
2002	26	33	25	0	4	88
2003	24	23	43	0	3	93
2004	18	27	52	1	6	104
2005	38	42	83	0	9	172
2006	59	48	174	0	17	298
2007	43	39	135	1	6	224
2008	51	51	100	0	13	215
2009	46	49	105	1	7	208
2010	37	43	103	2	11	196
2011	49	35	84	1	9	178
2012	38	37	139	2	8	224
2013	69	49	202	1	12	333
Total	708	719	1435	15	174	3051
Percentage	23.21	23.57	47.03	0.49	5.70	100.00

Source: UIA 1991-2013

Appendix 3.4: Distribution of FDI

	Local	Joint	Foreign	Total
1985	0	0	0	0
1986	0	0	0	0
1987	0	0	0	0
1988	0	0	0	0
1989	0	0	0	0
1990	0	0	0	0
1991	1	5	0	6
1992	50	30	29	109
1993	78	47	59	184
1994	110	56	69	235
1995	20	10	20	50
1996	77	58	91	226
1997	56	43	88	187
1998	37	21	43	101
1999	24	11	32	67
2000	18	22	49	89
2001	22	24	70	116
2002	51	18	79	148
2003	62	21	77	160
2004	60	34	89	183
2005	110	27	155	292
2006	111	48	271	430
2007	96	37	237	370
2008	100	7	273	380
2009	144	12	204	360
2010	131	32	186	349
2011	105	20	181	306
2012	74	25	241	340
2013	37	69	335	441
Total	1574	677	2878	5129
Percentage	30.68824	13.19945	56.1123	100

Source: UIA 1991-2013

Appendix 3.5: Sectoral distribution of FDI projects in Uganda 1991-2013

	AHFF	FIREBS	WRCS	TSC	CON	CSS	EGS	Man	MQ	NS	Total
1991	3	1	2	0	0	0	0	0	0	0	6
1992	20	22	6	5	4	1	0	51	0	0	109
1993	25	34	15	8	13	1	2	85	1	0	184
1994	30	47	20	26	13	15	3	78	3	0	235
1995	1	11	7	5	2	1	1	19	3	0	50
1996	37	41	31	22	16	8	2	65	4	0	226
1997	32	32	11	14	14	4	6	72	1	1	187
1998	13	11	9	16	7	4	1	37	3	0	101
1999	3	11	10	7	4	5	3	22	2	0	67
2000	14	12	11	11	3	7	4	26	1	0	89
2001	21	9	11	10	10	3	2	47	3	0	116
2002	26	21	13	14	6	9	6	48	5	0	148
2003	27	13	15	16	11	10	7	54	7	0	160
2004	33	18	24	15	10	9	3	67	4	0	183
2005	59	42	26	28	12	13	9	98	5	0	292
2006	49	54	51	35	40	10	17	168	6	0	430
2007	23	35	54	25	38	9	20	151	14	1	370
2008	42	77	35	36	11	10	8	142	18	1	380
2009	46	72	27	28	21	12	6	136	12	0	360
2010	49	67	30	24	27	3	5	133	11	0	349
2011	37	88	19	14	20	7	5	105	11	0	306
2012	45	59	18	9	13	16	12	151	17	0	340
2013	36	82	16	20	35	23	17	192	20	0	441
Total	671	859	461	388	330	180	139	1947	151	3	5129
%age	13.08	16.75	8.99	7.56	6.43	3.51	2.71	37.96	2.94	0.06	100

Source: UIA 1991-2013

Note: AHFF = Agriculture, Hunt, Forestry and Fish; FIREBS=Finance, Insurance; Real estate and Business services; WRCS = Wholesale, Retail, Catering and Accommodation services; TSC= Transport, storage and Communication services; CON=Construction; CSS= Community and Social services; EGS = Electricity, Gas and Water, Man= Manufacturing, MQ= Mining and Quarrying, NS = Not specified.

Appendix 8.1: Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
LNFDI does not Granger Cause LNEMP	28	1.23679	0.3089
LNEMP does not Granger Cause LNFDI		0.68796	0.5126
LNHCAP does not Granger Cause LNEMP	28	4.01414	0.0320
LNEMP does not Granger Cause LNHCAP		1.42755	0.2604
LNOP does not Granger Cause LNEMP	28	1.59012	0.2255
LNEMP does not Granger Cause LNOP		2.50416	0.1038
LNPOV does not Granger Cause LNEMP	28	1.32145	0.2863
LNEMP does not Granger Cause LNPOV		1.32810	0.2846
LNTOU does not Granger Cause LNEMP	28	2.27086	0.1259
LNEMP does not Granger Cause LNTOU		1.09358	0.3518
LNGDP does not Granger Cause LNEMP	28	3.82004	0.0369
LNEMP does not Granger Cause LNGDP		0.79626	0.4631
LNHCAP does not Granger Cause LNFDI	28	3.02991	0.0679
LNFDI does not Granger Cause LNHCAP		2.74857	0.0850
LNOP does not Granger Cause LNFDI	28	1.28033	0.2970
LNFDI does not Granger Cause LNOP		6.27982	0.0067
LNPOV does not Granger Cause LNFDI	28	2.67053	0.0906
LNFDI does not Granger Cause LNPOV		0.75537	0.4811
LNTOU does not Granger Cause LNFDI	28	5.85755	0.0088
LNFDI does not Granger Cause LNTOU		0.69476	0.5094
LNGDP does not Granger Cause LNFDI	28	1.90677	0.1713
LNFDI does not Granger Cause LNGDP		0.28332	0.7559
LNOP does not Granger Cause LNHCAP	28	3.32240	0.0540
LNHCAP does not Granger Cause LNOP		1.46704	0.2514
LNPOV does not Granger Cause LNHCAP	28	1.60435	0.2227
LNHCAP does not Granger Cause LNPOV		1.57165	0.2292
LNTOU does not Granger Cause LNHCAP	28	0.16827	0.8462
LNHCAP does not Granger Cause LNTOU		1.89192	0.1735
LNGDP does not Granger Cause LNHCAP	28	6.48068	0.0059
LNHCAP does not Granger Cause LNGDP		0.76775	0.4756
LNPOV does not Granger Cause LNOP	28	2.48641	0.1053
LNOP does not Granger Cause LNPOV		1.80655	0.1868
LNTOU does not Granger Cause LNOP	28	14.3821	9.E-05
LNOP does not Granger Cause LNTOU		0.66199	0.5254
LNGDP does not Granger Cause LNOP	28	3.79898	0.0375
LNOP does not Granger Cause LNGDP		2.12061	0.1428
LNTOU does not Granger Cause LNPOV	28	2.84172	0.0789
LNPOV does not Granger Cause LNTOU		0.82600	0.4504
LNGDP does not Granger Cause LNPOV	28	2.71756	0.0872
LNPOV does not Granger Cause LNGDP		0.07336	0.9295
LNGDP does not Granger Cause LNTOU	28	0.98236	0.3896
LNTOU does not Granger Cause LNGDP		1.00933	0.3800

Appendix 9.1: Cointegration test results

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.974527	274.5778	159.5297	0.0000
At most 1 *	0.854984	171.8138	125.6154	0.0000
At most 2 *	0.721965	117.7484	95.75366	0.0007
At most 3 *	0.623744	81.90814	69.81889	0.0040
At most 4 *	0.570159	54.53858	47.85613	0.0104
At most 5 *	0.448781	30.89709	29.79707	0.0372
At most 6 *	0.147948	4.483017	3.841466	0.0342
At most 7	0.293715	14.21964	15.49471	0.0771

Trace test indicates 6 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.974527	102.7639	52.36261	0.0000
At most 1 *	0.854984	54.06548	46.23142	0.0061
At most 2	0.721965	35.84023	40.07757	0.1391
At most 3	0.623744	27.36956	33.87687	0.2441
At most 4	0.570159	23.64149	27.58434	0.1477
At most 5	0.448781	16.67744	21.13162	0.1878
At most 6	0.293715	9.736627	14.26460	0.2298
At most 7 *	0.147948	4.483017	3.841466	0.0342

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

LNOP	LNPOV	LNUCPI	LNTOU	LNHC	LNGDP	LNFDI	LNEMP
-25.55351	-12.39404	-3.348079	-4.420066	0.172710	9.003779	-1.023110	-8.926226
19.05793	4.279383	4.416638	1.071819	2.876363	-9.606670	-0.604502	-27.86036
-2.832632	-0.529278	-3.274345	-2.664659	0.443054	9.440681	-1.329919	56.46877
8.742715	-1.490568	1.851348	-0.393237	1.826775	3.508936	-3.803391	57.71285
-5.988985	0.562467	-1.720117	-2.246533	-7.120448	22.91641	-1.928632	182.5377
21.43059	-10.40744	2.016058	3.645468	4.770292	-31.55845	-0.137221	-181.9225
-2.544895	-6.457664	2.543836	-2.534109	2.036642	-2.899696	2.435783	21.84520
-9.822912	-0.127835	0.601862	-2.399439	-1.736737	14.70770	-0.618119	68.39801

Unrestricted Adjustment Coefficients (alpha):

D(LNOP)	0.012912	-0.000155	-0.023591	-0.016317	-0.016736	-0.019728	0.010988	-0.004738
D(LNPOV)	0.044756	-0.036023	-0.017400	0.003403	0.023446	0.010979	-0.003620	-0.025297
D(LNUCPI)	0.045862	-0.013009	0.149879	-0.014619	0.024904	0.000781	-0.071334	0.018811
D(LNTOU)	0.055383	0.175471	0.222254	0.070195	-0.036069	-0.031415	0.066503	-0.033015
D(LNHC)	0.004661	0.053381	-0.087909	0.028250	0.111392	-0.031525	0.001672	-0.002302
D(LNGDP)	-0.003521	0.000157	-0.009829	-0.000985	-0.006151	-0.002610	-0.002252	-0.004139
D(LNFDI)	0.133567	-0.110853	-0.075205	0.098064	-0.020907	-0.093266	-0.035847	0.036839
D(LNEMP)	0.001558	0.009103	-0.000689	0.000832	0.002282	0.002537	0.000153	0.001153

1 Cointegrating Equation(s): Log likelihood 297.3654

Normalized cointegrating coefficients (standard error in parentheses)

LNOP	LNPOV	LNUCPI	LNTOU	LNHC	LNGDP	LNFDI	LNEMP
1.000000	0.485023	0.131022	0.172973	-0.006759	-0.352350	0.040038	0.349315
	(0.02609)	(0.00758)	(0.00649)	(0.01188)	(0.04553)	(0.00785)	(0.36519)

Adjustment coefficients (standard error in parentheses)

D(LNOP)	-0.329953
	(0.33661)
D(LNPOV)	-1.143680
	(0.52545)
D(LNUCPI)	-1.171937
	(1.38026)

D(LNTOU)	-1.415241
	(2.24811)
D(LNHC)	-0.119111
	(1.19461)
D(LNGDP)	0.089987
	(0.11273)
D(LNFDI)	-3.413095
	(1.61376)
D(LNEMP)	-0.039800
	(0.06901)

2 Cointegrating Equation(s): Log likelihood 324.3982

Normalized cointegrating coefficients (standard error in parentheses)

LNOP	LNPOV	LNUCPI	LNTOU	LNHC	LNGDP	LNFDI	LNEMP
1.000000	0.000000	0.318579	-0.044390	0.286862	-0.634875	-0.093578	-3.023229
		(0.04862)	(0.04116)	(0.06142)	(0.22636)	(0.05034)	(1.97171)
0.000000	1.000000	-0.386697	0.448151	-0.605375	0.582498	0.275483	6.953370
		(0.10350)	(0.08763)	(0.13075)	(0.48189)	(0.10717)	(4.19745)

Adjustment coefficients (standard error in parentheses)

D(LNOP)	-0.332901	-0.160697
	(0.41992)	(0.17272)
D(LNPOV)	-1.830202	-0.708867
	(0.59701)	(0.24556)
D(LNUCPI)	-1.419858	-0.624086
	(1.71908)	(0.70710)
D(LNTOU)	1.928873	0.064483
	(2.47526)	(1.01813)
D(LNHC)	0.898211	0.170664
	(1.43528)	(0.59036)
D(LNGDP)	0.092971	0.044316
	(0.14062)	(0.05784)
D(LNFDI)	-5.525728	-2.129813
	(1.83276)	(0.75386)
D(LNEMP)	0.133684	0.019651
	(0.05228)	(0.02151)

3 Cointegrating Equation(s): Log likelihood 342.3183

Normalized cointegrating coefficients (standard error in parentheses)

LNOP	LNPOV	LNUCPI	LNTOU	LNHC	LNGDP	LNFDI	LNEMP
1.000000	0.000000	0.000000	-0.360077	0.402495	0.348167	-0.272760	3.354960
			(0.08993)	(0.13351)	(0.50777)	(0.10805)	(4.41872)
0.000000	1.000000	0.000000	0.831337	-0.745733	-0.610736	0.492978	-0.788591
			(0.13241)	(0.19659)	(0.74766)	(0.15909)	(6.50631)
0.000000	0.000000	1.000000	0.990921	-0.362966	-3.085704	0.562441	-20.02072
			(0.23907)	(0.35495)	(1.34992)	(0.28725)	(11.7473)

Adjustment coefficients (standard error in parentheses)

D(LNOP)	-0.266077	-0.148211	0.033330
	(0.38217)	(0.15671)	(0.07687)
D(LNPOV)	-1.780912	-0.699657	-0.251972
	(0.58481)	(0.23980)	(0.11763)
D(LNUCPI)	-1.844409	-0.703414	-0.701760
	(1.30398)	(0.53469)	(0.26229)
D(LNTOU)	1.299309	-0.053151	-0.138172
	(1.83429)	(0.75214)	(0.36895)
D(LNHC)	1.147225	0.217192	0.508000
	(1.27928)	(0.52456)	(0.25732)
D(LNGDP)	0.120812	0.049518	0.044664
	(0.12014)	(0.04926)	(0.02417)
D(LNFDI)	-5.312701	-2.090009	-0.690544
	(1.75035)	(0.71772)	(0.35207)
D(LNEMP)	0.135635	0.020016	0.037245
	(0.05223)	(0.02142)	(0.01051)

4 Cointegrating Equation(s): Log likelihood 356.0031

Normalized cointegrating coefficients (standard error in parentheses)

LNOP	LNPOV	LNUCPI	LNTOU	LNHC	LNGDP	LNFDI	LNEMP
1.000000	0.000000	0.000000	0.000000	0.047041	1.226479	-0.560427	14.07190
				(0.19707)	(0.46939)	(0.13967)	(4.16927)
0.000000	1.000000	0.000000	0.000000	0.074931	-2.638560	1.157135	-25.53159
				(0.46464)	(1.10669)	(0.32932)	(9.83002)
0.000000	0.000000	1.000000	0.000000	0.615232	-5.502790	1.354090	-49.51340
				(0.61144)	(1.45634)	(0.43336)	(12.9357)
0.000000	0.000000	0.000000	1.000000	-0.987160	2.439231	-0.798903	29.76289
				(0.67440)	(1.60631)	(0.47798)	(14.2678)

Adjustment coefficients (standard error in parentheses)

D(LNOP)	-0.408732	-0.123889	0.003122	0.012039
	(0.37507)	(0.14931)	(0.07572)	(0.05976)
D(LNPOV)	-1.751165	-0.704729	-0.245673	-0.191407
	(0.60565)	(0.24111)	(0.12228)	(0.09650)
D(LNUCPI)	-1.972215	-0.681624	-0.728824	-0.610284
	(1.34692)	(0.53620)	(0.27194)	(0.21460)
D(LNTOU)	1.913000	-0.157781	-0.008218	-0.676559
	(1.82055)	(0.72475)	(0.36756)	(0.29007)
D(LNHC)	1.394207	0.175084	0.560301	0.259749
	(1.30763)	(0.52056)	(0.26401)	(0.20834)
D(LNGDP)	0.112200	0.050986	0.042840	0.042310
	(0.12431)	(0.04949)	(0.02510)	(0.01981)
D(LNFDI)	-4.455356	-2.236180	-0.508994	-0.547355
	(1.64448)	(0.65466)	(0.33202)	(0.26201)
D(LNEMP)	0.142906	0.018776	0.038784	0.004380
	(0.05376)	(0.02140)	(0.01085)	(0.00856)

5 Cointegrating Equation(s): Log likelihood 367.8238

Normalized cointegrating coefficients (standard error in parentheses)

LNOP	LNPOV	LNUCPI	LNTOU	LNHC	LNGDP	LNFDI	LNEMP
1.000000	0.000000	0.000000	0.000000	0.000000	1.388895	-0.592029	15.60987
					(0.28302)	(0.14272)	(2.07253)
0.000000	1.000000	0.000000	0.000000	0.000000	-2.379851	1.106797	-23.08181
					(0.61151)	(0.30837)	(4.47806)
0.000000	0.000000	1.000000	0.000000	0.000000	-3.378611	0.940779	-29.39898
					(0.68601)	(0.34593)	(5.02358)
0.000000	0.000000	0.000000	1.000000	0.000000	-0.969084	-0.135732	-2.511360
					(0.64858)	(0.32706)	(4.74951)
0.000000	0.000000	0.000000	0.000000	1.000000	-3.452646	0.671797	-32.69404
					(0.38609)	(0.19469)	(2.82728)

Adjustment coefficients (standard error in parentheses)

D(LNOP)	-0.308503	-0.133302	0.031909	0.049637	0.080691
	(0.35718)	(0.14005)	(0.07327)	(0.06085)	(0.08378)
D(LNPOV)	-1.891582	-0.691541	-0.286003	-0.244079	-0.264324
	(0.58657)	(0.23000)	(0.12032)	(0.09993)	(0.13759)
D(LNUCPI)	-2.121366	-0.667616	-0.771662	-0.666232	-0.167127
	(1.35431)	(0.53105)	(0.27781)	(0.23073)	(0.31769)
D(LNTOU)	2.129018	-0.178069	0.053826	-0.595528	0.997813
	(1.82764)	(0.71665)	(0.37491)	(0.31137)	(0.42872)
D(LNHC)	0.727083	0.237738	0.368694	0.009504	-0.626154
	(0.99105)	(0.38861)	(0.20330)	(0.16884)	(0.23248)
D(LNGDP)	0.149038	0.047526	0.053421	0.056128	0.037485
	(0.11648)	(0.04567)	(0.02389)	(0.01984)	(0.02732)
D(LNFDI)	-4.330143	-2.247939	-0.473031	-0.500387	-0.001096
	(1.66279)	(0.65200)	(0.34109)	(0.28329)	(0.39005)
D(LNEMP)	0.129238	0.020060	0.034859	-0.000747	0.011417
	(0.05153)	(0.02020)	(0.01057)	(0.00878)	(0.01209)

6 Cointegrating Equation(s): Log likelihood 376.1625

Normalized cointegrating coefficients (standard error in parentheses)

LNOP	LNPOV	LNUCPI	LNTOU	LNHC	LNGDP	LNFDI	LNEMP
1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	-0.136007	3.138050
						(0.01895)	(0.44276)

0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.325410	-1.711537
						(0.03836)	(0.89637)
0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	-0.168535	0.939828
						(0.07406)	(1.73034)
0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	-0.453915	6.190691
						(0.17841)	(4.16852)
0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	-0.461825	-1.690420
						(0.10753)	(2.51239)
0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	-0.328334	8.979668
						(0.04355)	(1.01748)

Adjustment coefficients (standard error in parentheses)

D(LNOP)	-0.731292	0.072019	-0.007864	-0.022282	-0.013419	0.076850
	(0.38029)	(0.16017)	(0.06858)	(0.06476)	(0.08792)	(0.40343)
D(LNPOV)	-1.656294	-0.805805	-0.263868	-0.204056	-0.211951	0.787517
	(0.68732)	(0.28948)	(0.12394)	(0.11705)	(0.15890)	(0.72915)
D(LNUCPI)	-2.104618	-0.675749	-0.770087	-0.663383	-0.163399	2.447618
	(1.60477)	(0.67587)	(0.28938)	(0.27328)	(0.37101)	(1.70242)
D(LNTOU)	1.455773	0.148883	-0.009509	-0.710051	0.847953	1.322341
	(2.14537)	(0.90355)	(0.38686)	(0.36534)	(0.49599)	(2.27591)
D(LNHC)	0.051486	0.565832	0.305138	-0.105419	-0.776538	2.345946
	(1.13621)	(0.47853)	(0.20488)	(0.19349)	(0.26268)	(1.20535)
D(LNGDP)	0.093108	0.074688	0.048159	0.046614	0.025036	-0.188049
	(0.13581)	(0.05720)	(0.02449)	(0.02313)	(0.03140)	(0.14408)
D(LNFDI)	-6.328893	-1.277277	-0.661061	-0.840386	-0.446003	4.365869
	(1.76380)	(0.74285)	(0.31805)	(0.30036)	(0.40777)	(1.87112)
D(LNEMP)	0.183602	-0.006341	0.039973	0.008501	0.023518	-0.104767
	(0.05619)	(0.02367)	(0.01013)	(0.00957)	(0.01299)	(0.05961)

Normalized cointegrating coefficients (standard error in parentheses)

LNOP	LNPOV	LNUCPI	LNTOU	LNHC	LNGDP	LNFDI	LNEMP
1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	5.559140
							(0.62220)
0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	-7.504249
							(1.49203)
0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	3.939960
							(1.40217)
0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	14.27095
							(4.09212)
0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	6.530651
							(2.94106)
0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	14.82443
							(1.62699)
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	17.80125

Adjustment coefficients (standard error in parentheses)

D(LNOP)	-0.759257	0.001060	0.020088	-0.050128	0.008960	0.044986	0.142067
	(0.36669)	(0.16509)	(0.06998)	(0.06650)	(0.08664)	(0.38912)	(0.04788)
D(LNPOV)	-1.647082	-0.782430	-0.273076	-0.194883	-0.219323	0.798013	-0.069357
	(0.68787)	(0.30969)	(0.13128)	(0.12475)	(0.16252)	(0.72995)	(0.08982)
D(LNUCPI)	-1.923080	-0.215096	-0.951550	-0.482614	-0.308681	2.654466	-0.404678
	(1.46041)	(0.65749)	(0.27872)	(0.26486)	(0.34505)	(1.54975)	(0.19069)
D(LNTOU)	1.286530	-0.280571	0.159664	-0.878577	0.983396	1.129502	-0.489431
	(2.05611)	(0.92568)	(0.39241)	(0.37289)	(0.48579)	(2.18190)	(0.26848)
D(LNHC)	0.047230	0.555032	0.309392	-0.109657	-0.773131	2.341096	-0.234006
	(1.13841)	(0.51252)	(0.21726)	(0.20646)	(0.26897)	(1.20805)	(0.14865)
D(LNGDP)	0.098840	0.089232	0.042430	0.052322	0.020448	-0.181518	0.027060
	(0.13442)	(0.06052)	(0.02565)	(0.02438)	(0.03176)	(0.14264)	(0.01755)
D(LNFDI)	-6.237667	-1.045792	-0.752249	-0.749547	-0.519010	4.469814	-0.376796
	(1.73471)	(0.78098)	(0.33107)	(0.31460)	(0.40985)	(1.84084)	(0.22651)
D(LNEMP)	0.183213	-0.007328	0.040362	0.008114	0.023830	-0.105210	-0.013721
	(0.05629)	(0.02534)	(0.01074)	(0.01021)	(0.01330)	(0.05973)	(0.00735)

* denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values

Appendix 9.2: Vector Error Correction Estimates

Cointegrating Eq:	CointEq1
LNGDP(-1)	1.000000
LNEMP(-1)	-65.63943
	(7.90249)
	[-8.30618]
LNFDI(-1)	0.787859
	(0.34074)
	[2.31221]
LNTOU(-1)	2.083804
	(0.19719)
	[10.5674]
LNPOV(-1)	7.040343
	(0.70444)
	[9.99429]
C	-5.013493

Error Correction:	D(LNGDP)	D(LNEMP)	D(LNFDI)	D(LNTOU)	D(LNPOV)
CointEq1	0.022760	-0.006039	0.132476	-0.250308	0.060434
	(0.00520)	(0.00462)	(0.08334)	(0.10055)	(0.02498)
	[4.37581]	[-1.30582]	[1.58950]	[-2.48928]	[2.41892]
D(LNGDP(-1))	-0.464251	-0.072042	2.819274	-3.782844	-2.226285
	(0.18993)	(0.16886)	(3.04346)	(3.67189)	(0.91233)
	[-2.44431]	[-0.42662]	[0.92634]	[-1.03022]	[-2.44023]
D(LNGDP(-2))	-0.527772	-0.098265	5.560996	2.867304	-3.643387
	(0.17007)	(0.15121)	(2.72519)	(3.28790)	(0.81692)
	[-3.10328]	[-0.64988]	[2.04059]	[0.87208]	[-4.45991]
D(LNEMP(-1))	1.040565	-1.104207	9.146846	-19.87340	3.679193
	(0.40216)	(0.35755)	(6.44422)	(7.77486)	(1.93176)
	[2.58744]	[-3.08822]	[1.41939]	[-2.55611]	[1.90458]
D(LNEMP(-2))	0.653363	-0.205484	9.562278	-22.39680	0.412997
	(0.31961)	(0.28416)	(5.12151)	(6.17902)	(1.53525)
	[2.04422]	[-0.72312]	[1.86708]	[-3.62465]	[0.26901]
D(LNFDI(-1))	-0.035941	0.008304	-0.363848	-0.149487	-0.233220
	(0.01470)	(0.01307)	(0.23556)	(0.28420)	(0.07061)
	[-2.44488]	[0.63531]	[-1.54459]	[-0.52599]	[-3.30278]
D(LNFDI(-2))	-0.006618	0.029818	-0.187370	-0.250990	-0.194379
	(0.01155)	(0.01027)	(0.18506)	(0.22327)	(0.05547)
	[-0.57306]	[2.90403]	[-1.01251]	[-1.12417]	[-3.50400]
D(LNTOU(-1))	-0.054738	0.014699	-0.450366	0.539136	-0.354115
	(0.01333)	(0.01185)	(0.21363)	(0.25774)	(0.06404)
	[-4.10583]	[1.24006]	[-2.10816]	[2.09177]	[-5.52966]
D(LNTOU(-2))	-0.006509	0.008118	-0.154263	-0.524093	-0.219286
	(0.01216)	(0.01081)	(0.19489)	(0.23513)	(0.05842)
	[-0.53515]	[0.75074]	[-0.79156]	[-2.22898]	[-3.75360]
D(LNPOV(-1))	-0.053630	0.020639	-1.256019	0.892223	-0.713330
	(0.03548)	(0.03155)	(0.56856)	(0.68596)	(0.17043)
	[-1.51148]	[0.65425]	[-2.20912]	[1.30069]	[-4.18536]
D(LNPOV(-2))	-0.029947	0.031143	-1.376359	0.448964	-0.447903
	(0.02879)	(0.02560)	(0.46135)	(0.55661)	(0.13830)
	[-1.04013]	[1.21664]	[-2.98332]	[0.80660]	[-3.23870]
C	1.610000	-0.106217	-2.949699	-5.857084	3.175724
	(0.33252)	(0.29563)	(5.32825)	(6.42845)	(1.59723)
	[4.84186]	[-0.35929]	[-0.55360]	[-0.91112]	[1.98827]
LNUCPI	-0.058236	0.035929	-0.185028	1.069174	-0.181428
	(0.01502)	(0.01335)	(0.24062)	(0.29030)	(0.07213)
	[-3.87830]	[2.69123]	[-0.76898]	[3.68300]	[-2.51535]

LNOP	0.021167	0.064627	-2.253238	1.121433	-0.401095
	(0.03755)	(0.03338)	(0.60163)	(0.72585)	(0.18035)
	[0.56376]	[1.93603]	[-3.74525]	[1.54499]	[-2.22402]
LNHCAP	-0.088062	-0.000437	0.096696	0.140438	-0.171569
	(0.02154)	(0.01915)	(0.34513)	(0.41640)	(0.10346)
	[-4.08856]	[-0.02284]	[0.28017]	[0.33727]	[-1.65832]
R-squared	0.758089	0.702348	0.784992	0.805370	0.838950
Adj. R-squared	0.475859	0.355088	0.534150	0.578303	0.651058
Sum sq. resids	0.002750	0.002174	0.706037	1.027713	0.063444
S.E. equation	0.015137	0.013458	0.242562	0.292648	0.072712
F-statistic	2.686070	2.022540	3.129424	3.546827	4.465069
Log likelihood	85.78202	88.95625	10.88164	5.813428	43.40999
Akaike AIC	-5.243112	-5.478241	0.305064	0.680487	-2.104444
Schwarz SC	-4.523203	-4.758332	1.024973	1.400396	-1.384534
Mean dependent	0.065134	-0.001371	0.072345	0.127815	-0.046586
S.D. dependent	0.020909	0.016759	0.355386	0.450656	0.123092
Determinant resid covariance (dof adj.)		1.28E-13			
Determinant resid covariance		2.23E-15			
Log likelihood		263.9182			
Akaike information criterion		-13.62357			
Schwarz criterion		-9.784050			

Standard errors in ( ) & t-statistics in [ ]