School of Economics and Finance

The Determinants of Foreign Direct Investment in African Countries

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

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Abstract

This thesis examines the factors that influence foreign direct investment (FDI) flows into African countries. African nations are encouraged to pursue FDI as it promotes economic development, provides access to managerial skills, financial resources, marketing expertise and leads to increased employment.

This research will examine the significance of economic risk (economic health), financial risk (financial strength), political risk (political stability), the performance of the Commodity Price Index, the performance of the World Stock Market Index (index tracking the performance of major stock markets in developed countries), gross fixed capital formation (infrastructure), openness to trade, and the availability of a host country stock market in influencing FDI flows into African countries. Thirty-five (35)[1] countries are included in this research, which uses panel data analysis. Annual data are used with a time period of 27 years (1984 to 2010).

This study will add new information to literature by demonstrating that the change in commodity prices can be used to predict whether or not there will be an increase of inward FDI to Africa. Past studies that have examined FDI flows into Africa have not included the performance of the Commodity Price Index as one of the variables that may influence FDI flows into African countries.

Previous studies have also not included the performance of stock markets in various developed countries as one of the variables that may influence FDI flows into African nations. This research will include the World Stock Market Index as one of the variables, thus adding new and unique information to the body of knowledge. The performance of stock markets in developed countries can be used to provide a signal to African nations as to whether or not they can expect an increase of inward FDI from these developed countries.

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[1]Countries included in this research: Algeria, Angola, Botswana, Burkina Faso, Cameroon, Côte d'Ivoire, Democratic Republic of the Congo, Egypt, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Libya, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Republic of the Congo, Senegal, Sierra Leone, South Africa, Sudan, United Republic of Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe.

Whilst the thesis is underpinned by a strong theoretical and literature review of the drivers of FDI, the economic, financial and political risk ratings produced by the International Country Risk Guide (ICRG) have been used in this research to represent the economic health, financial strength, and political stability of African countries. The use of the ICRG risk ratings will also contribute new and unique information to the literature. It will be possible to examine if these risk ratings can effectively be used as proxies for individual variables that are usually included in research to account for the economic, financial or political factors in African countries.

Further, the relationship between FDI flows into African nations and the availability of a stock market in a host country has not been sufficiently explored. Few studies to date (for example, Hailu, 2010) have examined this aspect, treating stock markets as an economic indicator. This research aims to obtain more information with regard to the availability of a stock market in a host nation and the influence that such a market has on FDI flows into Africa.

Regression models are used to analyse the data so as to provide information about the variables that are significant in influencing FDI flows into African countries. The initial analysis is an examination of an unlagged random effects model. The main analysis examines a dynamic panel data model, which includes the lagged dependent variable (FDI_{it-1}) as one of the explanatory variables. The dynamic panel data model is estimated using the Least Squares Dummy Variable (LSDV) model, which is also known as the fixed effects model. A test of robustness is undertaken to provide information on the strength of exogeneity between the dependent variable (FDI) and the explanatory variables. A second test of robustness is undertaken by averaging the annual data over three-year periods. This second robustness test provides information on factors that influence FDI flows into African countries in the long-run. The Vector Error Correction Model (VECM) is also carried out as a test of robustness to provide additional information on both the long-run and short-run relationships between FDI and the non-stationary explanatory variables.

The results from the dynamic panel data model show that there is a positive relationship between current FDI flows into African countries and the FDI flows

received in the previous year by African countries. An increase in FDI flows received by African countries in the previous year will lead to an increase of inward FDI received by African nations in the current year. The level of economic risk in African countries has a negative and significant relationship with FDI inflows to Africa. An increase in the level of economic risk (that is, poor economic health) in African countries will lead to a decrease in FDI inflows. Both financial risk and political risk are found to have an insignificant relationship with FDI inflows to Africa. These results indicate that the level of financial risk and the level of political risk present in African countries were insignificant considerations for foreign investors between 1984 and 2010.

The Commodity Price Index proxies important macro-economic variables and is important to consider in resource-rich African countries. The performance of the Commodity Price Index has a positive and significant relationship with FDI flows into Africa. The performance of the World Stock Market Index, as an indicator of international economic effects, also has a positive and significant relationship with inward FDI. The strong performance of the Commodity Price Index and the World Stock Market Index will lead to an increase of FDI flows into African countries.

Both gross fixed capital formation and openness to trade, as embedded in existing theory and literature, have a positive and significant relationship with the FDI flows into African countries. An increase in the level of infrastructure in African countries and an increase in the level of openness to trade, will lead to an increase of inward FDI to Africa. There is a positive relationship between having a stock market and the amount of inward FDI received by an African country. However, having a stock market in a host country does not play a significant role in attracting inward FDI.

Findings from this research will give African policy-makers an insight into the policies that they need to amend or implement so as to encourage inward FDI to African nations. These recommendations will be in relation to areas that deal with economic health, financial strength, political stability, commodity price movements, performance of stock markets in developed countries, infrastructure, openness to trade of African countries, and availability of a stock market in an African host country. This research will also be of interest to the various organisations within the

African Union, African producers and exporters of commodities, African central banks, and foreign investors wanting to obtain more information about investing in Africa.

Acknowledgements

Working on this PhD thesis has reminded me of the fact that no man is an island. It is true that a lot of the work that goes into writing up a thesis is fairly solitary in nature. However, the task of completing my PhD was made much easier through the help and encouragement of those around me.

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Glossary of Terms

AU – African Union

AMU – The Arab Maghreb Union

BITs – Bilateral Investment Treaties

CEN-SAD – Community of Sahel-Saharan States

COMESA – Common Market for Eastern and Southern Africa

DTTs – Double Taxation Treaties

EAC – East African Community

ECCAS – Economic Community for Central African States

ECOWAS – Economic Community for West African States

FDI – Foreign Direct Investment

GMM – Generalised Method of Moments

ICRG – International Country Risk Guide

ICSID – International Centre for the Settlement of Investment Disputes

IGAD – Intergovernmental Authority on Development

IMF – International Monetary Fund

LLC test – Levin, Lin and Chu (2002) unit root test

LSDV – Least Squares Dummy Variable

MENA – Middle East and North African region

MIGA – World Bank's Multilateral Investment Guarantee Agency

OAU – Organisation of African Unity

OECD – Organisation for Economic Cooperation and Development

PRS – Political Risk Services Group

PTA – Preferential Trade Agreements

SADC – Southern African Development Community

SSA – Sub-Saharan Africa

UN – United Nations

UNCTAD – United Nations Conference on Trade and Development

VAR – Vector Autoregression

VECM – Vector Error Correction Model

WAIPA – World Association of Investment Promotion Agencies

CHAPTER ONE
INTRODUCTION

1.1 Background

Africa is the world's second largest Continent after Asia. According to the United Nations Conference on Trade and Development (UNCTAD)[2], the African Continent had a population of approximately one billion people in 2012, which is about 15% of the world's population (UNCTAD, 2012a). The Continent is surrounded by the Mediterranean Sea to the North, the Red Sea to the Northeast, the Indian Ocean to the East, and the Atlantic Ocean to the West.

There are 54 recognised states[3] in Africa. This Continent is rich in natural resources and has received large foreign investments targeting these reserves. There has also been growth in the manufacturing and service sectors in the Continent. In 2000, the total value of manufactured goods for export in Africa was approximately US$39 billion. By 2008, this value had risen to approximately US$104 billion (African Economic Outlook, 2013d). Growth in the service sector has occurred in industries such as construction, transportation, electricity, water, telecommunications, retail, and consumer banking (World Bank, 2013a). However, many African citizens still live in poor conditions[4]. There are also concerns about internal conflict and heavy debt burdens. Nevertheless, African countries are working towards improving conditions in their nations through better governance.

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[2]The United Nations Conference on Trade and Development (UNCTAD) promotes the integration of developing countries into the world economy. The organisation aims to shape policies on development as well as ensuring that these policies lead to sustainable development (United Nations Conference on Trade and Development, 2013f).

[3]54 Recognised States in Africa: Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Côte d'Ivoire, Democratic Republic of the Congo, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea Bissau, Guinea, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Republic of the Congo, Rwanda, Senegal, Seychelles, Sierra Leone, São Tomé & Principe, Somalia, South Africa, Sudan, South Sudan, Swaziland, Togo, Tunisia, Uganda, United Republic of Tanzania, Zambia, and Zimbabwe. *Sahrawi Arab Democratic Republic and Somaliland are limited in official recognition.

[4]In 2010, 47.5% of the population in Sub-Saharan Africa was living on less than US$1.25 a day based on 2005 international prices (World Bank, 2013h).

An analysis by the International Monetary Fund (IMF) and The Economist[5] finds that over the decade to 2010 six of the world's ten fastest growing economies were in Sub-Saharan Africa (The Economist, 2011). Those countries were Angola, Chad, Ethiopia, Mozambique, Nigeria, and Rwanda. Economic growth in Africa has been driven by factors such as demand for raw materials, rising commodity prices, growth in the services sector, policy reforms, increasing intra-African trade, as well as increased trade with developing countries in other regions (Leke et al., 2010). In 2007, the GDP growth rate for Africa was 6.91% (World Bank, 2013e).

However, the GDP growth rate in African countries decreased to 1.97% in 2009 (World Bank, 2013e) partly as a result of the effects from the Global Financial Crisis[6]. In 2012, the GDP growth rate in African countries increased to 4.21% (World Bank, 2013e).

1.2 Significance of this study

This research will examine the significance of economic risk (economic health), financial risk (financial strength), political risk (political stability), performance of the Commodity Price Index, performance of the World Stock Market Index, gross fixed capital formation (infrastructure), openness to trade, and the availability of a stock market in a host country in influencing FDI flows into African countries. These variables are expected to confirm and expand current theory and literature and provide a better understanding of the factors that influence FDI into the Continent.

This is an important topic of study for Africa, as FDI leads to a transfer of capital, technology, management skills, an increase in employment, consumer choice, access to global markets, and economic growth (Gionea, 2005). Currently, Africa receives a small share of global FDI while it has the potential to be receiving much more.

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[5]The Economist: a newspaper that offers insight and opinion on international news, politics, business, finance, science and technology.

[6]Global Financial Crisis – This Crisis started showing its effects in mid-2007 and has been characterised by a period of global economic slowdown. Since then, there has been a decline in world stock markets, some financial institutions have collapsed (for example, Lehman Brothers) and some governments have requested for rescue packages to bail out their financial systems (for example, Cyprus, Greece, Ireland, Portugal, and Spain). The current global economy is slowly recovering from the effects of the Global Financial Crisis.

According to World Bank statistics, Africa received only 2.45% of the global inward FDI flows in 2011(World Bank, 2013c).

Past studies that examined FDI flows into Africa did not include the performance of the Commodity Price Index as one of the variables that may influence FDI flows into African countries. This research will add new information to literature by demonstrating that the change in commodity prices can be used to predict whether or not there will be an increase of inward FDI to Africa. A study by Mash (1998) was undertaken to examine investment response to commodity price shocks. The researcher finds that investment booms in response to commodity price shocks are likely, but not certain to take place. A boom at the end of the commodity price shock may also occur. However, Mash (1998) did not focus on FDI and the study included only four[7] African countries. The research in this thesis has a focus on FDI into Africa and uses data from 35 African nations. An increase in commodity prices is expected to have a positive impact on FDI flows into Africa.

Further, previous studies did not include the performance of stock markets in various developed countries as one of the variables that may influence FDI flows into African nations. This research will include the performance of stock markets in developed countries as one of the variables thus contributing new information to literature. The performance of stock markets in developed countries may be useful in providing signals to African nations as to whether or not they can expect an increase of FDI inflows from those developed countries.

For example, stock markets in many developed nations were weak during the Global Financial Crisis of 2008. The weak stock markets in developed countries contributed to the experienced economic slowdown. The decreased economic growth had an adverse effect on capital outflows, and as a result, Africa experienced a decrease in inward FDI from developed countries in 2009. A decrease of inward FDI to Africa was also experienced during the stock market downturn of 2002. During this time, there was a decline in stock prices across stock markets in the United States of

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[7]Mash (1998) – This research included four African countries, which are Côte d'Ivoire, Ghana, Kenya, and Sierra Leone.

America (USA), Canada, Asia, and Europe. Inward FDI flows to Africa decreased by 41% in 2002 (UNCTAD, 2003).

A large increase in inward FDI to Africa was experienced between 2003 and 2008, translating from approximately US$18 billion in 2003 to US$57 billion in 2008 (UNCTAD, 2013e). During this time, the stock markets in developed countries were also performing very strongly, with the MSCI World Index[8] reaching an annual average of 1,588 points in 2008. Previously in 2003, the MSCI World Index was at an annual average of 792 points. This study will use the MSCI World Index to track the performance of stock markets in 24 developed nations and analyses the relationship that this Index has with inward FDI flows to Africa. Nonnemberg and Cardoso de Mendonça (2004) examined the relationship between the Dow Jones Index and FDI flows into developing nations (nine of them in Africa). They find a positive impact on FDI flows. However, the Dow Jones Index only tracks the performance of 30 large publicly-owned companies based in the USA. The MSCI World Index utilised in this thesis, tracks the performance of large and mid-cap companies listed in the USA as well as in other developed countries. A rise in the performance of stock markets in developed countries is expected to have a positive impact on FDI flows into African countries.

The economic, financial, and political risk ratings produced by the International Country Risk Guide (ICRG) have been used in this research to represent the economic health, financial strength, and political stability of African countries. The use of the ICRG risk ratings allows researchers to better understand if these risk ratings can be used as a substitute for individual variables, usually included in research to account for economic, financial or political risk in a country. Previous studies that examined FDI flows into African countries used a number of macro-economic variables to account for economic, financial, and political risk in a country (for example, Asiedu, 2002; Nonnemberg and Cardoso de Mendonça, 2004; Onyeiwu and Shrestha, 2004; Anyanwu, 2006; Dupasquier and Osakwe, 2006;

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[8]MSCI World Index - Index that tracks the performance of stock markets in 24 developed nations. These countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, United Kingdom, and the United States of America.

Twimukye, 2006; Bartels and colleagues, 2009; Hailu, 2010; Mhlanga and colleagues, 2010; Mohamed and Sidiropoulos, 2010; Reiter and Steensma, 2010; Adjasi and colleagues, 2012; Anyanwu, 2012; Darley, 2012; Ezeoha and Cattaneo, 2012; Gebrewold, 2012; and Agbloyor and colleagues, 2013). Other studies (for example, Asiedu, 2006; Asiedu and Lien, 2011; Busse and Hefeker, 2007; and Mijiyawa, 2012) used some components of the ICRG risk ratings in their research. This research uses all the three ICRG risk ratings along with their components (i.e. economic risk rating, financial risk rating, and political risk rating).

The ICRG ratings compiled by the Political Risk Services Group have been used in the past for research in financial economics (for example, Simpson, 2012). Examples of other country risk rating agencies include: the Economist Intelligence Unit, Euromoney, Institutional Investor, Moody's, and Standard and Poor's. Country rating agencies produce ratings that are highly positively correlated and interdependent (for example, Hammer et al., 2006; Güttler and Wahrenburg, 2007; and Alsakka and ap Gwilym, 2010) and these ratings are indicators of economic health, financial strength, and political stability. The ICRG risk ratings have been chosen for use in this research as this data was readily available. These risk ratings also provide detailed and reliable monthly data over a long period of time, for a large number of countries (Hoti and McAleer, 2004).

This research will undertake a robustness test to obtain better understanding of the strength of exogeneity between the variables used in this research. In this test, each of the explanatory variables is treated as a dependent variable in a dynamic panel data model, with the dependent variable lagged by one year. This robustness test is performed so as to find out if any of the explanatory variables are useful in the prediction of the dependent variable (FDI), or if there is a reverse relationship whereby the dependent variable (FDI) is useful in the prediction of one or more of the explanatory variables. Previous studies have not used this methodology as a way of analysing the strength of exogeneity between variables.

The relationship between FDI flows into African nations and the availability of a stock market in a host country has not been sufficiently explored. One study (Hailu, 2010) examined this aspect. This research aims to obtain more information with

regard to the availability of a stock market in a host nation and the influence that this market has on FDI flows into Africa.

Findings from this research will give African policy-makers insight into the policies needing to be implemented or amended so as to encourage inward FDI to African nations. These recommendations will be in relation to areas that deal with economic health, financial strength, political stability, commodity price movements, stock market movements in developed countries, infrastructure, trade openness, and the availability of a stock market in an African host country. Specific economic, financial, and political aspects that African policy-makers may need to improve on or implement are obtained through the assistance of the ICRG risk ratings.

African producers and exporters of commodities will benefit from the results, particularly those that highlight the importance of commodity prices in influencing FDI flows into African countries. It is also essential for African policy-makers to understand the relationship between performance of stock markets in developed countries and the FDI flows received into Africa. It is anticipated that a rise in commodity prices and/or rise in the performance of stock markets in developed countries will lead to an increase of inward FDI to African countries. African policy-makers will therefore need to ensure that there are policies in place to cater for increased FDI when commodity prices rise, or when stock markets in developed countries are performing strongly.

Similarly, African nations may also need to look for alternative ways of boosting inward FDI when commodity prices are weak and/or when international stock markets in developed countries are performing poorly. African central banks will find the results of this research relevant, in support of their role in maintaining financial stability in the economy. Having a stock market in an African country may also play an important role in influencing inward FDI to African countries. If so, it will be beneficial for African nations to take steps to encourage further participation in the local stock markets.

1.3 Theory and literature

On one end of the scale, there is opposition to all forms of FDI; while on the other end of the scale, there is the free market economics view, which does not include any intervention (Hill, 2011). Between these two extremes is an approach known as pragmatic nationalism (Hill, 2011). Today, most countries adopt this pragmatic view towards FDI. Opposition towards FDI is related to the radical viewpoint, which has its roots in Marxist political and economic theory pioneered in the nineteenth Century. This view was especially popular in countries[9] that embraced Communism from 1945 until its collapse in the 1990s.

The free market view traces its roots to the Classical Economics and International Trade Theories of Smith (1776) and Ricardo (1817). Heckscher (1919) and Ohlin (1933) subsequently improved on the work of Ricardo (1817) and explain why it is beneficial for countries to take part in international trade, even for goods and services that it can produce itself. The works of Samuelson (1949, 1953) and Jones (1965) explained that international differences in factor endowments are a major source of comparative advantage[10]. This view is also in line with the work of Heckscher (1919) and Ohlin (1933). Towards the end of the 1980s, Krugman (1987) developed the New Trade Theory. This theory explains that goods and services produced in a country are determined by factors such as resources and climate. There is also additional specialisation due to economies of scale and there is much more trade than expected from countries with similar climate and resources (Krugman, 2008). Porter (1990) later developed the Theory of National Competitive Advantage, which provides insight as to why some nations achieve international success in specific industries. Dunning (1981, 1988) also made major contributions to the area of international trade. He wrote on the eclectic paradigm of international production which examines ownership, location, and internalisation advantages as factors that explain FDI.

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[9]Examples of countries that embraced the radical view towards FDI include the former Soviet Union, Poland, Czechoslovakia, Hungary, China, Cambodia, Cuba, and newly independent countries in the African Continent during the 1950s and 1960s.

[10]Comparative advantage: David Ricardo (1817) wrote on the theory of comparative advantage in his book, Principles of Political Economy. This theory argues that countries need to specialise in the production of those goods and services that they can produce most efficiently and buy the goods and services that it produces less efficiently.

Several studies have examined the variables that influence FDI flows into Africa. These include (but are not limited to), Asiedu (2002); Bende-Nabende (2002); Nonnemberg and Cardoso de Mendonça (2004); Onyeiwu and Shrestha (2004); Akinkugbe (2005); Tarzi (2005); Yasin (2005); Alsan and colleagues (2006); Anyanwu (2006); Asiedu (2006); Dupasquier and Osakwe (2006); Du Toit and colleagues (2006); Fedderke and Romm (2006); Kandiero and Chitiga (2006); Twimukye (2006); Busse and Hefeker (2007); Naudé and Krugell (2007); Sekkat and Veganzones-Varoudakis (2007); Büthe and Milner (2008); Kyereboah- Coleman and Agyire-Tettey (2008); Bartels and colleagues (2009); Hoarau (2009); Indopu and Tagne Talla (2010); Hailu (2010); Mhlanga and colleagues (2010); Mohamed and Sidiropoulos (2010); Reiter and Steensma (2010); Adjasi and colleagues (2012); Anyanwu (2012); Darley (2012); Ezeoha and Cattaneo (2012); Gebrewold (2012); Mijiyawa (2012), and Agbloyor and colleagues (2013). Factors such as large domestic markets, natural resource availability, infrastructure, educated labour force, government policies, trade openness, low inflation, political stability, exchange rates, presence of other firms in the economy, trade agreements, and flow of foreign aid all provide influence towards inward FDI to Africa. Most of these variables are proxied in this study by the comprehensive macro and micro-economic information provided in the risk ratings.

1.4 Data and method

Countries included in the study were chosen on the basis of being members of the African Union (AU) and having the ICRG risk ratings data available from the Political Risk Services Group[11] database. The AU was launched on 9 July 2002 in the Durban Summit, South Africa and is a successor of the Organisation of African Unity (OAU). This research acknowledges that the AU is an organisation that aims to promote economic prosperity in Africa and this is why member countries were chosen for inclusion in this study. Additional information on the AU is included in Appendix One – Background of the African Union.

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[11]Political Risk Services (PRS) Group: An organisation that deals with investment risk analysis. The International Country Risk Guide (ICRG) Rating compiled by the PRS Group offers information on the economic, financial, and political risk of various countries.

The data was collected from 1984 until 2010. The ICRG risk ratings provide information about the economic, financial, and political risks of the country being examined. Thirty-five (35) countries in Africa fall into this category. They are: Algeria, Angola, Botswana, Burkina Faso, Cameroon, Côte d'Ivoire, Democratic Republic of the Congo, Egypt, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Libya, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Republic of the Congo, Senegal, Sierra Leone, South Africa, Sudan, United Republic of Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe.

Panel data was used to conduct this research, being appropriate as it deals with a cross-section of African countries with annual observations over 27 years. The dependent variable is net FDI inflows. The independent variables are economic risk rating, financial risk rating, political risk rating, Commodity Price Index, World Stock Market Index, gross fixed capital formation, openness to trade, and a dummy variable for the stock market availability in a host nation. A preliminary analysis of the data was first undertaken. The preliminary analysis provided information about descriptive statistics of the variables, correlation between the variables, as well as the relationship between inward FDI flows to African countries and the level of composite risk (that is, combined economic, financial, and political risk). The simple hypothesis test for economic risk, financial risk, and political risk was also carried out. Out of the 35 African nations, Botswana was found to have the lowest level of economic and financial risk between 1984 and 2010, based on the ICRG risk ratings. Namibia was found to have the lowest level of political risk during this time. The simple hypothesis test provided detailed information as to whether or not the average economic risk rating for other countries was different from that of Botswana, whether or not the average financial risk rating for other countries was different from that of Botswana, and whether or not the average political risk rating for other countries was different from that of Namibia.

After preliminary analysis, the next stage was estimation of the regression models. The initial analysis involved estimation of the unlagged regression model. This model was used to provide an indication of variables that may be useful in influencing inward FDI into African countries. The random effects model was chosen to estimate the unlagged model, following the results from the Hausman

(1978) test. This test was used to provide direction as to whether the random effects model or the fixed effects model was appropriate to use in estimating the unlagged model. The unlagged model was corrected for the presence of heteroskedasticity and serial correlation in the errors using the White period method[12] available when analysing data through EViews software.

In the main analysis, a dynamic panel data model was estimated using the Least Squares Dummy Variable (LSDV) model, also known as the fixed effects model. The LSDV model is appropriate to use when there is a lagged dependent variable in the regression, and when the time period for the data is large. In the dynamic panel model, the dependent variable was lagged by one year (FDI_{it-1}) and became one of the explanatory variables in the regression model. The time period for the data used in this study is 27 years (1984 to 2010). A one-year lag on the dependent variable was found to provide the best fit for the dynamic panel data model. These results are presented in Chapter Five, Section 5.4.

Robustness tests were also carried out on the data. Analysis was undertaken to examine the strength of exogeneity between the dependent (FDI) and explanatory variables. Some of the explanatory variables might be useful in the prediction of the dependent variable (FDI), or there may be a reverse relationship whereby the dependent variable (FDI) is useful in the prediction of one or more of the explanatory variables. In order to examine this relationship, each of the explanatory variables was made into a dependent variable in separate dynamic panel data models. This analysis provided an understanding of how FDI behaves when it is an explanatory variable in a dynamic panel data model. A one-year lag on the dependent variable was found to provide the best fit for these dynamic panel data models. This robustness test is presented in Chapter Five, Section 5.5.

Another robustness test was undertaken to provide indication of the variables that influence FDI flows into African countries in the long-run. The original data had a time period of 27 years with an annual frequency. This annual data was averaged

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[12]The white period method assumes that the errors for a cross-section are heteroskedastic and serially correlated (cross-section clustered) (EViews, 2009). This method will correct for the presence of heteroskedasticity and serial correlation in the errors.

over three-year periods and estimated using an unlagged model and a dynamic panel data model. These results are also available in Chapter Five, Section 5.6, and indicate that the amount of FDI received in the previous year, level economic risk (economic health), level of political risk (political stability), movement of commodity prices, and the performance of stock markets in developed nations, are significant in influencing FDI received into African countries in the long-run.

The Vector Error Correction Model (VECM) was also undertaken as a robustness test to provide information on both the long-run equilibrium relationship and the short-run dynamic relationship between FDI and the explanatory variables. A VECM analysis was undertaken with variables that are non-stationary, and are cointegrated. However, some of the variables used in this research were found to be stationary at the level series. This may be due to the fact that the research was undertaken using annual data with a time period of 27 years. There are also some missing observations from several countries, which have not accurately recorded their data, and therefore an unbalanced panel data study was utilised for analysis. Variables that were included in the VECM are inward FDI, Commodity Price Index, financial risk, and gross fixed capital formation. These results are reported in Chapter Five, and indicate that the level of infrastructure in African countries is also useful in influencing FDI flows that are received into Africa in the short-run.

1.5 Policy implications

The results of this research show that it is important for African countries to have a low level of economic risk (strong economic health) as this will increase the amount of FDI flows received into the Continent. In order to achieve strong economic health, African Governments need to work towards increasing economic growth in their countries, having an increasing level of GDP per capita, having a low level of inflation, managing government expenditure as a percentage of GDP, investing in projects that yield positive returns in the long-run, as well as not accumulating a large current account deficit as a percentage of GDP. Increasing economic growth and increasing GDP per capita in African countries will also attract foreign investors who wish to target their goods and services towards the host country's local market.

There is a negative relationship between the level of financial risk and FDI flows into African countries, showing that having a high level of financial risk (low financial strength) will lead to less FDI flowing into Africa. It is therefore important for African nations to continue maintaining financial strength in their economies. In order to achieve low financial risk (increased financial strength), African Governments will need to work towards reducing the accumulation of foreign debt as a percentage of GDP, reducing the accumulation of foreign debt services as a percentage of exports of goods and services, increasing imports of goods and services in comparison to the amount of exports as a percentage of goods and services, increasing the level of net international liquidity as months of import cover, and having a stable exchange rate. The implementation of these policies by African policy-makers will play an important role in assisting African countries achieve financial strength in their economies.

The results of this study also show that there is a negative relationship between the level of political risk and FDI flows into African countries. This indicates that having a high level of political risk (political instability), will lead to less FDI flowing into Africa. In order to achieve low political risk (political stability), African Governments will need to work towards reducing government instability, reducing the level of social dissatisfaction in the country, as well as reducing investment risks for investors in relation to contract viability, repatriation of profits and payment delays. African countries should also have a low threat of civil war, coup, terrorism or political violence, a low level of cross-border war or external pressures from other countries, minimal or no military participation in government, and low levels of religious and ethnic tensions. African Governments also need to ensure that there is an impartial judicial system and observance of the law, a high level of institutional strength, and bureaucracy quality that will face minimal disruption even with a change in government.

The performance of the Commodity Price Index is found to have a positive influence on FDI flows into the African Continent. It is anticipated that as the Commodity Price Index rises, more FDI will flow into the Continent. Additional FDI inflows will lead to an increase of money supply in the economy. Prices of assets such as houses may start rising in the economy, and need to be carefully monitored. Increased FDI

inflows may also lead to exchange rate appreciation in a host country, as foreigners demand more of the local currency to invest in that host country. African policy-makers and central banks therefore need to ensure they have controls in place to cater for increased FDI inflows.

African Governments should also ensure that they save money from the sale of commodities. The money saved during the commodity upswings can be used during the downswing period to smoothen the economic volatility caused by commodity price changes. There is an interest among African countries to establish commodity exchanges so as to obtain more benefits from export of commodities, and this is highly encouraged.

The strong performance of stock markets in developed countries has been found to have a positive influence on the FDI flows received into Africa. Stock markets in developed countries (for example, the USA, Japan, and European countries) have been showing signs of improvement[13] in 2013, after reaching very low levels during the Global Financial Crisis that started mid-2007. These developed countries are also showing signs of economic recovery and are expected to increase their outward capital flows. African countries can anticipate receiving an increase of FDI flows from these nations in the coming years. Once again, African policy-makers should ensure that they have policies in place to cater for increased capital flows. This may also be a suitable time for African countries to engage in the promotion of investment opportunities available in their nations.

The results of this study also show that there is a positive, significant relationship between inward FDI flows to African countries and the level of infrastructure present in those countries. It is important for African nations to make a conscious effort to improve their infrastructure as this will increase the amount of FDI flows that they receive.

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[13]Stock markets in developed nations have been performing poorly since the onset of the Global Financial Crisis in mid-2007. However, stock markets in developed countries have started recovering and were performing strongly in early 2013. At the end of May 2013, the stock markets in the United Kingdom (FTSE 100) and Japan (Nikkei 225) were trading at their highest levels in five years (BBC, 2013). The Dow Jones Index in New York and Germany's Dax were also performing very strongly towards the end of May 2013.

Openness to trade in African countries is found to have a positive, significant relationship with the level of FDI flows received into African nations. African countries that are open and willing to trade with other nations are more likely to receive inward FDI flows. It is important for African countries to have external policies that encourage trade with other nations. However, African policy-makers should ensure that these FDI investments will add value to the local economy.

This study has also shown that there is an insignificant relationship between the availability of a stock market in a host country and the amount of FDI flows that are received in African countries. This result is similar to that obtained by Hailu (2010) in the study that examined the importance of capital markets in influencing FDI flows into African countries. However, it is anticipated that as African stock markets continue to develop, there will be increased FDI made through the financial markets. Research undertaken by Agbloyor and colleagues (2013), finds that stock market development plays a positive, significant role in attracting foreign investors into African countries.

Finally, the amount of FDI received in the previous year by African countries is significant in influencing the amount of FDI flows received in the current year by these African nations. It is important for African policy-makers to implement policies that will encourage FDI in their nations in the current year as these investments are likely to encourage further FDI inflows in the following year. Policy implications of this research support the work being undertaken by various bodies of the AU, which encourage economic health, financial strength, and political stability in the African Continent.

1.6 Foreign direct investment into African regions

Inward FDI flows to Africa have been on the rise as countries have initiated and effected political reforms and further opened up to international trade. In 2012, FDI flows into the Continent stood at a value of approximately US$50.04 billion (UNCTAD, 2013e). Inflows of FDI into Africa vary within the different regions, which include Northern Africa, Eastern Africa, Southern Africa, Western Africa, and Central Africa.

Between 1990 and 2012, Northern and Western Africa received the highest FDI flows in the region. Investments in Northern and Western Africa have mainly been driven by the oil and gas resources found in Algeria, Côte d'Ivoire, Egypt, Ghana, Liberia, Libya, Mauritania, Niger, Nigeria, Sudan, and Tunisia. However, FDI flows into North Africa started decreasing from 2009 onwards. This was mainly due to the economic and political uncertainty facing Algeria, Egypt, Libya, Morocco, Sudan, and Tunisia following the Arab Spring[14]. In 2012, FDI flows into Northern Africa increased to US$11.5 billion, up from US$8.5 billion in 2011 (UNCTAD, 2013e). The FDI flows into Western African countries decreased in 2012 to US$16.8 billion, down from US$17.7 billion in 2011 (UNCTAD, 2013e).

Southern African countries such as Botswana, Namibia and Zambia receive large investments in mining. Zambia also attracts foreign investments in financial services, renewable energy, chemicals, and communications (Ernst &Young, 2011). Angola attracts many foreign investors, due to the vast amounts of oil in the country. South Africa is one of the largest recipients of FDI in Africa, with investments flowing into software and information technology, business and financial services, metals, and automotive manufacturing (Ernst & Young, 2011b). Mozambique has received FDI flow into energy resources, food and tobacco, metals, financial services, and communications (Ernst & Young, 2011b). However, inward FDI flows to Southern African countries declined in 2012 to US$5.5 billion from US$7.5 billion in 2011 (UNCTAD, 2013e). This was mainly due to reduced investments in Angola and South Africa during this time.

Central African countries such as Cameroon, Chad, Democratic Republic of the Congo, Equatorial Guinea, Gabon, and Republic of the Congo are rich in oil and minerals thus receiving large investments in these sectors. However, the FDI flows into Central Africa decreased in 2012 to US$2.9 billion, down from US$5 billion in 2011 (UNCTAD, 2013e).

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[14] The Arab Spring refers to the wave of demonstrations and protests supporting political reforms, which occurred in some of the Arab nations such as Algeria, Bahrain, Egypt, Jordan, Kuwait, Libya, Morocco, Saudi Arabia, Syria, Oman, Tunisia, and Yemen starting from December 2010.

The FDI flows into Eastern Africa increased in 2012 to US$13.3 billion, up from US$9 billion in 2011 (UNCTAD, 2013e). These inward FDI flows were encouraged by the recent discovery of oil deposits in Uganda and Kenya (Deloitte, 2013). South Sudan is a current oil producer in the Region, and exports this commodity. In 2012, natural gas was also discovered offshore from Kenya (Tullow Oil plc, 2013). The United Republic of Tanzania and Mozambique are also known to have large deposits of natural gas. Other investment opportunities in Eastern Africa are available in sectors such as agriculture, construction and housing, education, finance, fisheries, healthcare, horticulture, information and communications technology, infrastructure, manufacturing, tourism, and water (East African community, 2012).

Figure 1.1: Annual FDI flows into African regions (billions of US$)
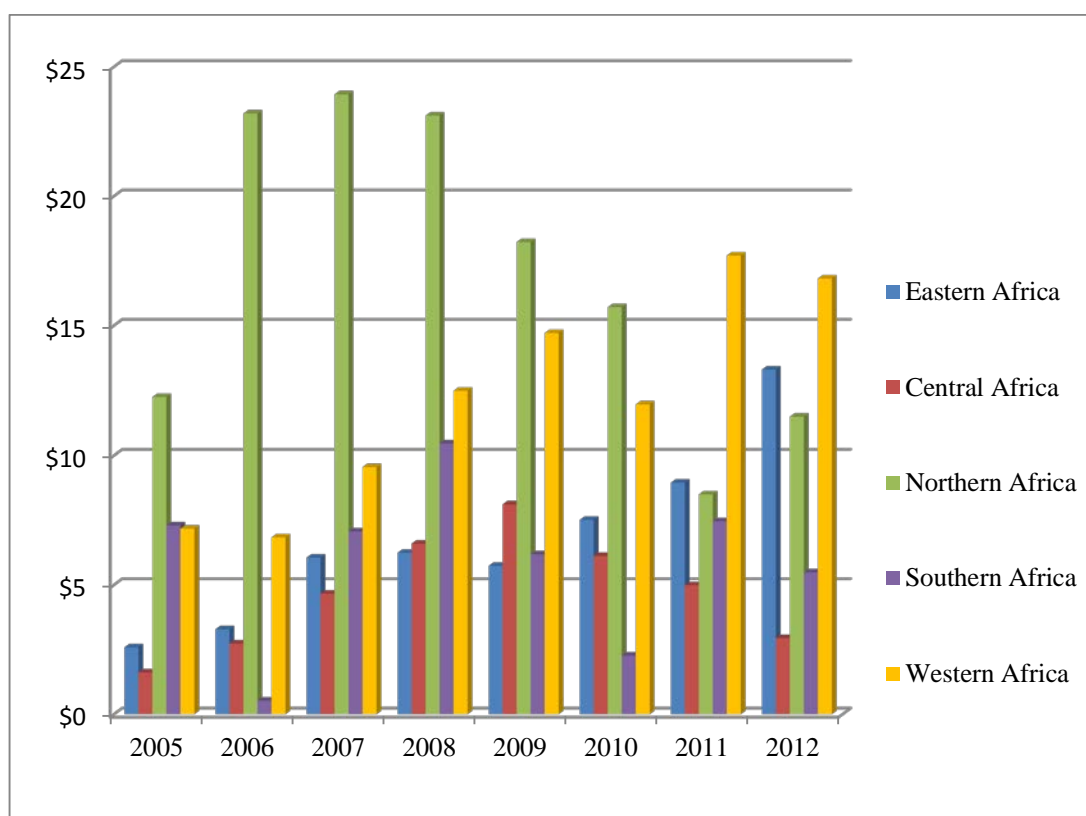
Source: United Nations Conference on Trade and Development, 2013e

Figure 1.2: Top 10 sectors ranked by proportional share of projects – greenfield investments (% share of total)

	Sums of 2003-12		2003		2012	
Financial services	16.2%		11%		17.9%	
Business services	7.9%		3.9%		12.8%	
Coal, oil and natural gas	7.8%		17.2%		3.0%	
Metals	7.1%		11.3%		4.2%	
Communications	6.9%		3.0%		12.2%	
Software and IT services	6.0%		5.9%		6.3	
Food and tobacco	5.3%		5.9%		6.4%	
Hotels and tourism	4.1%		3.9%		1.8%	
Automotive OEM	3.3%		4.2%		2.4%	
Transportation	3.3%		2.1%		3.9%	

Source: Source: Ernst & Young's Attractiveness Survey Africa, 2013

1.7 Foreign direct investment into Africa from Asia and other regions

Asian countries have become more involved in making greenfield investments and cross border mergers and acquisitions[15] in the African Continent (Adams, 2009). A greenfield investment is made when a new operation is set up in a foreign country. The FDI flows into Africa from Asia are expected to continue rising as Asian countries seek natural resources and wish to participate in the growth of African markets. Asian countries have also directed investment funds towards industry and manufacturing as African nations have continued to adopt appropriate policies to facilitate this. Between 1995 and 1999, Asian FDI flows into Africa only accounted for 6.5% of total FDI flows into the Continent. However, between 2000 and 2008, the share of Asian FDI flows into Africa increased to 15% (African Economic Outlook, 2011).

The majority of the FDI inflows from Asia have come from Hong Kong, Republic of Korea, Singapore, Malaysia, Taiwan, Thailand, China, and India (UNCTAD, 2007). In 2012, Malaysia, China, and India were among the largest source of FDI into Africa from developing countries (UNCTAD, 2013a). State-owned enterprises such

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[15]Cross border mergers and acquisitions occur when more than 10% equity share of an existing enterprise abroad is acquired (Gionea, 2005).

as China National Offshore Oil Corporation, Petronas from Malaysia, and India's Oil and Natural Gas, are examples of Asian firms that have invested in the Continent. China has become an important trading partner for Africa reflecting increased economic cooperation. In 2009, China became Africa's largest trading partner; and by 2011, China's bilateral trade volume with Africa was approximately US$160 billion (Africa Progress Panel, 2012). Major recipients of FDI from China have been Angola, Botswana, the Democratic Republic of the Congo, Ethiopia, Ghana, Kenya, Madagascar, Niger, Nigeria, South Africa, Sudan, United Republic of Tanzania, and Zambia (Weisbrod and Whalley, 2011). It is anticipated that FDI flows from India into Africa will rise as they too seek to participate in the growth of the African Continent. India has made major investments in Mauritius, Ivory Coast, Senegal, and Sudan (UNCTAD, 2010).

Further, Africa receives a substantial amount of investment from Middle Eastern countries. There has been a growing interest among these nations to buy large acres of farmland in Africa. This has been led by increased demand and a growing population in these Regions. Countries from the Middle East investing in Africa are Saudi Arabia, Qatar, Bahrain, Kuwait, and United Arab Emirates. Other countries, such as Brazil, China, and the Republic of Korea have also invested into arable farmland in Africa (Schaffnit-Chatterjee, 2012). These countries view the purchase or lease of farmland in Africa as a way of meeting demand for food in their home countries. A report from Oxfam (2012), states that over the past ten years to 2012, 62% of agricultural land deals have taken place in Africa. Eastern Africa hosts approximately a third of global land deals.

The growing interest of land acquisition in Africa will undoubtedly pose new challenges for African countries. It is important for African leaders to carefully assess the impact on society and the economy when making land deals. They also need to be transparent in making investment decisions. Research carried out by the Economist Intelligence Unit[16] (2013) highlights opportunities for countries in the Middle East that wish to invest in Africa. Apart from investing in arable land,

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[16]Economist Intelligence Unit - Business that offers forecasting and advisory services.

countries in the Middle East can invest in banking, infrastructure, retail, and telecommunications in Africa (Africa Global Business Forum, 2013).

Latin American countries, such as Brazil, have made significant investments in Africa. Investments from Brazil tend to flow into Portuguese speaking countries like Mozambique and Angola. Some large Brazilian companies that have invested in Africa include Petrobras and Vale. The energy company, Petrobras, has investments in Angola, Benin, Gabon, Libya, Namibia, Nigeria, and the United Republic of Tanzania (Petrobras, 2013). The Vale mining company operates in Angola, the Democratic Republic of the Congo, Guinea, Malawi, Mozambique, and Zambia (Vale, 2013). Other Latin American countries that have made investments in Africa include Mexico and Chile.

Intra-African investment has also been on the rise. African countries tend to make investments in their neighbouring countries thus indicating the importance of Regional Economic Communities. South Africa is the leading country in Africa in terms of intra-African FDI, investing heavily in other African nations. According to Ernst & Young's Attractiveness Survey (2011b), South Africa was one of the main investors in Angola, Democratic Republic of the Congo, Ghana, Kenya, Mauritius, Mozambique, Nigeria, Uganda, United Republic of Tanzania, and Zambia between 2003 and 2010.

The following graph (figure 1.3) shows new FDI investments that were made in the African Continent from both African countries and non-African emerging countries between 2003 and 2010. The graph shows that new FDI projects in Africa from African countries have been on the rise.

Figure 1.3: New FDI projects in Africa from African countries and non-African emerging countries
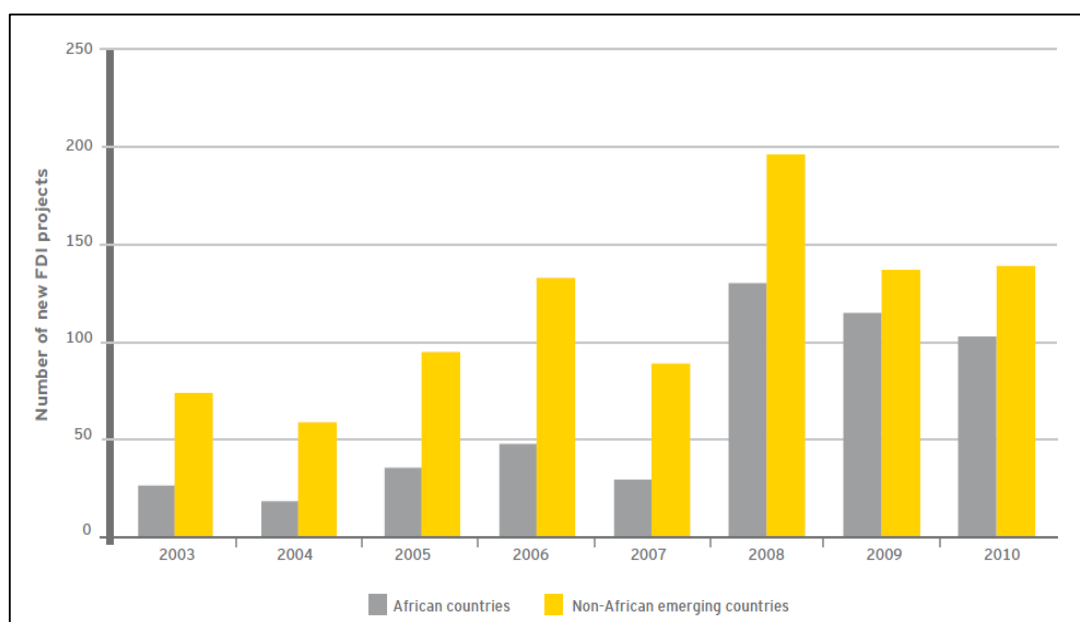
Source: Ernst & Young's Attractiveness Survey Africa, 2011a

However, the majority of the FDI flows into Africa still come from developed countries such as those in Europe, as well as the USA. The FDI flows from developed nations accounted for approximately 72% of inward FDI to Africa between 2000 and 2008 (African Economic Outlook, 2011).

1.8 Investment policies in Africa

Many African countries have taken steps towards improving the business environment in their economies. This has been achieved through means such as reducing taxes, establishing agencies that assist foreign investors, and removing a number of FDI restrictions. For example, in 2011 Angola introduced new investment policies aimed at enterprises that invest in developing areas, special economic zones or free trade zones. Investors in Angola need to fulfil certain conditions and in return receive incentives in specific industries (UNCTAD, 2012b). In 2012, Zambia encouraged foreign investors to meet their obligations in creating employment for Zambians so as to be eligible to receive tax incentives (UNCTAD, 2013d). In 2013, Algeria offered new incentives to foreign investors wishing to invest in resources such as shale gas and shale oil (UNCTAD, 2013d). Burkina Faso also introduced

some fiscal incentives in 2013[17]. Sudan has approved the *Investment Act* 2013, which offers tax and customs privileges to selected industries. Cape Verde now allows a corporate income tax credit of up to 50% of eligible investments made in sectors such as tourism, air and sea transportation, renewable energy, and information technology (UNCTAD, 2013d). Gabon has reduced the corporate tax rate from 35% to 30% for companies not operating in the mining and oil sector, as the country seeks to reduce its dependence on the energy sector (UNCTAD, 2013d).

Bilateral investment treaties (BITs) and double taxation treaties (DTTs) have also had a positive effect on Africa's investment climate. Between 2001 and 2010, least developed countries[18] made 455 BITs and 188 DTTs (UNCTAD, 2011). The signing of these investment treaties shows that countries are interested in participating in the growth of the African Continent. The Majority of African countries are also members of the World Association of Investment Promotion Agencies (WAIPA). This organisation gives member countries an opportunity to share about their experiences in attracting FDI and improving outward investment. Investment promotion authorities in member countries can obtain support from this agency when advising their governments on investment promotion strategies and policies (WAIPA, 2012).

However, some countries, such as the Democratic Republic of the Congo, introduced entry barriers into certain sectors. In most cases, entry barriers into certain sectors are introduced if this is seen to be in the best interest of the host country. The Democratic Republic of the Congo introduced a law that allows land to be held "only by Congolese citizens or by companies that are majority owned by Congolese nationals" (UNCTAD, 2012b: 80). This law is likely to have come about as a result of growing concerns about land purchases in Africa by foreign firms. There are

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[17]Burkina Faso introduced "an abolition of the limitations on the deductibility of remunerations paid by a resident company to non-resident persons, and the possibility to carry back head office expenses that may not be deducted in a loss making year to the most recent profitable tax year" (UNCTAD, 2013d: 5).

[18]Least Developed Countries as classified by the United Nations (2013c): Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, the Central African Republic, Chad, the Comoros, the Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, the Gambia, Guinea, Guinea- Bissau, Haiti, Kiribati, the Lao People's Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Samoa, São Tomé and Principe, Senegal, Sierra Leone, the Solomon Islands, Somalia, Sudan, Timor-Leste, Togo, Tuvalu, Uganda, the United Republic of Tanzania, Vanuatu, Yemen, and Zambia.

concerns about environmental consequences of land over-exploitation and the implications for domestic rural producers. Ghana, Zambia, and Zimbabwe increased their corporate tax rates and royalties in the extractive industries between 2011 and 2012 (UNCTAD, 2012b). Senegal raised the corporate tax rate in the country from 25% to 30% in 2012 (UNCTAD, 2013d). In 2013, Benin prohibited land ownership by foreign investors, although they are still allowed to enter into long term leases (UNCTAD, 2013d).

Regional Economic Communities

Africa offers foreign investors access to large markets through the Regional Economic Communities. The eight Communities in Africa are: the Arab Maghreb Union, Common Market for Eastern and Southern Africa, Community of Sahel-Saharan States, East African Community, Economic Community of Central African States, Economic Community of West African States, Intergovernmental Authority on Development, and the Southern African Development Community. These Regional Economic Communities have in place incentives to encourage investments.

The Arab Maghreb Union Regional Economic Community is in Northern Africa with five member countries: Algeria, Libya, Mauritania, Morocco, and Tunisia. In 2013, the Union launched an investment bank to finance infrastructure projects such as highways and energy as well as the promotion of technology in the region. This bank will assist in the growth of the Region, encouraging further investments into member countries. This Regional Community had a population of approximately 89 million people in 2011 (World Bank, 2013i).

The Common Market for Eastern and Southern Africa[19] (COMESA) has a free trade area that offers access to over 445 million people (COMESA Regional Investment Agency, 2013). This Regional Economic Community was established in 1994 and has 19 member countries. Most COMESA member states adhere to the World

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[19]Common Market For Eastern and Southern Africa (COMESA) – Regional economic community with member countries being: Burundi, Comoros, Democratic Republic of the Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia, and Zimbabwe.

Bank's Multilateral Investment Guarantee Agency[20]. So as to increase inward FDI, many member countries have signed and ratified BITs and DTTs. As of June 2011, 53 BITs were signed and/or ratified within the tripartite region (the EAC, COMESA and SADC). The COMESA member states have also established investment promotion agencies to guide foreign investors through the investment process. The Regional Investment Agency for COMESA was launched in 2006 to assist the Region in becoming a viable and attractive destination for investors. There are opportunities for investment in agriculture, infrastructure, logistics, manufacturing, real estate, services, and tourism within this Region (COMESA Regional Investment Agency, 2013).

The Community of Sahel-Saharan States[21] was established in February 1998 and has 27 member countries. This community aims to work together with the other Regional Economic Communities and the AU to support stability, and achieve economic and social development. This Community had a population of approximately 549 million people in 2011 (World Bank, 2013i).

The East African Community[22] (EAC) was re-established in 2000 and has five member countries. In 2011, this Community had a population of approximately 142 million people (World Bank, 2013i). The EAC has investment promotion agencies present in each member country to promote investment opportunities. There is also a refund of import duties on materials used in the production of goods exported to a third country. Duty and value added tax remission schemes have been made available to promote exports. Export processing zone regulations have been implemented to ensure that these zones are established in a uniform manner throughout member countries. Partner states have also agreed to harmonise duty exemption schemes and

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[20]World Bank's Multilateral Investment Guarantee Agency (MIGA) – This organisation aims to promote foreign direct investment into developing nations, encourage economic growth, reduce poverty and improve peoples' lives (Multilateral Investment Guarantee Agency, 2011).

[21]Community of Sahel-Saharan States (CEN-SAD) - Regional economic community with member countries being: Benin, Burkina Faso, Central African Republic, Comoros, Côte d'Ivoire, Djibouti, Egypt, Eritrea, Gambia, Guinea, Guinea-Bissau, Ghana, Libya, Liberia, Kenya, Mali, Morocco, Niger, Nigeria, Senegal, Sierra Leone, Somalia, São Tomé and Principe, Sudan, Chad, Togo, and Tunisia.

[22]East African Community (EAC) - Regional Economic Community with member countries being: Burundi, Kenya, Rwanda, United Republic of Tanzania, and Uganda.

adopt a single list of exemptions. The laws in member countries aim to protect property rights and assist in the acquisition and disposal of both physical and intellectual property. Each country is a member of the International Centre for the Settlement of Investment Disputes[23] and the World Bank's Multilateral Investment Guarantee Agency (East African Community, 2011).

The Economic Community of Central African States[24] (ECCAS) offers access to approximately 121 million people (International Democracy Watch, 2012) and has ten member countries. The Economic Community of West African States[25] (ECOWAS) is a regional market in West Africa with a population of over 287 million people (India-Africa investment Guide, 2011). This Regional Economic Community was established in 1975 and has 15 member countries. The key sectors in this region are metals and mining, infrastructure, agriculture, pharmaceuticals, petrochemicals, power and power equipment, automotive manufacturing, information, and communication technology. The ECOWAS members passed three Acts in 2008 so as to improve productive efficiency and intra-regional trade. The ECOWAS commission also seeks to develop a common investment policy for the region, thus establishing a consistent investment policy framework across member countries. Further, this Community is working towards developing a Regional stock exchange to serve the 15 member countries.

The Intergovernmental Authority on Development[26] (IGAD) was created in November 2006. This Regional Economic Community replaced the

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[23] International Centre for the Settlement of Investment Disputes (ICSID) – This institution was established under the Convention on the Settlement of Investment Disputes between states and nationals of other states. This organisation has over 140 forty member states (International Centre for the Settlement of Investment Disputes, 2013).

[24] The Economic Community of Central African States (ECCAS) – Regional economic community with member countries being: Angola, Burundi, Cameroon, Central African Republic, Chad, Republic of the Congo, Democratic Republic of the Congo, Gabon, Equatorial Guinea, and São Tomé & Principe.

[25] The Economic Community of West African States (ECOWAS) – Regional economic community with member countries being: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo.

[26] Intergovernmental Authority on Development (IGAD) – Regional economic community with member countries being: Djibouti, Ethiopia, Kenya, Somalia, South Sudan, Sudan, and Uganda. *Suspended: Eritrea.

Intergovernmental Authority on Drought and Development, which was founded in 1986. The mission of IGAD is to assist member states achieve food security, environmental protection, peace and security, and regional integration (IGAD, 2010). In 2011, this market offered investors access to approximately 220 million people (World Bank, 2013i), and has eight member countries.

The Southern African Development Community[27] (SADC) was established in 1992 and has 15 member countries. In 2011, this region had a population of approximately 279 million people (World Bank, 2013i). Member countries are encouraged to promote entrepreneurship in industries that attract FDI. There are also tax incentives available in SADC member countries with the aim of easing the tax burden on businesses. However, there are some restrictions in a number of SADC member countries against foreign ownership in industries like mining, oil and gas, transport and telecommunications, banking, insurance, and media. These sectors are aimed at economically empowering the Southern African people and protecting national interests (SADC, 2013).

As Africa's Regional Economic Communities continue to strengthen their economic, financial, and political integration, this will attract foreign investments to the Continent as foreign investors seek to get access to these large markets. It is anticipated that eventually all African countries will be economically, financially and politically integrated through the AU. As African countries continue to work towards this goal, they need to ensure that they achieve economic health, financial strength, and political stability in their individual countries and within their Regional Economic Communities. This will make it easier for the AU to achieve its vision of an integrated, prosperous and peaceful Africa.

1.9 Outline of the Chapters
Chapter One provides information on the significance of this research, theory and literature relating to FDI, data and methodology used in this research, and the policy

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[27]Southern African Development Community (SADC) – Regional economic community with member countries being: Angola, Botswana, Democratic Republic of the Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia, and Zimbabwe.

implications from this study. Included in this Chapter is also information on current FDI flows into African countries.

Chapter Two is a review of the theory and literature that relates to the determinants of FDI flows into Africa. Some of the advantages and disadvantages of allowing FDI into a country are considered in this Chapter. There is also a discussion of the radical view in relation to FDI, which has its roots in Marxist political and economic theory, and the free market view, which can be traced back to the Classical Economics and International Trade Theories of Smith (1776) and Ricardo (1817). Other researchers who have been influential in the area of international trade are discussed (for example, Heckscher, 1919; Ohlin, 1933; Samuelson, 1949, 1953; Jones, 1965; Vernon, 1966; Dunning, 1981, 1988; Krugman, 1987; Porter, 1990; and Drucker, 1992). This Chapter also examines literature relating to the determinants of inward FDI to Africa and other regions around the world.

Chapter Three introduces the hypotheses and econometric models used in this research. These hypotheses relate to the variables formulated using past theory, literature and gaps in the literature. This Chapter presents the unlagged regression model (Model 3.1) and the dynamic panel data model (Model 3.2). The unlagged regression model is estimated using the random effects model, following results from Hausman's (1978) test. A dynamic panel data model is used in this research and the lagged dependent variable (FDI_{it-1}) is used as one of the explanatory variables. The dynamic panel data model is estimated using the LSDV model, also known as the fixed effects model. The LSDV estimation technique can be used when there is a lagged dependent variable in the regression, and the time period is long (large T).

Chapter Four contains a description of the data gathered for this study and the methodology used to carry out this research. A preliminary analysis of the data is also presented in this Chapter. Panel data analysis is utilised, with annual data drawn from 1984 to 2010. Thirty-five (35) African countries are included in this study. This Chapter provides information on the descriptive statistics of each variable, correlation between the variables, relationship between FDI flows into African countries and the composite risk (i.e. economic, financial and political risk) present in these countries, as well as the simple hypothesis tests. The simple hypothesis tests

have been carried out so as to provide detailed information about the economic risk, financial risk, and political risk present in each of the 35 African countries examined in this thesis.

The main findings from this research are presented in Chapter Five. This Chapter presents the results from the unlagged model and the dynamic panel data model. However, before these regression models are carried out, heteroskedasticity and serial correlation tests are undertaken. The unlagged regression model is estimated using the random effects model so as to provide an initial indication of the variables that may be significant in influencing FDI flows into African countries. The dynamic panel data model is then carried out using the LSDV estimation technique. This is the main model used in this research and provides information about the variables that are significant in influencing FDI flows into African nations. The dynamic panel data model is lagged by one year, as this is found to be the best fit for the model. Tests of robustness are also undertaken in this Chapter. The first test of robustness aims to find out whether some of the explanatory variables might be useful in predicting the dependent variable (FDI), or if there is a reverse relationship whereby the dependent variable (FDI) is useful in the prediction of one or more of the explanatory variables. This test provides information on the strength of exogeneity between the dependent variable (FDI) and the explanatory variables. The second test of robustness includes time averaging the annual data from 1984 until 2010 over three-year periods. It is anticipated that time averaging the data will smooth out the cyclical fluctuations and provide information on the variables that influence FDI flows into African nations in the long-run. A panel Vector Error Correction Model (VECM) is also carried out as a robustness test to examine the long-run relationship between FDI and the non-stationary explanatory variables.

Chapter Six provides a detailed discussion of the findings. There is a discussion of whether or not these findings support each of the hypotheses presented in Chapter Three. There is also a discussion as to whether or not the main results support past theory and literature. Policy implications are presented in this Chapter. The information obtained in this research will be relevant to African policy-makers, the AU, African central banks, African producers and exporters of commodities as well as foreign investors who need to obtain information about FDI in African countries.

The new and unique information obtained from this research is presented in this Chapter. There is also information about the limitations of this study and proposed future directions for further research. Chapter Seven provides a conclusion to this research.

1.10 Conclusion

This Chapter presents the significance of this research, followed by a summary of the theory and literature that relates to FDI, data and methodology used in carrying out this research, as well as the policy implications from this study. There is also information about FDI flows into Africa and the investment policies present in African countries.

This Chapter highlights that past studies, examining FDI flows into Africa have not included the performance of the Commodity Price Index as one of the variables that may influence FDI flows into African countries. Previous studies have also not included the performance of major stock markets in developed countries as one of the variables that may influence FDI flows into African nations. The economic, financial, and political risk ratings produced by the ICRG have been used in this research to represent the economic health, financial strength, and political stability of African countries. Previous studies that examined FDI flows into African countries used a number of macro-economic variables to account for economic, financial, and political risk in a country. Other studies only used some components of the ICRG risk ratings in their research. This study will also use a robustness test to get a better understanding of the strength exogeneity between the proposed variables. The Chapter concludes by providing an outline of the content to be found in the later Chapters of this study.

CHAPTER TWO

FOREIGN DIRECT INVESTMENT THEORY AND LITERATURE REVIEW

This Chapter provides background information on FDI and the manner in which this issue has been approached by various people and countries over the years. Theories relating to international trade are included here, as they provide a solid foundation for understanding FDI. This Chapter also reviews literature relating to FDI into Africa and other parts of the world. Section 2.1 outlines FDI theory and provides current information on FDI flows into developed, transitional, and developing nations. Section 2.2 presents the literature review of studies that relate to FDI. Section 2.3 outlines the similarities and differences in past studies that have been undertaken on inward FDI. The final section provides a summary of the Chapter and reiterates the gaps in literature to be addressed in this research.

2.1 Foreign Direct Investment theory

Inward FDI occurs when an overseas firm has a controlling interest in a new or existing business in an economy, other than that of the investor firm. This controlling interest may vary between individual countries. The Organisation for Economic Cooperation and Development (OECD)[28] states that "FDI is a category of investment that reflects the objective of establishing a lasting interest by a resident enterprise in one economy (direct investor) in an enterprise that is resident in an economy other than that of the direct investor. The lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise and a significant degree of influence on the management of the enterprise. The direct or indirect ownership of 10% or more of the voting power of an enterprise resident in one economy by an investor resident in another economy is evidence of such a relationship" (OECD, 2008: 234). Most countries adopt this FDI criterion from the OECD, enabling FDI statistics to be comparable among different nations. There are three components that make up FDI and these are: equity investments, reinvested earnings, and inter-company loans between multi-national enterprises and their foreign affiliates (Naudé and Krugell, 2004).

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[28]Organisation for Economic Cooperation and Development (OECD) – This organisation encourages the implementation of policies that will improve the economic and social well-being of people around the globe (Organisation of Economic Co-operation and Development, 2013).

The FDI ideology has ranged from hostility to all forms of FDI at one extreme, to a free market view, which does not include any intervention from government. Between these two extremes is an approach known as pragmatic nationalism (Hill, 2011). Opposition towards FDI is related to the radical view, inherent in Marxist political and economic theory. Marxism was pioneered by two German philosophers (Marx and Engels) in the mid-to late 19th Century. Both Marx and Engels were philosophers, political theorists, social scientists, and revolutionaries. In 1848, Marx and Engels co-authored a book[29] containing their views on the political economy. Marx later published further work in 1867[30], which also contained a critical analysis of the political economy. The economic and political ideas of Marx gained further popularity in the socialist movement even after his death in 1883.

The 'radical view' perceives multi-national companies as tools for exploiting host countries for the benefit of the home country. Radical thinkers argue that multi-national companies take profits from the host country to the home country and give nothing to the host country in return. According to the radical view, FDI from advanced capitalist countries does not allow the Least Developing Countries (LDCs) to grow and keeps them dependent on the advanced nations. Proponents of this ideology argue that countries should not allow FDI into their countries, as there are no benefits to be gained. From 1945 until the 1980s, this radical view of looking at FDI was popular, especially in economies that observed Communism. Countries in Eastern Europe, such as the former Soviet Union, Poland, Czechoslovakia, and Hungary, were opposed to FDI until the collapse of Communism in the early 1990s. China, Cambodia, and Cuba are examples of other nations that also opposed foreign investment, as they too embraced Communism.

Many African countries gained independence[31] between 1950 and 1970, when Socialism was gaining popularity as an economic way of thinking. A number of these countries took on this radical view of FDI and were quick to nationalise

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[29]The Communist Manifesto (1848) –Written by Karl Marx and Friedrich Engels.

[30]Das Capital (1867) – Written by Karl Marx.

[31]Most African countries had gained independence from the colonial powers by 1970 except for seven countries in the Continent (Angola, Cape Verde, Guinea-Bissau, Mozambique, Namibia, South Africa, and Zimbabwe).

foreign-owned enterprises, transforming them into state owned firms after independence. Countries, such as India and Iran, had a nationalistic political ideology and they too embraced the radical view towards foreign investment. However, by the late 1980s, the radical position was no longer popular in many countries. This is likely to be the result of the collapse of Communism, the poor economic health of countries that opposed foreign investment, and the strong performance of developing countries that embraced capitalism instead of the radical view (Hill, 2011). During the 1980s, countries such as Taiwan, Singapore, and Hong Kong were classified as developing nations. These are examples of countries that embraced capitalism and achieved strong economic growth during this period.

The theories of International Trade offer a strong foundation for understanding FDI. Trade between different groups of people can be traced back many Centuries. However, it was not until the 15th Century that people tried to explain why trade occurs and its resultant benefits (Wild et al., 2008). Mercantilism is an early trade theory that sought to explain why countries should engage in international trade. This theory states that nations accumulate financial wealth by encouraging exports and discouraging imports (Wild et al., 2008). A number of European nations, such as Britain, France, Netherlands, Portugal, and Spain followed this economic theory from the 16th Century until the late 18th Century. One of the problems with Mercantilism is that if all nations were to restrict imports and only encourage exports, trade would be very restricted and limited to only essential goods and services.

The free market view of foreign investment is drawn from the Classical Economics and International Trade Theories of Smith (1776) and Ricardo (1817). In the late 18th Century, the theory of Absolute Advantage[32] was put forward by Smith. This theory was the first to explain why free trade is beneficial to a country. 'Absolute Advantage' is the ability of a nation to produce more of a good or service than any other nation using the same or fewer resources (Wild et al., 2008). According to Smith, the 'invisible hand' of the market will determine what a country imports and

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[32]The theory of absolute advantage was put forward by Smith (1776) in his book, The Wealth of Nations.

what it exports. When Smith writes about the invisible hand, he refers to human instincts. He argued that sometimes people act in their own self-interest, which unintentionally provides benefits to society. The idea of self-interest was raised by Smith in "...the context of competitive markets, property rights, social capital and basic institutions of justice" (Wight, 2009: X). Ricardo added to the work of Smith and wrote on the theory of comparative advantage[33]. According to the free market view, international production should be undertaken by countries in accordance with the theory of comparative advantage. Countries need to specialise in the production of those goods and services that they can produce most efficiently, and buy the goods and services that it produces less efficiently.

Heckscher (1919) and Ohlin (1933) developed the work of Ricardo and their theory is known as the Heckscher-Ohlin theory. These scholars show that international differences in factor endowments are a source of comparative advantage. This view is also supported by the earlier work of Samuelson (1949, 1953) and Jones (1965). The theories by Smith, Ricardo, and Heckscher-Ohlin explain why it is beneficial for a country to take part in international trade, even for goods and services that it can produce itself. The free market ideology has encouraged countries to remove barriers to inward FDI. There has also been an increase in bilateral investment treaties, which promote investments between two countries. It should be noted however, that no country has solely adopted either the free market view or radical view to FDI. Rather, countries have adopted a mix of the two ideologies and this is best described as 'pragmatic nationalism'. It is realised that there are benefits and costs to FDI. As such, pragmatic nationalism argues that FDI should only be allowed if the benefits outweigh the costs.

The gravity model has also been a popular way of analysing trade flows between countries and draws its analogy from Newton's Universal Law of Gravitation[34]. The gravity model specifies that the trade flow between two countries is proportional to the product of each country's GDP (national income) and inversely proportional to

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[33]Ricardo (1817) wrote on the theory of comparative advantage in his book, Principles of Political Economy.

[34]Newton's Universal Law of Gravitation contends that the force between any two bodies "is directly proportional to the product of their masses and inversely proportional for the square of the distance between the centres of masses" (Galperin, 2011: 713).

the distance between the countries (Rahman, 2009). Dummy variables can also be added to the basic gravity model so as to be able to test for other specific effects that influence trade flows. The 'pure' form of the gravity model is detailed in (for example, Fidrmuc, 2007).

In 1960, Mundell constructed an international trade model drawn from the Classical School of Economics. This trade model was applied to establish effects on "international equilibrium of unilateral transfers, productivity changes, export and import taxes, and production and consumption taxes" (Mundell, 1960: 67). The international trade model by Mundell (1960) was useful in explaining trade between two countries as well as trade between multiple countries. In the mid-1960s the International Product Life Cycle Theory was put forward by Vernon (1966). This Theory as noted by Wild and colleagues (2008: 164), states that "a company will begin by exporting its product and later undertake FDI as the product moves through its life cycle". The Theory was useful for explaining trade patterns especially when the USA was dominant in the world markets. However, the theory is weak in explaining today's trading patterns. For example, there are more companies today operating in international locations from the initial production stage. There are also a number of firms from developing or emerging nations that have undertaken FDI in advanced economies. This South-North FDI cannot be sufficiently explained by the International Product Life Cycle Theory. Indian companies such as Infosys and Tata Consultancy Services, are examples of two leading information technology companies that have made investments in advanced countries (Contessi and El-Ghazaly, 2010) such as the USA, the United Kingdom (UK), Switzerland, Canada, and Japan. In 1961, Posner presented research explaining trade in manufactured goods between advanced countries, which share very similar general economic conditions. The research by Posner (1961) proposed that trade may be caused by technical changes and developments that influence some industries and not others. As these technical changes usually start from one country, the 'comparative cost differences' may encourage trade in specific goods for some time before the rest of the world imitates this technical innovation.

Later, the 'New Trade Theory' began to emerge in the 1970s and Krugman (1987) has been influential in this field. This Theory contends that there is more trade than

expected from countries with similar climate and resources. It goes on to explain that some firms may be the first to enter into some industries and build a competitive advantage that is not easy to challenge. These firms then specialise in the production and export of a particular product due to economies of scale[35] and not because of underlying differences in factor endowments. Porter (1990) pursued research related to the New Trade Theory and developed a theory known as the Theory of National Competitive Advantage. This theory offers insight into why some nations achieve international success in specific industries and the implications for firms and governments.

The 'eclectic paradigm' put forward by Dunning (1981, 1988) is also useful in understanding international production and the issues relating to the activities of multi-nationals. The eclectic paradigm suggests that a firm may choose to undertake FDI for reasons such as ownership, location, and internalisation advantages. Ownership advantages mean that a particular firm has specific exclusive advantages that allow it to successfully operate in a foreign country, and overcome the costs. Other researchers, such as (Anyanwu, 2012: 437), explain that ownership advantages may arise when the foreign firm is able to "coordinate complementary activities, such as manufacturing, distribution, and the ability to exploit differences between countries". In addition, the firm may also have monopoly advantages such as patents, technology, economies of scale, and access to financial capital. A firm may also be interested in investing in a foreign location due to the resources available there, and this is linked to location advantages. Most multi-national firms have the technology, marketing, and management knowledge required to access these resources.

Internalisation deals with how a firm chooses to invest in a foreign country. A firm can either open up a wholly-owned subsidiary in a foreign country thus selling the good or service themselves, or license[36] to another firm in the host nation. Firms may choose to invest in a certain country if they do not wish to give away their knowledge on technology, marketing, and management, which gives them a

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[35]Economies of scale – cost advantages linked to large scale production.

[36]Licensing – "when a firm (licensor) licenses the right to produce its product, use its production processes, or use its brand name or trademark to another firm (licensee)" (Gionea, 2003: 436).

competitive edge (Hill, 2011). There are many greenfield investments in Africa, in which foreign firms decide to establish a new enterprise in the host country. Drucker (1992) takes on more of a management theoretical approach to FDI, and concludes that FDI is a major driver of economic and financial growth, rather than overseas trade.

Previous theory contends that foreign firms may use FDI as a way of maintaining and increasing their sales through expansion (Gionea, 2005). Taking part in FDI also allows foreign firms to avoid barriers to trade, such as tariffs or quotas. Some firms may decide to make an FDI investment in response to an investment undertaken by another firm in the same industry. This behaviour is mainly observed in oligopoly-type market structures. In an oligopoly market, there are a few large firms selling similar, or different, goods and services. An example is provided of the car maker Honda, which made investments in the US and Europe in the 1980s. Toyota and Nissan responded to this by also undertaking investments in the US and Europe (Hill, 2011). When enterprises move abroad they often encourage their suppliers to follow them to the new location, as they wish to maintain their business relationship (Gionea, 2005). As many suppliers also like to expand their business, they may be inclined to follow their customers to a new foreign location, thus increasing the flow of inward FDI to the foreign country.

There are benefits to be gained by countries that are open to FDI. Foreign investors can make a positive contribution to the host economy by supplying the latest technology, which will encourage economic development and industrialisation. Large multi-national firms usually have the capacity to equip their personnel with the latest skills needed to run operations in an efficient manner. As such, foreign investors bring their managerial skills to the host nation and in doing so; improve the efficiency of operations in the host country (Hill, 2011). If the foreign-owned firm produces goods for exports, the host country will observe an increase in exports. This will be an advantage for the host country, as there will be a positive effect on the country's current account of balance of payments. If the foreign investment is a substitute for imported goods, this will also improve the current account as there will be less imports coming into the host nation. The initial financial investment from the

multi-national will also have a positive effect on the host country's balance of payments account as it will show up as a credit on the capital account.

Disadvantages of FDI in a host nation, according to some researchers, for example Gionea (2005) and Hill (2011) include consideration that the multi-national company may have greater financial strength in comparison to domestic competitors. Due to their large size, multi-national companies tend to have economies of scale, as they produce in large quantities. They also have access to large capital, which allows them to spend greater amounts on advertising thereby pushing out smaller competitors in a host nation. They may also provide a negative effect on a country's balance of payments account. This will occur when the multi-national repatriates profits back to the home country, or when the multi-national firm has to import many goods that are needed in the production process.

In today's global economy, most countries are open to foreign investment. Traditionally, most FDI flows have been directed towards the developed nations such as the USA, Canada, Japan and countries in Western Europe. However, inward FDI flows to developed nations declined heavily in 2012 and were surpassed by FDI flows into developing countries. The inward FDI flows to developing countries were approximately US$130 billion higher than those received by developed countries in 2012 (UNCTAD, 2013c). The decreased incentive to invest in developed countries has been brought on by downturn in economic activity in these economies caused by the Global Financial Crisis. Since the onset of this Financial Crisis in mid-2007, developed countries, especially those in Europe, Northern America and parts of Asia, have faced slow economic growth. Investors are now more confident about investing into developing nations, due to factors such as large markets that encourage market-seeking investments and strong commodity prices encouraging investments in extractive industries. Developing countries were also been less affected by the Global Financial Crisis.

The FDI inflows into transition countries were also hampered in 2012 and fell by 13% from the previous year (UNCTAD, 2013c). This was a result of poor economic health facing European countries who are the main investors in transition economies.

The following graphs show inward FDI flows to developed, transition[37] and developing nations from 1990 until 2011.

Figure 2.1: Inward FDI flows to developed economies (billions of US$)
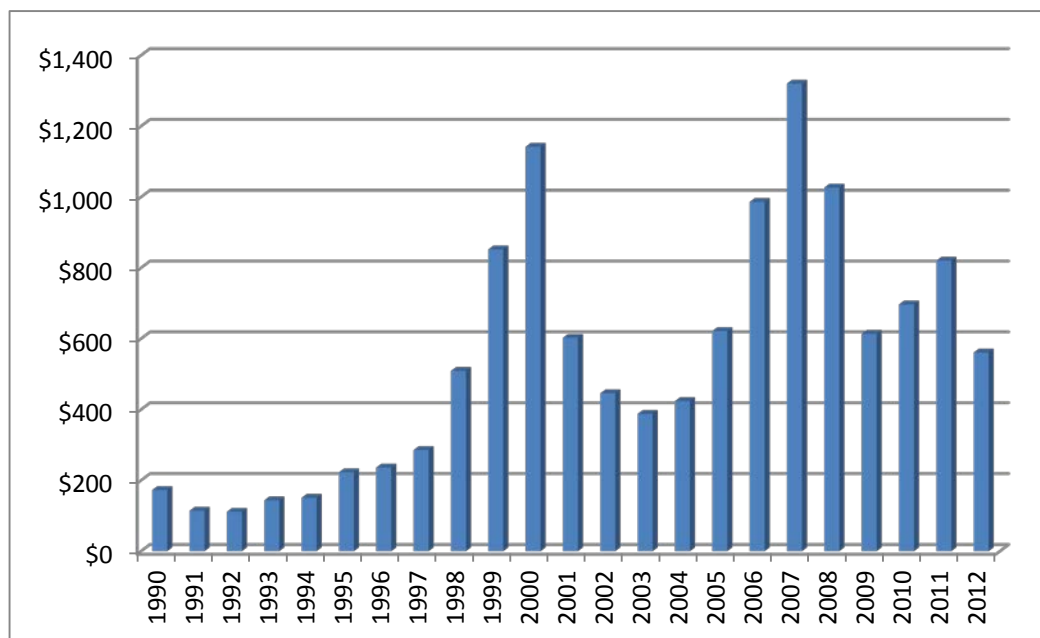
Source: United Nations Conference on Trade and Development, 2013e

Figure 2.2: Inward FDI flows to transition economies (billions of US$)
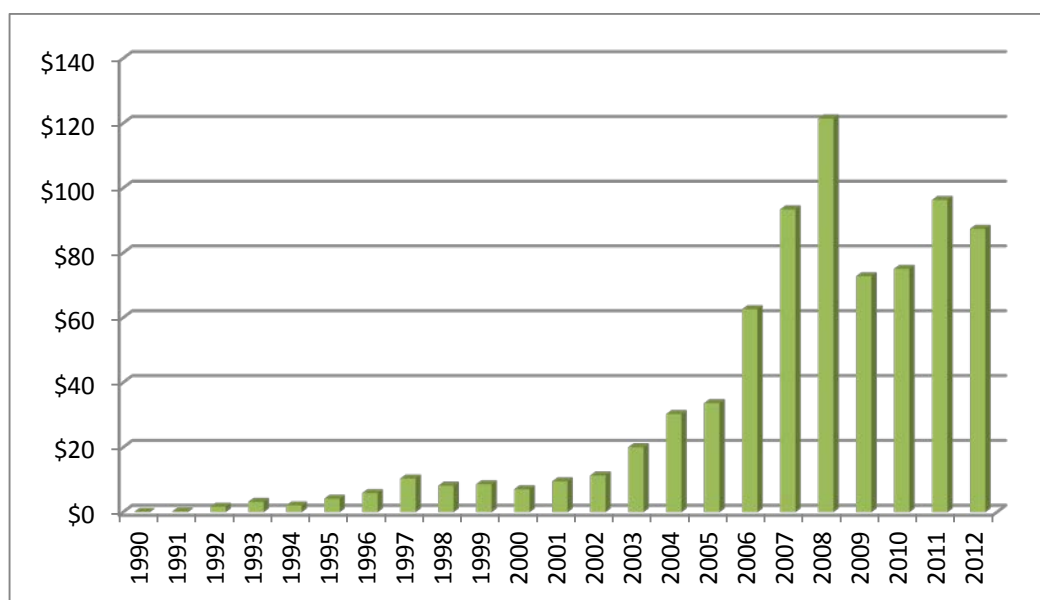
Source: United Nations Conference on Trade and Development, 2013e

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[37] Transition economies are countries in transition from centrally planned to market economies. These are countries in South-East Europe and the Commonwealth of Independent States. The Commonwealth of Independent States countries are: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan (International Monetary Fund, 2013).

Figure 2.3: Inward FDI flows to developing economies (billions of US$)
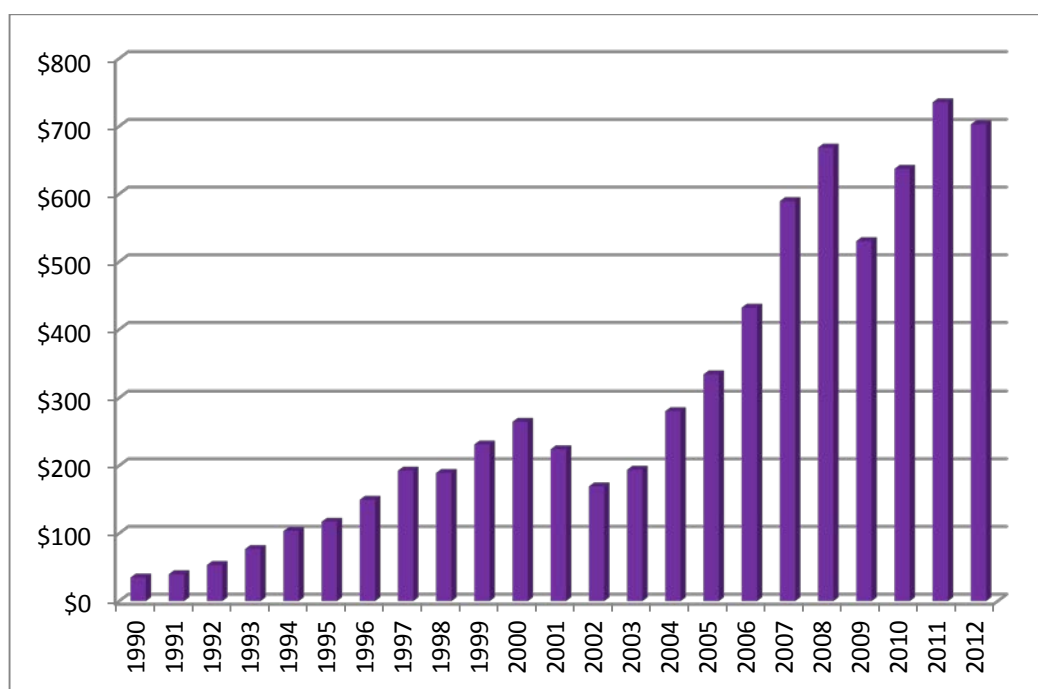
Source: United Nations Conference on Trade and Development, 2013e

Figure 2.1 shows that inward FDI flows to developed countries have been on an upward trend from 1990 until 2000. After that, there is a large decrease in FDI inflows, followed by another upward trend from 2005 until 2007. Following the effects of the Global Financial Crisis, FDI flows into developed nations have been on a downward trend since 2008. The FDI inflows to transition and developing economies (Figure 2.2 and Figure 2.3 respectively) have been on an upward trend from 1990 to 2011.

2.2 Determinants of Foreign Direct Investment: Literature Review

The following section presents a comprehensive review of the most important literature relating to the determinants of inward FDI into Africa. Also included is a review of literature conducted in relation to the determinants of inward FDI into developed, emerging, and developing countries in other regions.

Large domestic markets have been found to be important, especially if foreign firms wish to sell their products in the host nation. Asiedu (2002) finds that most of the FDI flows in Sub-Saharan Africa (SSA) are aimed at buyers outside the country (non-market seeking FDI). A lot of the FDI into Africa flows to natural resources,

which are then exported. However, over the years there has been an increase in the amount of FDI aimed at buyers in host countries (market-seeking FDI). Mhlanga and colleagues (2010) researched on FDI into the Southern African Development Community (SADC)[38]. From their research they find that market size promotes FDI flows into SADC countries. Investors from developing nations either within or outside of Africa, are willing to make market-seeking investments into African countries as they are more familiar with the governance in developing nations (Mhlanga et al., 2010).

The economic growth of African countries, as well as increase in population, has been an incentive for foreign firms to make market-seeking investments in the Continent. Asiedu (2006) and Ezeoha and Cattaneo (2012) showed that large local markets are significant in attracting FDI into SSA. Anyanwu (2012) finds that there is a positive relationship between market size (measured using urban population size) and FDI flows into Africa. Twimukye (2006) examined 45 countries in Africa and finds that the population size has a positive relationship with FDI. As the population size of a host country increases, there is also likely to be an increase in the amount of FDI inflows, as investors seek to take advantage of the growing market. Based on a cointegration analysis of 19 countries, Bende-Nabende (2002) discovered that growing markets are a long-run determinant of FDI in SSA. Fedderke and Romm (2006) examined the determinants of FDI in South Africa and find that the growth of the market size is an important factor that can increase flows into the country. Tarzi (2005), who researches on FDI into developing nations, finds market size an important consideration for foreign investors. Mohamed and Sidiropoulos (2010) studied a panel of 36 countries and find the size of the economy influences FDI flows into Middle East and North African (MENA) countries. The market size also plays an important role in influencing FDI flows into Greece. This result is found in the research carried out by Leitão (2010), using data from 1998 to 2007. Zheng (2009) conducted a study on China and India and finds market growth to be an important determinant of FDI in both countries.

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[38] Southern African Development Community (SADC) – Regional economic community with member countries being: Angola, Botswana, Democratic Republic of the Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia, and Zimbabwe. *Seychelles was not included in this study by Mhlanga et al. (2010).

Natural resources have attracted many foreign investors into Africa. Asiedu's (2006) research finds that the availability of natural resources promotes FDI flows into SSA. However, small countries and/or those that lack natural resources can obtain inward FDI by improving their institutions to control for factors such as corruption, ensuring that the law is well enforced, and the legal system is impartial (Asiedu 2006). Anyanwu (2012) examined 53 African countries and concluded that natural resource endowments (especially oil) attract substantial FDI into Africa. Onyeiwu and Shrestha (2004) examined the determinants of FDI into Africa and find natural resource availability to be significant in influencing FDI inflows. Hoarau (2009), who investigated FDI flows into the Common Market for Eastern and Southern Africa (COMESA)[39] finds that countries with large amounts of natural resources, such as oil, tend to receive more FDI inflows. Hailu (2010) also finds natural resources to be a significant factor in influencing FDI inflows into African nations. Mohamed and Sidiropoulos (2010) concluded that natural resources are an important determinant of FDI flows into MENA countries.

Following the findings above about the importance of natural resources in attracting FDI flows into African countries, it is ascertained that the availability of commodities in a country is also important in influencing inward FDI. Research undertaken by Mash (1998) on a sample of six countries (four of them in Africa) finds that investment booms in response to commodity price shocks are likely, but not certain to take place. There may also be an investment boom at the end of the price shock. It is anticipated that as demand for commodities increases, commodity prices will continue to rise thus leading to an increase of inward FDI to countries that export these commodities. Research carried out by Rangasamy and Mihaljek (2011) examined capital flows and commodity price movements in African countries from 2001 and 2010. The findings from this research show that an increase in commodity prices during this time period encouraged large FDI flows to the extractive sector in many African countries.

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[39]Common Market For Eastern and Southern Africa (COMESA) – Regional economic community with member countries being: Burundi, Comoros, Democratic Republic of the Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia, and Zimbabwe.

Sound infrastructure in a country assists in reducing the operating costs of businesses. It becomes more efficient to transport goods from one place to another, communicate with people, have uninterrupted power, reliable water supply, and well-constructed buildings. Many African countries have been allocating more funds into infrastructure, as they realise its importance in their economies. There is currently a huge presence of Chinese firms in Africa working on infrastructure projects such as building roads, railways, bridges, ports, and construction. There are many investment opportunities in infrastructure, as noted by Anyanwu (2006), and many African Governments encourage foreign investments in this sector. Asiedu (2006) finds that infrastructure is important in attracting FDI flows into SSA. Bartels and colleagues (2009) researched the motivating factors and policy issues that influence FDI in SSA. They find infrastructure to be one the factors that influence FDI flows. These researchers state that governments need to improve on the quality of infrastructure so as to reduce the transaction costs faced by foreign investors. Naudé and Matthee (2007) find that international transport costs in Africa are very high and they create a barrier to the development of African countries. Dupasquier and Osakwe (2006) explained that poor infrastructure is one of the reasons Africa has been receiving low levels of FDI in comparison to other developing regions. Ezeoha and Cattaneo (2012) who examined the flows of FDI into SSA find infrastructural development to be an important factor in influencing FDI inflows.

There are other researchers such as Akinkugbe (2005); Sekkat and Veganzones-Varoudakis (2007) and Hailu (2010) who also find infrastructure to be significant in attracting FDI into African countries. Studies using data from other parts of the world also show the significance of infrastructure in influencing FDI flows. For example, Zhang (2001) focused on emerging economies; while Botrić and Škuflić (2006) used data from Southeast European countries. All of these researchers find infrastructure to be a significant variable. Walsh and Yu (2010) examined the determinants of FDI into different sectors in 27 countries classified as advanced or emerging market economies. Their results show that good infrastructure is important in attracting FDI in the tertiary sector. Quazi (2007) estimated the determinants of FDI to nine Latin American countries and finds that better infrastructure increases FDI flows into these nations.

However, not all researchers find infrastructure to be a significant variable. Onyeiwu and Shrestha (2004), who examined 29 countries in Africa, did not find infrastructure to be significant in influencing FDI flows. They find that poor infrastructure may not deter foreign investors because factors, such as natural resources, openness, and other macro-economic variables may be more significant. The earlier research of Asiedu (2002) finds that the level of infrastructure in SSA countries is not significant in influencing FDI inflows.

Foreign investors may be attracted to invest into a country due to the educated labour force. Literacy rates are normally used as a measure of level of education. An educated labour force is more easily trained, which adds to the level of human capital, thus leading to an increase in level of productivity in a country. The research undertaken by Naudé and Krugell (2005), highlighted that the lack of human resource development in Africa may be a factor that limits FDI flows into the Continent. Nonnemberg and Cardoso de Mendonça (2004) used data from 38 developing countries. Their findings showed that FDI is correlated to the level of schooling. Asiedu (2006) examined 22 countries in SSA and finds that there is a positive relationship between FDI and level of literacy in a country. African nations should therefore work on increasing the literacy levels in their economies, as it also provides an incentive for enterprises to invest in their countries. Twimukye (2006) concluded that the literacy rate in a host country has a positive impact on the FDI flows into Africa. Hailu (2010) finds that the labour quality in a host nation is also important when it comes to influencing FDI.

Alsan and colleagues (2006) find that FDI inflows are strongly and positively influenced by population health in low and middle-income countries. An increase the health of the population means that the labour force will be more productive, leading to an increase in the country's productivity. Reiter and Steensma (2010) concluded that FDI flows are positively related to improvements in human development. Improvements in human development can be brought about through better health and education. However, their paper goes on to mention that the relationship between FDI and improvements in human development is stronger when there is less corruption, the FDI policy does not allow foreign investors to enter some economic

sectors and a country is prudent in choosing, which foreign companies it allows into the country.

The cost of labour has also been found to influence FDI flows. Zheng (2009), in a study on China and India, showed that labour costs are taken into consideration by foreign investors when they are investing into these countries. Mateev (2009), in a study of Central and South-eastern European countries shows labour costs to be a significant variable. Leitão (2010) examined the factors that influence FDI flows into Greece and also finds labour costs to be one of the significant variables.

Openness to trade is another significant factor that may influence FDI flows into a country. Foreign investors are able to bring their funds into the host country, as well as repatriate some (or all) of their profits back to their home country. Asiedu (2002) finds openness to trade a significant determinant of FDI flows to SSA. Asiedu (2002) examined openness to trade by observing the ratio of imports and exports to the country's GDP. Asiedu (2002) further explained that the impact of openness to trade on FDI depends on the type of investment that is being made into the host country. If the multi-national company seeks to sell their products in the host country (market-seeking FDI), then trade restrictions (less openness) may have a positive impact on FDI. Foreign firms may decide to open up a firm in the host country if it is difficult to bring that firm's products into a country. By setting up a firm in the host nation, the foreign investor can avoid the need to deal with tariffs and quotas on their imports.

However, if the foreign company wants to export their products out of the host country (non-market seeking FDI), trade restrictions may lead to less FDI coming into the country. It can be costly for the multi-national company to export their products out of the host nation, as other countries retaliate against the host nation trade restrictions.

Kandiero and Chitiga (2006) also looked into the relationship between trade openness and FDI. These researchers concluded that increased openness in the economy has a positive impact on FDI flows into Africa. As part of their research, Kandiero and Chitiga (2006) find that the service sector has more barriers than any

of the other sectors. Their findings state that further trade liberalisation is likely to increase FDI flows into service sectors, such as telecommunications, banking, finance, insurance, transport, retail, business, and legal services. Other studies such as Onyeiwu and Shrestha, 2004; Sekkat and Veganzones-Varoudakis, 2007; Hailu, 2010, and Ezeoha and Cattaneo, 2012 find that trade openness plays a significant role in attracting greater FDI flows into Africa.

Akinkugbe (2005) provided a two-part econometric analysis of FDI flows to Africa, which indicated that a host country's outward orientation towards international trade is important in attracting FDI. Campos and Kinoshita (2003) find trade openness to be a significant variable for 25 transition economies. Quazi (2007) shows that greater trade openness boosts FDI flows into Latin American countries. Nonnemberg and Cardoso de Mendonça (2004) find that an economy's degree of openness is significant in influencing FDI flows into developing countries. Trade openness is also important in influencing FDI flows into Greece, as concluded by research undertaken by Leitão (2010). However, it is important for a host nation to be prudent when making their decision to allow foreign investment. This decision should be made with the country's national interests in mind.

High rates of inflation can be a cost of doing business, as foreign firms enter into long-term contracts in the host nation. When actual inflation rate turns out to be very different from the anticipated inflation rate, foreign firms may lose out as their purchasing power decreases. A high rate of inflation was found to have a negative effect on attracting inward FDI by Hailu (2010). Research undertaken by Twimukye (2006) also finds the inflation rate to have a negative relationship with FDI flows into Africa. The finding from Asiedu (2006) showed that a low level of inflation has a positive effect on FDI flows into SSA. Onyeiwu and Shrestha (2004), as well as Naudé and Krugell (2007) find that inflation is a significant variable, which influences foreign investors who wish to invest in Africa. Nonnemberg and Cardoso de Mendonça (2004) showed that FDI is correlated to the level of inflation in developing nations. A low level of inflation is likely to encourage more FDI inflows, as it is indicates that an economy has sound macro-economic policies.

Many countries within the African Continent have long been perceived to be politically unstable. Since the early 1990s, 12 countries in Africa have been involved in civil war. These are Angola, Burundi, Chad, Côte d'Ivoire, Democratic Republic of the Congo, Republic of the Congo, Guinea Bissau, Liberia, Rwanda, Sierra Leone, Sudan, and Uganda (Moyo, 2009). The AU is made up of 54 nations, and many of these countries have taken steps to improve the political climate in their countries. Research from Bartels and colleagues (2009) highlighted that political economy considerations strongly influence FDI location decisions in SSA. Busse and Hefeker (2007) agree that political risk is a major component that influences FDI flows into Africa. These researchers, using the International Country Risk Guide,[40] examined 12 factors under political risk in 83 developing countries from 1984 to 2003. Their research concluded that government stability, internal and external conflicts, law and order, ethnic tensions, and bureaucratic quality are important determinants of FDI. Corruption and democratic accountability are also important, but to a lesser degree. Bartels and colleagues (2009) obtained data from a survey of 758 respondents in 10 SSA countries. They find that investors are strongly influenced by the political economy in a country. In their research, Dupasquier and Osakwe (2006) state that political instability in Africa is a factor that has been responsible for low FDI. Naudé and Krugell (2007) showed it is important for a host country to have good governance (political stability, accountability, regulatory burden, and rule of law) as it influences the amount of FDI flows into Africa. Al-Sadig (2009) used panel data from 117 countries and showed higher corruption levels decrease FDI inflows. Political risk has also been found to be an important determinant of FDI into China and India from research undertaken by Zheng (2009). Daude and Stein (2007) used data from 34 source countries, most of them developed, as well as from 152 host countries. They find that unpredictability of laws, regulations and policies, too much regulatory burden, government instability, and lack of commitment are significant in deterring FDI.

However, not all researchers examining the topic of FDI consider political stability to be an important determinant. Asiedu (2002) decided not to investigate further into

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[40]The International Country Risk Guide (ICRG) ratings are published by the Political Risk Services Group. This rating comprises 22 variables in three sub-categories of risk: political, financial, and economic. There is a separate index for each of the sub-categories.

political risk as the variable is found to be insignificant. This is supported by events in Angola between 1998 and 1999. During this time Angola's FDI inflows ranked first in SSA in spite of political instability due to civil war. Angola's large oil and gas deposits continue to attract foreign investors who may find its natural resources offer benefits that outweigh the political risk. Kandiero and Chitiga (2006) also agree with Asiedu (2002); they find that the political stability variable in their data was insignificant. Onyeiwu and Shrestha (2004) find that political rights in a country are not significant in influencing FDI flows into African countries.

Government policies are influential in attracting FDI flows into a country. Asiedu (2006) concluded through research that government policies are significant in influencing FDI flows into SSA. Governments can offer incentives to potential foreign investors in the form of tax holidays, tax rebates, investments in infrastructure, among others. Governments should also work to ensure that there is more transparency in their economies. Policies that aim to train and upgrade the skills of the labour force are also encouraged, as this increases human capital.

The findings from Bartels and colleagues (2009) showed that governments in SSA need to improve on their regulatory environment. In other words, there should be laws that encourage people to do business in an economy. Dupasquier and Osakwe (2006) believe that African countries should improve their relations with existing investors and offer them incentives to come and invest more into the Continent. Baniak and colleagues (2003) used data from some transition economies; their results show that the high volatility of fiscal and business regulations reduces the flow of FDI into these countries. Quazi (2007), who examined nine Latin American countries find that FDI inflows decrease when government policy changes lead to higher trade barriers, higher taxes, restrictions on foreign investment, a more repressive financial system, additional price controls, and wage controls.

The research undertaken by Banga (2003) showed that there is usually an increase in government incentives in developing countries seeking to attract inward FDI. There may also be a removal of restrictions on foreign firms present in host nations, an increase in the number of bilateral investment treaties, and regional investment

agreements. Bilateral investment treaties[41] have been used in many developing countries and found to have a positive effect on FDI. Neumayer and Spess (2005) find that a higher number of bilateral investment treaties increase FDI flows into a developing country. The results from Büthe and Milner (2008) indicated that countries involved in Preferential Trade Agreements (PTAs)[42] receive higher inward FDI flows. These researchers suggest that when countries are members of PTAs or international trade agreements they are less likely to go back on their commitments due to the high costs incurred when terms of the agreement are broken.

The exchange rate has also been considered to be important in determining FDI flows into a country. Kandiero and Chitiga (2006) looked into the relationship between real exchange rates and FDI in 38 African countries. They find an inverse relationship between real exchange rate appreciation and FDI inflows. "Real exchange rate appreciation may crowd out exports, which in turn could discourage FDI if the motive is to use the host country to produce and then export the goods" (Kandiero and Chitiga, 2006: 358). Kyereboah-Coleman and Agyire-Tettey (2008) agree that exchange rates play an important role in attracting FDI. The aim of their paper was to examine how exchange rate volatility impacts FDI inflows into Ghana. Their research concluded that real exchange rate volatility had a negative influence on FDI inflows. This means that exchange rate volatility, which is a measure of risk, decreases FDI inflows. Bende-Nabende (2002) and Twimukye (2006) both find exchange rates to be important in influencing FDI flows into Africa. Research by Jeon and Rhee (2008) also shows that FDI inflows from the USA into South Korea have a significant association with the real exchange rate and expected exchange rate changes.

The presence of foreign firms in an economy may be an incentive for other multi-national companies to come and invest into a host nation. Results from Walsh and Yu (2010) indicated that the presence of other foreign firms in a country appears to be important in influencing FDI flows. Their research was based on data from 27

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[41]Bilateral investment treaties are agreements between two nations for the reciprocal, encouragement, promotion and protection of investments made in each other's countries (United Nations Conference on Trade and Development, 2004).

[42]Preferential Trade Agreements (PTAs) – Trade agreements between several countries to reduce tariffs on certain goods.

advanced and emerging countries. Some firms may follow other multi-national companies into a foreign country, as it may signal a good business environment, and reduces their uncertainty. This is known as agglomeration. Campos and Kinoshita (2003) find that agglomeration is an important determinant of FDI inflows for Eastern European and Baltic countries.

The flow of foreign aid into a host country has also been considered to be a determinant of FDI. Conditions are usually attached to the aid given to developing nations, with some of them aimed at improving the economic and financial conditions of the recipient country. Organisations such as the International Monetary Fund (IMF), World Bank, and United Nations are major aid donors to developing nations. Research from Biglaiser and De Rouen Jr (2010) to examine 126 developing nations find that overall, IMF involvement in a certain country tends to encourage FDI from the USA. However, the amount of FDI flows into a host country depends on the specific IMF programs taken. Indeed, other developed nations may have a preference to invest into nations that have received some assistance through development aid. It is anticipated that with the right management countries receiving development aid, will move towards overcoming poverty through changes in areas, such as education, health, water and sanitation, infrastructure, and food security. As a result these countries are more likely to achieve economic growth. Yasin (2005) finds that bilateral official development assistance has a significant and positive influence on FDI flows in SSA. However, multilateral development assistance does not have a significant effect on FDI inflows. Blaise (2005) finds that aid from Japan to China has a positive and significant effect on the locational choice of Japanese private investors in China. Research undertaken by Kimura and Todo (2010) showed that Japanese aid promotes FDI from Japan into the country that received Japanese aid. However, Japanese aid into a certain country does not attract FDI from other countries. Karakaplan and others (2005) conclude that FDI does not necessarily flow to countries that receive aid, nor does it have to flow to a country that has received FDI flows in the past. Good governance and developed financial markets help reinforce the positive effects of aid.

Hailu (2010) investigated the relationship between inward FDI and stock market availability in a host country. The researcher finds a positive relationship between

stock market availability and FDI. Foreign firms may choose to participate in a host nation's business environment through a significant acquisition of interest (10% or more voting stock) in a local firm. Stock markets may also be seen as a means of testing this investment climate. These markets may be viewed as an easier exit for investors who want to leave an investment environment, and they can do so by selling out their ownership through the share market. Hailu (2010) however, contends that further study may reveal a negative relationship between stock market availability and FDI. Foreign owners may undertake portfolio investment in a stock market thus crowding out FDI. Hailu (2010) concludes that stock market availability in Africa has a positive, but insignificant effect on inward FDI. There may also be an advantage of having a local stock market in an African host country. The research undertaken by Adjasi and colleagues (2012), which examined 32 African countries, showed that inward FDI to African countries is more productive in the presence of well-functioning local financial markets. African countries are therefore encouraged to continue working on the development of their local stock markets.

Research undertaken by Simpson (2012), finds that changes in country risk ratings influence stock market prices. This study examined the energy sectors within stock markets in Australia and India. Others, such as Kaminsky and Schmukler (2002) find that changes in sovereign debt ratings and outlook significantly affect financial markets in emerging economies. When there is a downgrade in risk ratings, stock returns decline. Research carried out by Heaney and Hooper (1999) showed that the financial risk index is significant in influencing the equity markets in the Association of South East Asian Nations (ASEAN)[43] member countries. Results from the research undertaken by Heaney and Hooper (1999), Kaminsky and Schmukler (2002), and Simpson (2012) indicate that it is important for countries to achieve economic health, financial strength, and political stability as these factors may also have an impact on the performance of local financial markets. The study in this thesis acknowledges the connection between FDI and risk ratings (as measures of economic health, financial strength and political stability), and recognises that FDI can be directed through stock markets in the forms of debt or equity. A summary of the

[43]Association of South East Asian Nations (ASEAN) member countries: Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam.

literature on determinants of foreign direct investment into developing, emerging and developed countries is included in Appendix Two.

2.3 Discussion of past studies relating to Foreign Direct Investment inflows

There have been numerous studies undertaken examining the factors that influence FDI flows into different parts of the world. Today, most nations are open to the idea of FDI and even look for ways of attracting this form of investment. Previous literature shows that variables such as large domestic markets (Bende-Nabende, 2002; Tarzi, 2005; Asiedu, 2006; Twimukye, 2006; Mohamed and Sidiropoulos, 2010; Mhlanga et al., 2010; Ezeoha and Cattaneo, 2012; Anyanwu, 2012), export orientation policies (Bende-Nabende, 2002), potential market size (Mhlanga et al., 2010), market growth (Bende-Nabende, 2002 and Fedderke and Romm, 2006), economic growth (Nonnemberg and Cardoso de Mendonça, 2004; Onyeiwu and Shrestha, 2004; Dupasquier and Osakwe, 2006; Sekkat and Veganzones-Varoudakis, 2007), the availability of natural resources (Onyeiwu and Shrestha, 2004; Asiedu, 2006; Hailu, 2010; Mohamed and Sidiropoulos, 2010; Anyanwu, 2012) and infrastructure (Asiedu, 2002; Akinkugbe, 2005; Tarzi, 2005; Asiedu, 2006; Dupasquier and Osakwe, 2006; Sekkat and Veganzones-Varoudakis, 2007; Hailu, 2010; Ezeoha and Cattaneo, 2012) all play a significant role in influencing FDI flows into Africa.

Other factors found to be significant determinants of FDI into the African continent include an educated labour force (Nonnemberg and Cardoso de Mendonça, 2004; Twimukye, 2006; and Naudé and Krugell, 2005), government policies (Dupasquier and Osakwe, 2006; Mohamed and Sidiropoulos, 2010; Anyanwu, 2012), trade openness (Asiedu, 2002; Bende-Nabende, 2002; Nonnemberg and Cardoso de Mendonça, 2004; Onyeiwu and Shrestha, 2004; Akinkugbe, 2005; Yasin, 2005; Kandiero and Chitiga, 2006; Sekkat and Veganzones-Varoudakis, 2007; Hailu, 2010; Mohamed and Sidiropoulos, 2010; Ezeoha and Cattaneo, 2012; Anyanwu, 2012); inflation (Nonnemberg and Cardoso de Mendonça, 2004; Onyeiwu and Shrestha, 2004; Asiedu, 2006; Twimukye, 2006; Naudé and Krugell, 2007), political stability (Asiedu, 2006; Dupasquier and Osakwe, 2006; Fedderke and Romm, 2006; Busse and Hefeker, 2007; Naudé and Krugell, 2007; Sekkat and Veganzones-Varoudakis, 2007; Bezuidenhout and Naudé, 2008; and Bartels et al., 2009), exchange rates (Bende-Nabende, 2002; Yasin, 2005; Twimukye, 2006; Kyereboah- Coleman and Agyire-Tettey, 2008); the presence of foreign firms in an economy (Ezeoha and Cattaneo, 2012; Anyanwu, 2012), foreign aid (Yasin, 2005; Anyanwu, 2012), return

on investments (Asiedu, 2002; Akinkugbe, 2005; Naudé and Krugell, 2007), repatriation and remittance of profits (Tarzi, 2005), population health (Alsan et al., 2006), population size (Twimukye, 2006), lower taxes (Fedderke and Romm, 2006), property rights (Fedderke and Romm, 2006), reduction in tariff and non-tariff barriers (Kandiero and Chitiga, 2006), international trade agreements (Büthe and Milner, 2008) and colonial ties (Mhlanga et al., 2010).

In some cases, the distance of a host country from major FDI source countries has been found to be important in explaining FDI flows into African countries (Twimukye, 2006). Asiedu (2002) finds that countries in SSA receive less FDI inflows as a result of their geographical location. However, Naudé and Krugell (2007) did not find the geography of African countries to be significant in influencing FDI flows into the Continent.

Some of the above variables are also helpful in explaining inward FDI to developing countries outside of Africa, emerging countries and developed nations. In addition, labour costs have been found to be significant variables in attracting FDI to China and India (Zheng, 2009), Greece (Leitão, 2010) and in transition economies (Mateev, 2009). Agglomeration is a significant variable in a number of studies that have been carried out in countries outside of Africa (Campos and Kinoshita, 2003; Blaise, 2005; Botrić and Škuflić, 2006; Walsh and Yu, 2010). Historical links with foreign investors is an important determinant of inward FDI to China (Zhang, 2001). Excessive bureaucracy has a negative effect on inward FDI to Mexico (Quazi, 2007), and this variable may also have an adverse effect on FDI flows into other emerging economies. The geographical distance between the home country and the host nation was found to have a negative relationship with inward FDI into Central and South-eastern European countries (Mateev, 2009). Banga (2003) finds that bilateral investment treaties are significant in influencing FDI inflows into Asian countries. Neumayer and Spess (2005) also find bilateral investment treaties to be important for developing countries that wish to attract inward FDI.

Most studies examining FDI into Africa have used panel data analysis. The Ordinary Least Squares method was used in a number of studies (for example, Asiedu, 2002; Nonnemberg and Cardoso de Mendonça, 2004; Alsan et al., 2006; Mhlanga et al.,

2010; Anyanwu 2012). Fixed effects estimation analysis was used by Asiedu (2006), Busse and Hefeker (2007), Sekkat and Veganzones-Varoudakis (2007), Büthe and Milner (2008), Reiter and Steensma (2010) and Mhlanga et al. (2010), whereas Nonnemberg and Cardoso de Mendonça (2004), Onyeiwu and Shrestha (2004), and Mohamed and Sidiropoulos (2010) used both the fixed effects and random effects estimation methods.

Other methodologies that have been applied include the Generalised Method of Moments (Kandiero and Chitiga, 2006; Naudé and Krugell, 2007; Walsh and Yu, 2010; Anyanwu 2012). Cointegration analysis was used by Bende-Nabende (2002) who examined determinants of FDI into Sub-Saharan Africa. Fedderke and Romm (2006) used a Vector Error Correction Model when analysing FDI into South Africa. The ARCH[44] and GARCH[45] Models, cointegration and Error Correction Model were used by Kyereboah- Coleman and Agyire-Tettey (2008) who examined the effect of exchange rate volatility FDI into Ghana. The Feasible Generalised Least Squares estimation method was used by Twimukye (2006), Hailu (2010), and Anyanwu (2012).

2.4 Conclusion

Modern FDI theory can be traced back to Classical Economics and the International Trade Theories of Smith (1776) and Ricardo (1817). Since then, a number of theories have been put forward by various scholars, making it easier to understand international trade. After examination of previous studies, it is noted that there is limited empirical examination of the influence that the Commodity Price Index performance has on inward FDI to African countries. A study by Mash (1998) using a sample of four African[46] countries during the 1970s coffee and cocoa boom, finds that investment booms in response to commodity price shocks may take place. This research will contain a sample of 35 African countries, examining data from 1984 to 2010, thus contributing new information to current literature.

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[44]ARCH Model: Autoregressive Conditionally Heteroskedastic Model.

[45]GARCH Model: Generalised Autoregressive Conditionally Heteroskedastic Model.

[46]African countries included in the study by Mash (1998): Côte d'Ivoire, Ghana, Kenya, and Senegal.

There is limited literature that examines the effect of stock market performance in developed countries on FDI flows into Africa. Nonnemberg and Cardoso de Mendonça (2004) find that FDI into developing countries is closely associated with stock market performance in developed countries. Of the 38 developing countries examined by these researchers, nine of them are African[47]. The researchers used the Dow Jones to examine stock market performance. Nevertheless, it should be noted that the Dow Jones Index only tracks the top 30 publicly-owned companies based in the USA. This Index does not contain information about listed companies based in other developed nations. This research will add new information to the current literature by using the MSCI World Index, which tracks the performance of stock markets in 24 developed countries and examines its impact on the FDI inflows to 35 African nations.

The relationship between FDI flows into African nations and the availability of a stock market in a host country has not been sufficiently explored. A study undertaken by Hailu (2010) has examined this aspect. This research aims to obtain more information in regard to the availability of a stock market in a host nation and the influence that this market has on FDI flows into Africa.

The original contribution of this research to knowledge includes using a Commodity Price Index (UNCTAD free-market price index) to assess the influence that commodity prices have on inward FDI to African countries, and using the World Stock Market Index (MSCI World Index) to assess the influence that stock market performance in developed countries has on inward FDI to African nations. The ICRG risk ratings[48] have been used as a proxy for various economic, financial, and political risk variables and these will be explained further in Chapter Four (Section 4.2). No previous studies have used the three ICRG economic, financial and political risk ratings at the same time to assess economic health, financial strength, and political stability in African countries and subsequent impact on inward FDI to African

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[47]African countries included in the research undertaken by Nonnemberg and Cardoso de Mendonça (2004): South Africa, Angola, Côte d'Ivoire, Egypt, Morocco, Mozambique, Nigeria, Senegal, and Zambia.

[48]The International Country Risk Guide (ICRG) ratings are published by the Political Risk Services Group. This rating comprises 22 variables in three sub-categories of risk: political, financial, and economic. There is a separate index for each of the sub-categories.

countries. The results obtained using these risk ratings will provide information as to whether previously studied economic, financial, and political risk variables can realistically be proxied by the ICRG risk ratings.

This study will also carry out a robustness test to obtain a better understanding of the strength of exogeneity between the variables used in this research. The robustness test is performed so as to find out if any of the explanatory variables are useful in the prediction of the dependent variable (FDI), or if there is a reverse relationship whereby the dependent variable (FDI) is useful in the prediction of one or more of the explanatory variables. Previous studies have not used this methodology as a way of analysing the strength of exogeneity between variables.

Based on a review of theory, gaps in literature, data, and methodology of previous studies, the following issues arise relating to FDI flows into African countries and these are:

- whether or not in the context and scope of this thesis, the economic, financial, and political risk variables remain statistically significant as determinants of FDI inflows,
- whether or not, previously studied variables can realistically be proxied by risk ratings that provide indications of economic health, financial strength, and political stability,
- whether or not, the Commodity Price Index performance and World Stock Market Index performance (from developed countries) can provide more information as statistically significant determinants of inward FDI,
- whether or not, having sound infrastructure in a country is statistically significant in influencing FDI inflows,
- whether or not, having an open economy is statistically significant in influencing FDI inflows,
- whether or not, the availability of a stock market in a host country is statistically significant in influencing inward FDI; and
- whether or not, a joint analysis of a contemporaneous model (for unlagged data) in a preliminary analysis will be useful in the later examination for the main

analysis of a dynamic panel data model estimated using the LSDV technique, which is also the fixed effects method.

The next Chapter builds on the important issues raised out of the theory and literature review and transforms these issues into testable hypotheses. The Chapter highlights the central hypotheses in the thesis and provides the evidence base for those hypotheses. Thereafter, the specified models for testing are presented.

CHAPTER THREE
HYPOTHESES AND MODEL

This Chapter sets out the hypotheses to be tested in this thesis. The associated variables have been included in the estimation models based on issues arising from theory, literature, and perceived gaps in the literature. In the initial analysis, an unlagged random effects model was estimated following on from Hausman's (1978) test. The Hausman (1978) test was used to provide direction as to whether the random effects model or the fixed effects model is appropriate to use in estimating the unlagged regression model. The unlagged random effects model was used in this research to provide indication of the variables that may be useful in influencing FDI flows into African countries. The unlagged regression model was corrected for the presence of heteroskedasticity and serial correlation in the errors using the White period method[49].

In the main analysis, a dynamic panel data model was estimated using the Least Squares Dummy Variable (LSDV) model, which is also known as the fixed effects model. The LSDV model is appropriate to use when there is a lagged dependent variable in the regression, and when the time period for the data is large. Research undertaken by Judson and Owen (1999), using the Monte Carlo approach, finds that when the time period in the panel data is approximately 30 years (T=30) or more, the LSDV estimation technique performs just as well or better than other alternative methods[50]. The research carried out by Roodman (2009) also finds that when the time period in the panel is large, the fixed effects estimator method can be used. The data in this research has a time period of 27 years (1984 to 2010). When estimating the dynamic panel data model, the dependent variable was lagged by one year (FDI_{it-1}) and became one of the explanatory variables in the regression model. One of advantage of using a dynamic panel data model is that including a lagged

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[49]The white period method assumes that the errors for a cross-section are heteroskedastic and serially correlated (cross-section clustered) (EViews, 2009). This method will correct for the presence of heteroskedasticity and serial correlation in the errors.

[50]The research undertaken by Judson and Owen (1999) evaluates and compares four econometric methods for estimating dynamic panel data models. These methods are the instrumental variables estimator proposed by Anderson and Hsiao (1981), Arellano and Bond (1991) one-step and two-step GMM estimators, and a Corrected Least Squares Dummy Variable estimator derived in Kiviet (1995).

dependent variable in the regression usually eliminates serial correlation present in the model (Keele and Kelly, 2005).

The variables included in both the unlagged random effects model and dynamic panel data model are: economic risk rating, financial risk rating, political risk rating, Commodity Price Index, World Stock Market Index, gross fixed capital formation (infrastructure), openness to trade, and a dummy variable for the availability of a stock market in the host nation. In addition, the dynamic panel data model will have the lagged FDI variable (FDI_{it-1}) as one of the explanatory variables. The hypotheses relating to all these variables are included in this Chapter. Annual data are used for this research, covering the period from 1984 to 2010.

3.1 Hypotheses for variables included in the unlagged and dynamic panel data regression models

1. Economic risk

Economic health has been identified in research as an important driver of FDI into Africa. The International Country Risk Guide (ICRG) economic risk rating is used as a proxy for economic health and strength in a particular country. This rating is an aggregate of five components: GDP per head, real GDP growth, annual inflation rate, budget balance as a percentage of GDP, and current account as a percentage of GDP. High levels of inward FDI are expected when there is a high GDP per capita, high economic growth, low levels of inflation, a surplus budget balance as a percentage of GDP, and a current account surplus as a percentage of GDP. In this research, the economic risk rating was arranged in such a way that a high economic risk rating reflects high economic risk (low economic health) in a country and vice versa.

Bengoa and Sanchez-Robles (2003) and Bartels and colleagues (2009) find economic stability to be an important factor in attracting FDI. Walsh and Yu's (2010) research contended that good macro-economic management (for example, low inflation, strong growth and openness to trade) will lead to more FDI. The research undertaken by Krugell (2005) finds that a stable macro-economic environment may be important for African countries that wish to attract FDI inflows. Asiedu (2006), Twimukye (2006), Hailu (2010) and Gebrewold (2012) find that a high rate of inflation has a

negative effect on attracting FDI into African countries. Nonnemberg and Cardoso de Mendonça (2004), Onyeiwu and Shrestha (2004), Twimukye (2006) and Naudé and Krugell (2007) also find the rate of inflation to be a significant determinant of inward FDI into Africa. Economic growth has been found to have a positive effect on FDI inflows into Africa (for example, Nonnemberg and Cardoso de Mendonça, 2004; Onyeiwu and Shrestha, 2004; Dupasquier and Osakwe, 2006; Sekkat and Veganzones-Varoudakis, 2007). An increase in real GDP (used as a proxy for market size) was also shown to be significant in influencing FDI inflows into South Africa by Du Toit and colleagues (2006).

Countries that experience economic growth and development may find themselves receiving more FDI. For example, Onyeiwu and Shrestha (2004) and Sekkat and Veganzones-Varoudakis (2007) find that improvements in the economic climate can increase a country's attractiveness with respect to investment. The research carried out by Razmi and Behname (2012) contended that Islamic countries need to pay attention to economic growth and economic risk so as to continue attracting inward FDI flows to their countries. The findings from previous literature support the proposition that a good economic climate plays a major role in attracting FDI. The first hypothesis to be tested is:

H$_1$: there is a negative and significant relationship between economic risk and inward FDI.

2. Financial risk

Financial strength has also has been identified in theory and literature as an important determinant of FDI into Africa. The ICRG financial risk rating is an aggregate of five components, which are: foreign debt as a percentage of GDP, foreign debt services as a percentage of exports of goods and services, current account as a percentage of exports of goods and services, net international liquidity as months of import cover, and exchange rate stability. This variable is being used as a proxy for financial strength in a country. High levels of inward FDI into a country are expected when a country has a low level of foreign debt as a percentage of GDP, a greater amount of exports of goods and services in comparison to the level of imports of goods and services, adequate official reserves, and a stable exchange rate. The financial risk

rating has been arranged in such a way that a high financial risk rating reflects high financial risk (low financial strength) in a country and vice versa.

Many African nations have a high level of external debt as a percentage of their GDP. The research by Aryeetey and colleagues (2012) finds that heavy debt in African countries discourages FDI, posing a risk to economic growth. Exchange rates also play a role in the financial strength of a country. Kandiero and Chitiga (2006) examined the relationship between real exchange rates and FDI. These researchers find an inverse relationship between real exchange appreciation and inward FDI. Twimukye (2006) noted that unexpected movements in the exchange rate may affect expected rates of return to investment, which in turn has an impact on FDI flows. Kyereboah-Coleman and Agyire-Tettey (2008) researched exchange rate volatility and its impact FDI flows into Ghana. Their research concluded that real exchange rate volatility has a negative influence on inward FDI to Ghana. The nominal exchange rate was found to have a negative and significant relationship with the FDI flows into South Africa (Du Toit et al., 2006). The findings from previous literature indicate that a high financial risk in a host country tends to discourage FDI. The second hypothesis to be tested is:

H_2: there is a negative and significant relationship between financial risk and inward FDI.

3. Political risk
Political risk has been identified as an important driver of inward FDI to Africa. The ICRG political risk rating is an aggregate of twelve variables that aim to assess political stability. These are: government stability, socioeconomic obligations, investment profile, internal conflict, external conflict, corruption, military in politics, religious tensions, law and order, ethnic tensions, democratic accountability, and bureaucracy quality. High levels of inward FDI are likely to be associated with factors such as government stability, decreased corruption, democracy in the country, low internal and external conflict, law and order, and strong bureaucracy. The political risk rating was calculated in such a way that a high political risk rating reflects high political risk (low political stability) in a country and vice versa.

Busse and Hefeker (2007) examined the relationship between FDI and political risk. They concluded that government stability, internal and external conflicts, law and order, ethnic tensions, and bureaucratic quality are important determinants of FDI. Other researchers such as Akinkugbe (2005), Asiedu (2006), Dupasquier and Osakwe (2006), Fedderke and Romm (2006), Busse and Hefeker (2007), Naudé and Krugell (2007), Sekkat and Veganzones-Varoudakis (2007), and Bartels and colleagues (2009) showed that the political situation in a country is an important consideration for foreign investors. Hailu (2010) also finds that a stable political condition plays a role in attracting FDI, as do government policies in a host country (Dupasquier and Osakwe, 2006; Mohamed and Sidiropoulos, 2010; and Anyanwu, 2012).

However, research undertaken by Asiedu (2002) and Kandiero and Chitiga (2006) indicated that political risk may not be an important determinant of FDI in African countries. Onyeiwu and Shrestha (2004) find that political rights are unimportant for FDI flows into Africa. Multi-national companies may also take out political risk insurance[51] giving them more confidence to invest in certain African nations that they consider to be politically unstable. Nevertheless, based on most studies it is expected that high political instability in a country is likely to lead to a decrease in inward FDI. The third hypothesis to be tested is:

H$_3$: there is a negative and significant relationship between political risk and inward FDI.

4. Commodity Price Index

Based on previous research literature, the availability of commodities in a country has been identified as an important variable influencing inward FDI. A large number of African countries are endowed with resources that are in demand around the world. Asiedu (2006) indicated that the availability of natural resources promotes FDI flows to Sub Saharan Africa. The research undertaken by Anyanwu (2012),

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[51]Political risk insurance: "PRI captures most, but not all, non-commercial risks. It covers political events, including the direct and indirect actions of host governments, which negatively impact investments and are not promptly or adequately compensated for" (Multilateral Investment Guarantee Agency, 2009: 47). Political risks that are generally insured include expropriation, currency inconvertibility and transfer restrictions, political violence, breach of contract and protection against a government's failure to make a payment when due (Multilateral Investment Guarantee Agency, 2009).

Onyeiwu and Shrestha (2004), and Hailu (2010) finds that the availability of natural resources is significant in influencing FDI into Africa.

The findings from Hoarau's (2009) research showed that countries with large natural resources within the Common Market for Eastern and Southern Africa (COMESA) tend to receive more FDI. The research undertaken by Mash (1998) on a sample of six countries (four of them in Africa) finds that investment booms in response to commodity price shocks are likely, but not certain to take place. There may also be an investment boom at the end of the price shock. However, the study undertaken by Mash (1998) did not focus on FDI. This research will contain a sample of 35 African countries. It is anticipated that as demand for commodities increases and commodity prices continue to rise, there will be an increase of inward FDI to Africa as foreign investors seek to benefit from this trade. The Commodity Price Index is used as a proxy for the commodity effect.

A rise in the Commodity Price Index could also translate to an improved trade balance and current account balance for the African host country. Increases in the demand for commodities are likely to lead to an increase in the value of exports out of an African country rich in natural resources. This increase in the value of exports will have a positive effect on the balance of trade, which is likely to lead to an improved current account balance. An improved balance of trade may lead to improved macro-economic conditions, which would in turn lead to increased FDI flows into these African countries that are now able to export more commodities. As such, the fourth hypothesis to be tested is:

H$_4$: there is a positive and significant relationship between the performance of the Commodity Price Index and inward FDI.

5. World Stock Market Index

Based on previous research, the performance of major stock markets in developed countries has been identified as a variable that may be useful in driving FDI flows into Africa. There is limited literature examining the influence that stock markets in developing countries have on FDI flows into Africa. The performance of these stock markets may be used to signal to African nations, as to whether or not they can expect an increase of inward FDI from developed countries. The World Stock

Market Index has been used to track the performance of major stock markets in developed nations. This Index can also be used as an indicator of the degree of globalisation and financial integration of African countries.

The research undertaken by Duca (2007) on international financial markets, finds that stock prices appear to granger cause GDP. This means that the changes in the stock prices can be used to predict movement in GDP. Duca (2007) did not find any reverse causality from GDP to stock prices. "There is a broad consensus that stock market performance impacts the economy and that this influence has increased over the years" (Sandte, 2012: 2). Changes in stock prices can increase or decrease the wealth of an individual which will have an impact on their consumption, and subsequently have an effect on the economy. Many public companies rely on the stock market to raise investment funds. These companies are likely to raise more capital through the stock market during a bull market. In turn, the raised funds will play a role in the growth of these companies which is likely to have a positive impact on the economy.

The movement of stock prices plays an important role in developed countries where it is common for individuals to own stocks as part of their investment portfolio. The stock markets in many developed nations also tend to represent the underlying economies of these countries. This means that the sectors that make up the countries' GDP are reasonably well represented on the stock exchanges.

A rise in the World Stock Market Index, due to the good performance of stock markets in developed countries, may indicate future economic growth or an increase in GDP in the economies of developed countries. This will in turn lead to increased outflows of foreign investment from these developed nations with some of the investments flowing into African countries. Nonnemberg and Cardoso de Mendonça (2004) find the Dow Jones Index[52] to be significant and positively correlated to FDI flows into developing nations. The fifth hypothesis to be tested is:

H5: there is a positive and significant relationship between the performance of the World Stock Market Index and inward FDI.

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[52]Dow Jones Index – Index that tracks the performance of 30 large publicly-owned companies based in the United States of America.

6. Gross fixed capital formation (Infrastructure)

Gross fixed capital formation will be used as a proxy for infrastructure in this research. There are other measures used in literature as a proxy for infrastructure such as telephone density, road network and electricity among others. However, it is anticipated that the use of gross fixed capital formation in this research will act as a good measure for infrastructure. Past studies have also used Gross Fixed Capital Formation as a measure for infrastructure. Examples of researchers that have used Gross Fixed Capital Formation as a proxy for infrastructure in undertaking their research on FDI flows to African countries include Twimukye (2006), and Asiedu and Lien (2011).

Infrastructure has been identified as important in influencing inward FDI flows to Africa. A country's infrastructure includes investment in transportation, communications, buildings, roads, and power supplies and is significant in attracting FDI into Africa (Asiedu, 2002; Tarzi, 2005; Asiedu, 2006; Dupasquier and Osakwe, 2006; Sekkat and Veganzones-Varoudakis, 2007; Bartels et al., 2009; Walsh and Yu, 2010; and Ezeoha and Cattaneo, 2012). Akinkugbe (2005), Hailu (2010), and Mhlanga and colleagues (2010) also find that infrastructure development has a positive effect on FDI flows into Africa. Kandiero and Chitiga (2006) concluded that one of the reasons as to why the African Continent has been receiving little FDI is due to poor infrastructure. The level of infrastructure is also important in attracting inward FDI to countries in the Gulf Cooperation Council[53] countries. Research undertaken by Mina (2007) showed that infrastructure development in this region has a positive effect on FDI inflows.

However, research from Onyeiwu and Shrestha (2004) and Twimukye (2006) did not support the finding that infrastructure is significant in influencing FDI flows into Africa. Nevertheless, the majority of past studies indicate that infrastructure is important for a country. It is therefore anticipated that better infrastructure will increase inward FDI to African countries. The sixth hypothesis to be tested is:

H$_6$: there is a positive and significant relationship between gross fixed capital formation (infrastructure) and inward FDI.

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[53]The Gulf Cooperation Council member countries: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

7. Openness to trade

The term 'openness to trade' deals with the trade restrictions placed on goods and services coming into a country. Trade restrictions could be in the form of tariffs, quotas, import charges, restrictions on franchising, restrictions on foreign direct investment, among others. This variable has been identified as a significant determinant of FDI flows into Africa. Openness to trade promotes free trade thus encouraging more investment in a country. Kandiero and Chitiga (2006) find that FDI responds well to openness in African countries. Other researchers also find openness to be significant in influencing inward FDI to Africa including Asiedu (2002), Bende-Nabende (2002), Nonnemberg and Cardoso de Mendonça (2004), Onyeiwu and Shrestha (2004), Akinkugbe (2005), Yasin (2005), Twimukye (2006), Sekkat and Veganzones-Varoudakis (2007), Hailu (2010), Mhlanga and colleagues (2010), Mohamed and Sidiropoulos (2010), Ezeoha and Cattaneo (2012), and Anyanwu (2012).

The level of openness to trade is also important in influencing inward FDI to other regions around the world. For example, research undertaken by Mina (2007) finds that openness to trade is significant in influencing FDI flows into the GCC countries, whereas Jadhav (2012) concluded that the level of openness to trade is significant in influencing FDI flows into the economies of Brazil, Russia, India, China, and South Africa. The results from past literature indicate that having an open economy, which allows trade with other nations, is important for those countries that wish to attract foreign direct investments. The seventh hypothesis to be tested is:

H_7: there is a positive and significant relationship between openness to trade in African countries and inward FDI.

8. Stock market availability

Based on previous literature, stock market availability has been identified as a variable that may be a driver of inward FDI to Africa. The availability of a stock market in a particular African country has been accounted for by using a dummy variable. Having a stock market will give foreign investors an opportunity to invest in local companies listed on the stock exchange. If foreign investors purchase 10% or more shareholding in a firm, that transaction counts as FDI. It is expected that a country with a stock market may receive more FDI inflows, as the stock market

provides an avenue for making investments. Foreign investors will have an opportunity to invest in a firm that has already been established, is publicly known, and has the option of accessing additional funds in the future by issuing new shares or other securities. Investors can also sell their ownership through the stock market, should they wish to exit from the investment. Research from Hailu (2010) concluded that the stock market availability in Africa has a positive, but insignificant effect on inward FDI. It is anticipated that results from this research will find the stock market availability variable significant in influencing FDI flows into African countries.

The eighth hypothesis to be tested is:

H$_8$: there is a positive and significant relationship between the stock market availability in a host country and inward FDI.

9. Previous foreign direct investment (included in the dynamic panel model)

The amount of FDI received in the previous year is expected to influence the amount of FDI received in the current year. Foreign investors might also be more confident about investing into a host country that received investments in the previous year. Findings from Ezeoha and Cattaneo (2012) and Anyanwu (2012) show that the presence of other foreign firms Africa is significant in influencing FDI flows into the Continent. Studies carried out in countries outside of Africa also show that the presence of other foreign firms is significant in influencing FDI inflows (for example, Campos and Kinoshita, 2003; Blaise, 2005; Botrić and Škuflić, 2006; and Walsh and Yu, 2010). The FDI projects also tend to last for more than a year, and are likely to carry on into the current year. In the same way, current FDI flows are expected to be important in influencing the FDI flows that will be received in the following year. The results from the research carried out by Mijiyawa (2012) support the contention that African countries that attract FDI flows in the current time period are likely to attract more FDI flows in the future. The ninth hypothesis to be tested is:

H$_9$: there is a positive and significant relationship between FDI received in the previous year and current inward FDI to African countries.

3.2 Unlagged Regression Model

The following unlagged panel regression model will be used in this research. This model is estimated using the random effects model, following recommendation from the Hausman (1978) test. The unlagged regression model is estimated as part of the

initial analysis. This model is used to provide an indication of the variables that may be useful in influencing inward FDI to African countries. To follow is the unlagged regression model (Model 3.1).

$$ln(FDI_{it}) = \alpha + \beta_1 ln(ER_{it}) + \beta_2 ln(FR_{it}) + \beta_3 ln(PR_{it}) + \beta_4 ln(Commindex_{it}) + \beta_5 ln(Worldindex_{it}) + \beta_6 ln(Capformation_{it}) + \beta_7 ln(Open_{it}) + \beta_8(SM) + \omega_{it}$$

$$(3.1)$$

The subscript i refers to an individual country, and t refers to years from 1984 to 2010. The dependent variable is net FDI inflows (FDI_{it}). The independent variables are the economic risk rating (ER_{it}), financial risk rating (FR_{it}), political risk rating (PR_{it}), Commodity Price Index $(Commindex_{it})$, World Stock Market Index $(Worldindex_{it})$, gross fixed capital formation $(Capformation_{it})$, openness to trade $(Open_{it})$, and a dummy variable for the availability of a stock market (SM). The α is the common intercept which is the same for all the cross-sectional countries and over time. The $\omega_{it} = \epsilon_i + u_{it}$. ϵ_i measures the random deviation of each country's intercept term from the common intercept term α, while u_{it} is the residual term for country i at time t. The variables have been transformed into natural logarithms, except for the dummy variable. This will allow coefficient estimates to be interpreted as elasticities. Annual data are used for the analysis.

3.3 Dynamic Panel Data Model

A dynamic panel data model is estimated in the main analysis. This dynamic panel model will also provide information on the effect that FDI inflows received into Africa in the previous year have on current FDI inflows. As such, the lagged dependent variable (FDI_{it-1}) is included as an explanatory variable in the dynamic panel model. The FDI variable is lagged by one year.

This model is estimated using the LSDV technique, as this is the most appropriate method for dynamic panel data drawn from a long time period. The time period for the data used in this research is 27 years (1984 to 2010). The LSDV model is also

known as the fixed effects model. To follow is the dynamic panel data model (Model 3.2).

$$ln(FDI_{it}) = \alpha_i + \lambda_t + \beta_1 ln(FDI_{it-1}) + \beta_2 ln(ER_{it}) + \beta_3 ln(FR_{it}) +$$
$$\beta_4 ln(PR_{it}) + \beta_5 ln(Commindex_{it}) + \beta_6 ln(Worldindex_{it}) +$$
$$\beta_7 ln(Capformation_{it}) + \beta_8 ln(Open_{it}) + \beta_9 (SM) + u_{it}$$

$$(3.2)$$

The subscript i refers to an individual country, and t refers to years from 1984 until 2010. The dependent variable is net FDI inflows (FDI_{it}). The independent variables are lagged FDI (FDI_{it-1}), economic risk (ER_{it}), financial risk (FR_{it}), political risk (PR_{it}), Commodity Price Index ($Commindex_{it}$), World Stock Market Index ($Worldindex_{it}$), gross fixed capital formation ($Capformation_{it}$), openness to trade ($Open_{it}$), and a dummy variable for the availability of a stock market (SM). The α_i is the individual country effect, which is specific to the individual cross sectional country i. The λ_t is the country invariant time effect, while u_{it} is the residual term for country i at time t. The variables are in natural logarithms except for the dummy variable, allowing the coefficient estimates to be interpreted as elasticities. Annual data are used for the analysis.

3.4 Conclusion

This Chapter presents the hypotheses to be tested in this research. These hypotheses are drawn from previous literature and research. The variables used in this research are the economic risk rating, financial risk rating, political risk rating, Commodity Price Index, World Stock Market Index, gross fixed capital formation, openness to trade and a dummy variable representing the availability of a stock market in the host nation. Regression models are used for data analysis, in order to provide an understanding of the variables that are significant in influencing FDI flows into African countries.

An unlagged regression model (Model 3.1) is carried out as part of the initial analysis, providing an indication of the variables that influence FDI flows into the African Continent. A dynamic panel data model (Model 3.2) is carried out as part of

the main analysis. This model also provides information as to whether or not, FDI flows received into Africa in the previous year have an effect on current FDI inflows into the Continent.

Panel data analysis is used in this research encompassing data drawn from 35 African countries over a time period of 27 years. The unlagged model is estimated using the random effects model in line with the Hausman (1978) test. The dynamic panel data model is estimated using the LSDV model, which is also known as the fixed effects model. The LSDV technique has been applied to estimate the dynamic panel data regression model, as is appropriate in the presence of a lagged dependent variable, and when the time period in the panel is large (large T).

CHAPTER FOUR
DATA, METHOD AND PRELIMINARY ANALYSIS

This Chapter introduces the data used in this research to analyse the determinants of FDI flows into African countries. Data are drawn from 35 AU member countries from a period of 1984 to 2010. These countries have been chosen because they are members of the AU, and also because it was possible to obtain their country risk ratings, which are produced by the International Country Risk Guide (ICRG). The AU aims to promote economic prosperity in Africa and this is why member countries were chosen for inclusion in this study. The ICRG risk ratings are used to provide information about the economic health, financial strength, and political stability of the selected African countries. The methodology used to analyse the data examining FDI flows into African countries is also included in this Chapter (Section 4.3). As the research deals with panel data, the main model that will be used to analyse the data is a dynamic panel data model. However, before this model is estimated, some preliminary analysis is undertaken.

This preliminary analysis includes descriptive statistics of the variables (Section 4.8), examination of the correlation between the variables used in the study (Section 4.9), and analysis of the relationship between inward FDI flows to African nations and the economic health, financial strength and political risk ratings of these African countries (Section 4.10). Out of the 35 African nations used in this research, Botswana is found to have the lowest level of economic and financial risk based on the ICRG risk ratings, and Namibia has the lowest level of political risk during this time based on the same ratings. Therefore these countries have been used as benchmarks for this part of the analysis. As such, the preliminary analysis also includes examination of the simple hypothesis tests. The simple hypothesis tests will be used to provide detailed information as to whether or not the average economic risk rating for the other countries is different from that of Botswana (Section 4.11); whether or not the average financial risk rating for the other countries is different from that of Botswana (Section 4.12); and, whether or not the average political risk rating for the other countries is different from that of Namibia (Section 4.13). This Chapter ends by providing a concluding summary of the findings.

4.1 Data

The countries included in this research were chosen on the basis of firstly being a member of the AU and secondly, having their country risk rating data available from ICRG. The data covers the period from 1984 to 2010. In total, 35 African countries are included in this research. The economic, financial and political risk rating data are acquired from the Political Risk Services (PRS) Group database and produced by the ICRG. Each of these risk ratings is an aggregate of various components. The political risk rating includes 12 weighted variables, covering both political and social attributes. The economic and financial risk ratings each comprise of five components. As mentioned in the introduction, country rating agencies produce ratings that are highly positively correlated (for example, Hammer et al., 2006; Güttler and Wahrenburg, 2007; and Alsakka and ap Gwilym, 2010), with these risk ratings being indicators of economic health, financial strength, and political stability. The ICRG risk ratings have been chosen as they offer detailed and reliable monthly data over a long period of time, for a large number of countries. The components that make up each risk rating are made available later in this Chapter.

The net FDI inflows data and gross fixed capital formation (infrastructure) data were obtained from the World Development Indicators available from the World Bank database. The openness to trade data was calculated by initially adding the imports of goods and services and exports of goods and services for the relevant African country. This total (imports and exports) was then divided by the country's GDP to obtain a figure that provides information about openness to trade. The host country's imports of goods and services data, exports of goods and services data, and GDP data were also obtained from the World Development Indicators available from the World Bank database.

The UNCTAD free-market commodity prices index data were obtained from the UNCTAD Statistics database. The MSCI World Index data were obtained from Datastream[54]. The stock market availability data were obtained from individual country stock market websites. Where no information was found with regard to availability of a stock market, it was assumed that the particular African country does not have an operating stock exchange. Most of this data (for example, net FDI

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[54]Datastream - database that offers access to a wide range of financial information.

inflows, gross fixed capital formation, imports of goods and services, exports of goods and services and GDP) were only available on an annual frequency for majority of the African countries.

The net FDI inflows variable is used as the dependent variable in this research. This study has not divided the FDI inflows received by a particular African country by the value of its GDP. This is because the ICRG economic risk rating contains information on GDP, which is GDP per head and real GDP growth. The ICRG economic risk rating provides a way of assessing a country's economic strengths and weaknesses and comprises of five components[55] which are: GDP per head, real GDP growth, annual inflation rate, budget balance as a percentage of GDP, and current account as a percentage of GDP. The GDP per head and real GDP growth components can be used to account for the market size in an African country. These components offer information on how large each of the African markets are, which may shed some light on country size as well.

4.2 Description of variables used in the research

1. **Foreign Direct Investment:** Net inflow of investment made to acquire a lasting interest (10% or more voting stock) in an enterprise, operating in an economy other than that of the investor. This is the total of equity capital, reinvestment of earnings, long-term capital, and short-term capital as shown in the balance of payments. Net FDI inflows are the new investment inflows less disinvestment in the host economy from foreign investors. This FDI information was collected from the Balance of Payments database reported by the IMF, UNCTAD and official national sources. The data were obtained from the World Development Indicators, which is accessible from the World Bank database. Data are in US dollars and have an annual frequency (World Bank, 2013c).

2. **Economic risk rating:** The ICRG economic risk rating was obtained from the Political Risk Services (PRS) group database. This model for forecasting economic, financial and political risk was created in 1980. The economic risk rating provides a way of assessing a country's economic strengths and weaknesses. This risk rating

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[55]Appendix Three contains detailed information about the five components that make up the ICRG economic risk rating.

comprises of five components which are: GDP per head, real GDP growth, annual inflation rate, budget balance as a percentage of GDP, and current account as a percentage of GDP. The ICRG economic risk rating data shows that the lower the risk rating, the higher the economic risk; and the higher the risk rating, the lower the economic risk for a particular country. The ICRG economic risk rating is based on 50 points.

However, in this research, the economic risk data have been multiplied by 2 to obtain a number based on 100 points. This number is then subtracted from 100 to obtain data that shows the lower the risk rating, the lower the economic risk (strong economic health); and the higher the risk rating, the higher the economic risk (poor economic health). These data have an annual frequency.

3. **Financial risk rating:** The ICRG financial risk rating was obtained from the PRS group database. The financial risk rating provides a way of measuring a country's ability to finance its official, commercial, and trade debt obligations. This risk rating comprises of five components[56] which are: foreign debt as a percentage of GDP, foreign debt services as a percentage of exports of goods and services, current account as a percentage of exports of goods and services, net international liquidity as months of import cover, and exchange rate stability. The ICRG financial risk ratings show that the lower the risk rating, the higher the financial risk; and the higher the risk rating, the lower the financial risk for a particular country. The ICRG financial risk rating is based on 50 points.

In this research the financial risk data has been multiplied by 2 to obtain a number based on 100 points. This number has then subtracted from 100 to obtain data that shows the lower the risk rating, the lower the financial risk (increased financial strength); and the higher the risk rating, the higher the financial risk (low financial strength). These data have an annual frequency.

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[56]Appendix Three contains detailed information about the five components that make up the ICRG Financial risk rating.

4. **Political risk rating:** The ICRG political risk rating was obtained from the PRS group database. The political risk rating provides a way of measuring a country's political stability. This risk rating comprises of 12 components[57] which include: government stability, socioeconomic obligations (socioeconomic pressures in a country relating to unemployment, consumer confidence and poverty), investment profile, internal conflict, external conflict, corruption, military in politics, religious tensions, law and order, ethnic tensions, democratic accountability (government's response to its citizens), and bureaucracy quality (institutional strength). The ICRG political risk ratings show that the lower the risk rating, the higher the political risk; and the higher the risk rating, the lower the political risk for a particular country. The ICRG political risk rating is based on 100 points.

The original ICRG political risk data for this research have been subtracted from 100 in order to obtain data that shows the lower the risk rating, the lower the political risk (political stability); and the higher the risk rating, the higher the political risk (political instability). These data also have an annual frequency.

5. **Commodity Price Index:** This research used the UNCTAD free-market Commodity Price Index to track the free market prices of the main commodity exports from developing countries[58]. This Index commenced in 1960 and was obtained from the UNCTAD Statistics database. The UNCTAD free-market commodity index contains various groupings as per the following: food accounts for 49.06%, tropical beverages account for 5.56%, vegetable oilseeds and oils account for 6.97%, agricultural raw materials account for 13.52%, and minerals, ores and metals account for 24.89% of the group weight. The weights used in the construction of these indices represent the

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[57]Appendix Three contains detailed information about the twelve components make up the ICRG Political risk rating.

[58]Developing countries in Africa as classified by the United Nations Conference on Trade and Development: Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Côte d'Ivoire, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Republic of the Congo, Rwanda, Saint Helena, São Tomé and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Swaziland, Togo, Tunisia, Uganda, United Republic of Tanzania, Western Sahara, Zambia, and Zimbabwe.

relative values of exports from developing countries from 1999 to 2001. The base year for the calculation of the indices is the year 2000.

For this research, the combined index for all groups was used to track commodity prices. A table showing commodities that fall under each grouping and the total weight allocated to each commodity is found in Appendix Four. The data were obtained on an annual basis (UNCTAD, 2013b).

6. **World Stock Market Index:** The MSCI World Index was launched on 27 February, 1970. This Index tracks the performance of stock markets in 24 developed nations. These countries are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, UK, and USA. The Index contains 1,608 components (listed firms) and covers approximately 85% of the free float-adjusted market capitalisation in each country.

Firms listed in the USA account for 53.81% of the Index, those listed in the UK make up 9.12% of the Index, Japanese listed firms account for 8.87%, Canadian listed firms account for 4.52%, French listed firms account for 3.85% while listed firms from other countries account for 19.84% of the Index. The MSCI World Index tracks large and mid-cap firms in various sectors such as financials, information technology, consumer discretionary, health care, consumer staples, industrials, energy, materials, telecommunication services, and utilities (MSCI, 2013b).

The MSCI World Index is based on the MSCI Global Investable Indices Methodology[59]. This approach to index construction allows meaningful global views and cross-regional comparisons across all market capitalisation size, sector and style segments, and combinations. The data were obtained from Datastream and have an annual frequency.

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[59]Appendix Five contains detailed information about the MSCI Global Investable Indices Methodology.

7. **Gross fixed capital formation:** Gross fixed capital formation includes land improvements, plant, machinery and equipment purchases, the construction of roads and railways, schools, offices, hospitals, private residential dwellings as well as commercial, industrial buildings, and net acquisitions of valuables[60] (World Bank, 2013f). This variable was used as a proxy for infrastructure. These statistics were obtained from the World Bank National Accounts data and OECD National Accounts data files. The data were drawn from the World Development Indicators, accessible from the World Bank database. The data are represented in US dollars and have an annual frequency.

8. **Openness to trade of the host country:** This is a measure of the ratio of imports and exports to a country's GDP. It was calculated by initially adding the host nation's imports of goods and services, and exports of goods and services. The sum of total imports and exports was then divided by the host nation's GDP. The import of goods and services includes transactions between a country's residents and the rest of the world. This transaction represents a change of ownership of general merchandise, non-monetary gold, and services from non-residents to residents (World Bank, 2013g).

The export of goods and services includes transactions between residents of a country and the rest of the world. This transaction involves a change of ownership of general merchandise, net exports of goods, non-monetary gold, and services from residents to non-residents (World Bank, 2013b). Both the export and import statistics were from the World Bank National Accounts data and OECD's National Accounts data files. The data were obtained from the World Development Indicators, accessible from World Bank's database. The data are represented in US dollars, with an annual frequency.

The World Bank database defines GDP as "the sum of gross value added by all resident producers in the economy plus any product taxes, and minus any subsidies

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[60]According to the 1993 System of National Accounts, net acquisitions of valuables are also considered as capital formation. The System of National Accounts consists of an integrated set of macro-economic accounts, balance sheets and tables based on internationally agreed concepts, definitions, classifications, and accounting rules. This system was adopted by the United Nations Statistical Commission in 1993 (United Nations, 2013d).

not included in the value of the products"(World Bank, 2013d). Dollar figures for GDP are converted from domestic currencies, using single year official exchange rates. A different conversion factor is used when the official exchange rate does not reflect the rate applied to the actual foreign exchange transactions in a certain country. These statistics were also from the World Bank National Accounts data and OECD National Accounts data files. The data were obtained from the World Development Indicators, accessible from the World Bank database. The data are represented in current US dollars, with an annual frequency.

9. **Stock market:** This is a dummy variable representing the availability of a stock market in an African host country. This information was obtained from the stock market websites of those countries that have an operating stock market. Where information was unavailable in relation to the availability of a stock market, it was assumed that the particular African country does not have an operating stock exchange.

4.3 Methodology

The initial step was carrying out a preliminary analysis of the data. In the preliminary analysis, descriptive statistics were examined for all the variables used in the research (Section 4.8). Descriptive statistics provided summary statistics such as the mean, median, standard deviation, skewness, kurtosis, and the distribution of the series using the Jarque-Bera (1987) statistic. The correlation between variables used in this research is included in this Chapter (Section 4.9). This provides information on the level of multicollinearity present between the explanatory variables. When estimating an OLS regression, it is assumed that the explanatory variables are not correlated with one another. In such a case, adding or removing variables from a regression does not cause the values of the coefficients on the other variables to change. There could either be perfect collinearity between two or more variables or near multicollinearity. In reality, there is usually a degree of near multicollinearity between two or more explanatory variables. This is the situation whereby there is no perfect relationship between any of the explanatory variables.

The preliminary analysis also provided information on the relationship between inward FDI flows received by the African countries and the composite risk of these

countries (Section 4.10). The composite risk of a particular country is the combined economic, financial, and political risk for that country. The importance of economic health, financial strength, and political stability in attracting FDI inflows is highlighted in this Chapter. Countries were grouped according to the amount of inward FDI they received from 1984 to 2010. Three countries were included in each graph so as to make the interpretation of graphs easier.

Finally, the simple hypothesis test was also carried out on the economic risk rating, financial risk rating, and political risk rating of the 35 countries examined in this study. Botswana was found to have the highest economic and financial strength, whereas Namibia had the highest political stability followed closely by Botswana. The simple hypothesis test provided information as to whether or not the economic risk rating of other African countries (included in the research) was different from that of Botswana, whether or not the financial risk rating of other African countries was different from that of Botswana, and whether or not the political risk rating of other African countries was different from that of Namibia. Through simple hypothesis testing, more details on the economic health, financial strength, and political stability of African countries were obtained.

After the preliminary analysis of the data was completed, the next step was to analyse the data using econometric regression models, in order to identify variables that were significant in influencing FDI flows into African countries. Literature that examines FDI flows into Africa tends to use panel data analysis (for example, Asiedu, 2002; Nonnemberg and Cardoso de Mendonça, 2004; Onyeiwu and Shrestha, 2004; Yasin, 2005; Alsan and colleagues, 2006; Asiedu, 2006; Kandiero and Chitiga, 2006; Twimukye, 2006; Busse and Hefeker, 2007; Naudé and Krugell, 2007; Sekkat and Veganzones-Varoudakis, 2007; Hailu, 2010; Mohamed and Sidiropoulos, 2010; Reiter and Steensma, 2010; Mhlanga et al, 2010; Walsh and Yu, 2010; Asiedu and Lien, 2011; Adjasi et al, 2012; Ezeoha and Cattaneo, 2012; Anyanwu, 2012 and Agbloyor et al, 2013). This research also used panel data analysis, which increases the degrees of freedom as it combines cross-sectional and time series data. Panel data analysis provides "more informative data, more variability, less collinearity among variables, more degrees of freedom and more

efficiency" (Gujarati, 2004: 637). However, as there are missing data for some of the countries included in this research, the panel data are unbalanced.

Prior to the estimation of the panel regression models, the heteroskedasticity test was carried out. The heteroskedasticity test examines whether or not the variance of the error term from an estimated regression is constant. This was followed by the serial correlation test, which examines whether or not the error terms are correlated with their lagged values. The presence of heteroskedasticity and serial correlation was corrected by using the White period estimator available through the EViews software for data analysis. An unlagged regression model was estimated as part of the initial analysis so as to provide an indication of variables that are significant in influencing FDI flows into African countries. Following recommendation from the Hausman (1978) test, the unlagged regression was estimated using the random effects model. The unlagged model estimation results are included in Chapter Five, Section 5.3.

A dynamic panel data model was estimated in the main analysis and included the lagged dependent variable (FDI_{it-1}) as one of the explanatory variables. The dynamic panel data model was carried out using the LSDV model, also known as the fixed effects model. Research undertaken by Judson and Owen (1999), using the Monte Carlo approach showed that when the time period in the panel data is approximately 30 years (T=30) or more, the LSDV estimation technique performs just as well or better than other alternative methods[61]. The data in this research have a time period of 27 years (1984 until 2010). Further, research from Keele and Kelly (2005) finds that including a lagged dependent variable in the regression often eliminates serial correlation present in the model (Keele and Kelly, 2005). This therefore provides an advantage when estimating the dynamic panel data model. The dynamic panel data model estimation results are included in Chapter Five, Section 5.4.

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[61]The research undertaken by Judson and Owen (1999) evaluates and compares four econometric methods for estimating dynamic panel data models. These methods are the instrumental variables estimator proposed by Anderson and Hsiao (1981), Arellano and Bond (1991) one-step and two-step GMM estimators, and a Corrected Least Squares Dummy Variable estimator derived in Kiviet (1995).

After estimation of the dynamic panel model, tests of robustness were carried out. The first test of robustness aimed to find out whether some of the explanatory variables might be useful in the prediction of the dependent variable (FDI), or if there is a reverse relationship whereby the dependent variable (FDI) is useful in the prediction of one or more of the explanatory variables. This test provided information on the strength of exogeneity between the dependent variable (FDI) and the explanatory variables. It was found that most of the explanatory variables were useful in the prediction of FDI flows into Africa. The level of FDI flows into Africa offer little prediction of any of the explanatory variables. This robustness test is considered further in Chapter Five, Section 5.5.

The second test of robustness included time averaging the annual data from 1984 until 2010, over three-year periods. It was anticipated that time averaging the data would smooth out the cyclical fluctuations and provide information on variables that influence FDI flows into African nations in the long-run. Details of these results are found in Chapter Five, Section 5.6.

A panel Vector Error Correction Model (VECM) was also carried out as a robustness test. A VECM was estimated to examine the long-run relationship between FDI and the non-stationary explanatory variables. In order to carry out the VECM, explanatory variables should be non-stationary at the level series, and stationary at first differences. These variables should also be cointegrated. When the unit root tests[62] were carried out, the results showed that only some of the variables were non-stationary at the level series, while the others were stationary. The non-stationary variables are FDI, the Commodity Price Index, financial risk rating, and gross fixed capital formation. These variables were therefore included in the estimation of the VECM.

The Johansen (1991) cointegration test was also carried out and results showed that there is a long-run relationship between FDI and the explanatory variables. After the estimation of the VECM, the Granger (1969) causality test was estimated, indicating a short-run relationship between inward FDI and gross fixed capital formation. The Granger (1969) causality test is described further in Chapter Five, Section 5.10.

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[62]Panel unit root tests at the level series are included in Appendix Six.

4.4 Alternative methods for estimating dynamic panel data

This research used the LSDV model to estimate the dynamic panel data model as there is a lagged dependent variable (FDI_{it-1}) in the regression, and the time period is long (T=27). Other alternative methods for estimating dynamic panel data as explained by Judson and Owen (1999) and Flannery and Hankins (2013) include: the Instrumental Variables estimator proposed by Anderson and Hsiao (1981), Corrected Least Squares Dummy Variable technique developed in Kiviet (1995) and Bruno (2005), difference Generalised Method of Moments (GMM) estimation by Arellano and Bond (1991), System GMM estimation by Blundell and Bond (1998), and two variations of long differencing by Hahn and colleagues (2007) and Huang and Ritter (2009).

Anderson and Hsiao (1981) suggested two Instrumental Variable estimators. The model was transformed to first differences so as to eliminate the unobserved individual heterogeneity. The second lags of the dependent variable were used, either differenced or in levels, as an instrument for the differenced one-time lagged dependent variable. Arellano and Bond (1991) discussed on the use of a GMM estimator for the first differenced model. This model relies on a larger number of internal instruments and is more efficient than the Instrumental Variable estimators presented by Anderson and Hsiao (1981). Blundell and Bond (1998) noted that with data that are highly persistent, the first differenced instrumental variables, or GMM estimators, may suffer from a small sample bias due to weak instruments. They suggested a system GMM estimator, with first differenced instruments for the equation in levels, and instrument in levels for the first differenced equation (Bruno, 2005). It should be noted that the GMM estimators are more suited to data with large numbers of cross-sections and a short time series.

Hahn and colleagues (2007) developed a long difference instrumental variable estimation technique and used balanced panel data. These researchers showed that combining multi-period differencing with longer lagged instruments can produce less biased estimates than the Arellano and Bond (1991) or Blundell and Bond (1998) approaches. Huang and Ritter (2009) applied the long difference estimator to unbalanced panels. They used the same differencing interval for all firms, regardless of their panel lengths (Flannery and Hankins, 2013).

Judson and Owen (1999) find in their research that the Corrected Least Squares Dummy Variable (LSDVC) technique outperforms all the other estimation techniques. Flannery and Hankins (2012) also find that the LSDVC technique is the most accurate methodology for analysing dynamic panel data[63]. However, it should be noted that the LSDVC is difficult to apply to large samples of data and assumes exogenous regressors (Flannery and Hankins, 2013).

4.5 Random Effects Model or Fixed Effects Model

This section contains information on how to decide upon using a fixed effects or random effects model. Panel data consist of features from both time series and cross sectional data. When analysing panel data, fixed effects and random effects models are commonly used. When estimating a random effects model each individual (for example, country) will have a common mean value for the intercept, with individual differences in the intercept values of each country being reflected in the error term. When using a fixed effects model the intercept will differ across the different countries, but each country's intercept will not vary over time; that is, time invariant (Gujarati, 2004). Each country will therefore have its own fixed intercept value.

In order to decide on an appropriate model, the Hausman (1978) test is usually carried out. The null hypothesis of the Hausman (1978) test is that the fixed effects model and random effects model estimators do not differ substantially. If the null hypothesis is rejected, the conclusion is that the random effects model is not appropriate and the fixed effects model is preferred (Gujarati, 2004).

4.6 Unit Root Tests

This section describes the main unit root tests used in this research. Unit root tests are used to find out if a series of variables is stationary or non-stationary. When a series is stationary, the variables are time invariant. The Ordinary Least Squares (OLS) regression technique assumes the variables to be stationary. In order to

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[63]The research from Flannery and Haskins (2012) evaluates and compares seven econometric methods for estimating dynamic panel data models. These methods are Ordinary Least Squares, Fixed Effects, Arellano and Bond (1991) difference GMM estimator, Blundell and Bond (1998) system GMM estimator, Four Period Long Differencing which replicates the Huang and Ritter (2009) implementation of the Hahn et al. (2007) estimator, an alternative adaptation of the Hahn et al. (2007) balanced panel estimator thus allowing for unbalanced panels, and the Corrected Least Squares Dummy Variable methodology.

compare the results under different unit root tests, the Levin, Li and Chu test (2002) and Fisher-ADF test, proposed by Maddala and Wu (1999), and Choi (2001) are used. These tests are more appropriate for unbalanced data. Other unit root tests available for use with panel data include the Breitung (2000) t-statistic test, Hadri (2000), the Im, Pesaran and Shin (2003) statistic test, and the PP-Fisher Chi square tests proposed by Maddala and Wu (1999), and Choi (2001).

Levin, Lin and Chu (LLC) Test

The null hypothesis of the LLC test shows the existence of a unit root, against the alternative hypothesis of no unit root. The presence of a unit root in a series means that the series is non-stationary. This unit root test allows for time trends and individual specific intercepts.

A limitation of the Levin-Lin tests is the homogeneity assumption which assumes that "each individual specific process is the same across all cross-sectional units of the panel" (Geda et al., 2012: 147). In other words, it is assumed that the persistence parameters, p_i, are common across cross-sections so that $(p_i = p)$ for all i (for example, individual countries). The LLC test considers the following basic Augmented Dicky Fuller specification:

$$\Delta y_{it} = \alpha y_{it-1} + \sum_{j=1}^{p_i} \beta_{ij} \, \Delta y_{it-1} + X'_{it}\delta + \varepsilon_{it}$$

where it is assumed a common $\alpha = (p - 1)$, but allows the lag order for the difference terms, p_i to vary across cross-sections. The null and alternative hypotheses for the test may be written as: H_0: $\alpha = 0$ and H_1: $\alpha < 0$.

Fisher-ADF Test

This test uses Fisher's (1932) results, and has been proposed by Maddala and Wu (1999) and by Choi (2001). The Maddala-Wu equation takes the following form.

$$P = -2 \sum_{i=1}^{N} lnp_i$$

This equation has a x^2 distribution, with 2N degree of freedom. When N is large, Choi proposed a modified P-test:

$$P_m = \frac{1}{2\sqrt{n}}\sum_{i=1}^{N}(-2\,ln(p_i)-2) = -\frac{1}{\sqrt{N}}\sum_{i=1}^{N}\left(ln(p_i)+1\right)$$

Where P_m is shown to have a standard normal distribution of the form $P_m \rightarrow$ N (0, 1). The null hypothesis of the Fisher-ADF test shows the existence of a unit root. The alternative hypothesis is that some (not all) of the cross-sections do not have a unit root. The test allows for time trends and individual specific intercepts. The persistence parameter, p_i varies freely across the individual series or cross-sections in the panel. An advantage of the Fisher test is that it does not require a balanced panel or the same lag length. The unit root tests for all explanatory variables used in this research and the results are presented in Appendix Six.

4.7 Preliminary data analysis

This section presents the preliminary analysis for the data used in this research. The descriptive statistics are initially carried out, and provide summary statistics of the mean, median, standard deviation, skewness and kurtosis of the individual series. Information is also obtained as to whether or not the data are normally distributed. The correlation matrix (Table 4.3) between the variables used in this research is also presented. This matrix will show whether or not there is a high level of correlation between two or more of the explanatory variables. If there is a fairly high level of correlation, this may indicate the presence of multicollinearity.

This preliminary analysis also contains information on the relationship between inward FDI flows to African nations and the level of composite risk (economic risk, financial risk, and political risk) present in these countries (Section 4.10). The simple hypothesis test analysis is carried out on the economic, financial, and political risk ratings of the 35 countries (Sections 4.11, 4.12 and 4.13). These tests provide additional information on the economic health, financial strength, and political stability of the African countries examined in this study.

4.8 Descriptive statistics

The following Tables show the descriptive statistics for different variables used in the research. The FDI data was the most volatile in the sample, with a standard deviation of 2.22, followed by the World Stock Market Index, financial risk rating, stock market availability, gross fixed capital formation, openness to trade, economic risk rating, Commodity Price Index, and political risk rating respectively.

The skewness and kurtosis can be used to determine if data are normally distributed. A standard normal distribution has a skewness of 0 and kurtosis of 3. "Skewness measures the extent to which a distribution is not symmetric about its mean value" (Brooks, 2008: 161), and kurtosis measures the peakedness or flatness of a distribution. The Jarque-Bera (1987) test was used to test the null hypothesis that the data are normally distributed. This test is based on the joint effects of skewness and kurtosis. From the result of the Jarque-Bera (1987) test, it can be seen that none of the variables used in this research were normally distributed. The p-value of the all variables indicates that we should reject the null hypothesis, which is that the data are from a normal distribution. The variables are in natural logarithms.

Table 4.1: Descriptive Statistics

	lnfdi	lneconrisk	lnfinrisk	lnpolrisk	lncommindex
Mean	18.147	3.612	3.640	3.795	4.863
Median	18.320	3.638	3.761	3.797	4.820
Maximum	23.172	4.492	4.431	4.502	5.565
Minimum	9.210	1.872	0.693	2.936	4.567
Std. Dev.	2.221	0.387	0.533	0.263	0.288
Skewness	-0.484	-0.861	-1.971	-0.306	1.172
Kurtosis	3.442	4.858	8.924	3.214	3.384
Jarque-Bera	38.282	247.727	1955.849	16.255	222.309
Probability	0.000***	0.000***	0.000***	0.000***	0.000***
Observations	810	927	927	928	945

Significant p-values at *10%, **5% and ***1%

Table 4.2: Descriptive Statistics

	lnworldindex	lncapformation	lnopen	sm
Mean	6.546	2.807	4.081	0.463
Median	6.675	2.900	4.106	0.000
Maximum	7.371	3.879	5.187	1.000
Minimum	5.216	0.693	2.382	0.000
Std. Dev.	0.593	0.465	0.450	0.499
Skewness	-0.699	-1.246	-0.583	0.146
Kurtosis	2.694	5.605	4.056	1.021
Jarque-Bera	80.706	478.286	92.337	157.518
Probability	0.000***	0.000***	0.000***	0.000***
Observations	945	883	895	945

Significant p-values at *10%, **5% and ***1%

4.9 Correlation between the variables

The correlation matrix on the following page (Table 4.3) shows that the level of correlation between all of the explanatory variables is low or moderate. It is noted that there is a moderate level of correlation between the economic risk rating and financial risk rating of 0.69. As this correlation is not perfectly positive the study will proceed to include both variables in the unlagged and dynamic panel data regression analysis. A high level of correlation between the dependent variable (FDI) and any of the explanatory variables does not count as multicollinearity.

4.10 The relationship between inward FDI flows and the composite risk ratings

The graphs starting from Figure 4.1 show the relationship between FDI flows into African countries and their composite risk ratings. The ICRG composite risk rating is a combined total of the economic, financial, and political risk rating. The political risk rating contributes 50% to the composite rating. The financial and economic risk ratings each contribute 25%. This rating is based on 100 points[64]. A high composite rating (combined economic, financial, and political risk rating) indicates low composite risk, while a low composite rating indicates high composite risk.

In this research, the original ICRG composite risk rating data was subtracted from 100. The data was calculated to show that a high composite risk rating indicates high

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[64] Appendix Three contains detailed information on the calculation of the ICRG Composite risk rating.

composite risk (that is, high economic, financial, and political risk), signifying poor economic health, low financial strength, and political instability. A low composite risk rating in a particular country indicates low composite risk demonstrating strong economic health, increased financial strength, and political stability

Countries have been grouped according to the amount of inward FDI they received from 1984 until 2010. Egypt received the largest amount of inward FDI flows between 1984 and 2010, followed by Nigeria, South Africa, Sudan, Tunisia, Algeria, Libya, Angola, Republic of the Congo, Ghana, Zambia, Democratic Republic of the Congo, Botswana, United Republic of Tanzania, Uganda, Côte d'Ivoire, Mozambique, Madagascar, Ethiopia, Liberia, Namibia, Cameroon, Niger, Senegal, Mali, Kenya, Guinea, Zimbabwe, Malawi, Burkina Faso, Togo, Gabon, Gambia, Sierra Leone, and Guinea Bissau respectively (World Bank, 2011b).

Table 4.3: Correlation Matrix

	FDI	Economic Risk	Financial Risk	Political Risk	Commodity Index	World Index	Capital Formation	Openness to Trade
FDI	1.000	-0.423	-0.500	-0.293	0.359	0.437	0.145	0.322
Economic Risk	-0.423	1.000	0.686	0.480	-0.219	-0.316	-0.277	-0.318
Financial Risk	-0.500	0.686	1.000	0.511	-0.412	-0.442	-0.228	-0.263
Political Risk	-0.293	0.480	0.511	1.000	-0.145	-0.281	-0.359	-0.314
Commodity Index	0.359	-0.219	-0.412	-0.145	1.000	0.431	0.161	0.202
World Index	0.437	-0.316	-0.442	-0.281	0.431	1.000	0.016	0.204
Capital Formation	0.145	-0.277	-0.228	-0.359	0.161	0.016	1.000	0.238
Openness to Trade	0.322	-0.318	-0.263	-0.314	0.202	0.204	0.238	1.000

The graphs illustrate that FDI flows into majority of the 35 countries included in this research have been on an upward trend since 1984 (that is, increased FDI inflows). Countries that have experienced substantial growth in inward FDI since the year 2000 include: Algeria, Botswana, Democratic Republic of the Congo, Egypt, Ethiopia, Gabon, Ghana, Kenya, Liberia, Libya, Madagascar, Mali, Mozambique, Namibia, Niger, Nigeria, Republic of the Congo, Senegal, Sierra Leone, South Africa, Sudan, United Republic of Tanzania, Uganda, and Zambia.

Botswana had the lowest average composite risk rating (that is, lowest average economic, financial, and political risk) between 1984 and 2010. This was followed by Namibia, South Africa, Gabon, Tunisia, Libya, Gambia, Egypt, Algeria, Senegal, Kenya, Cameroon, Ghana, Côte d'Ivoire, Burkina Faso, United Republic of Tanzania, Malawi, Republic of the Congo, Madagascar, Togo, Niger, Zambia, Nigeria, Mali, Angola, Guinea, Mozambique, Uganda, Ethiopia, Zimbabwe, Sierra Leone, Guinea-Bissau, Sudan, Democratic Republic of the Congo, and Liberia respectively. Overall results illustrate that countries with strong economic and financial strength, together with political stability, are likely to benefit from increased FDI inflows as they have an environment favourable for doing business.

Summary of the relationship between FDI inflows and composite risk ratings in Egypt, Nigeria, and South Africa

Figure 4.1 shows the annual inward FDI flows to Egypt, Nigeria, and South Africa. From this graph it can be seen that FDI flows into these countries have been rising since 1984. Of these three countries, Egypt received the largest amount of FDI between 1984 and 2010, followed by Nigeria and South Africa respectively. In Egypt and Nigeria, there were large increases in FDI inflows starting from 2004 onwards. The FDI flows into South Africa have fluctuated more than those received by Egypt and Nigeria.

Egypt receives FDI flows in the financial services sector, coal, oil, natural gas, software and information technology services, hotels and tourism, as well as food and tobacco (Ernst &Young, 2011). South Africa has been able to attract FDI flows into software and information technology, business services, financial services, metals, and automotive manufacturing (Ernst & Young, 2011b). Nigeria has oil and gas reserves which have attracted large FDI flows into the country. Other sectors that receive FDI flows include communications, financial services, business services, food, and tobacco (Ernst & Young, 2011b).

Figure 4.2 shows the composite risk (combined economic, financial and political risk) ratings for Egypt, Nigeria, and South Africa. South Africa has the lowest average composite risk followed by Egypt and Nigeria respectively. The composite risk rating for Egypt and South Africa has declined since 1984 and has been fairly stable since the year 2000. After examining the average composite risk rating of all the countries from 1984 to 2010, Egypt is ranked eighth, while South Africa is ranked number three out of the 35 countries included in this research. Having strong economic health, financial strength, and political stability has benefited Egypt and South Africa as they have been among the top recipients of FDI flows into Africa.

Out of the 35 countries, Nigeria is ranked number 23 in terms of its composite risk rating. This indicates that Nigeria needs to work on increasing the level of economic health, financial strength, and political stability in the country. However, foreign investors are interested in gaining access to Nigeria's vast energy reserves and do not seem to have been deterred by the country's relatively high composite risk.

Figure 4.1 - Inward FDI flows to Egypt, Nigeria, and South Africa (Millions of US$)
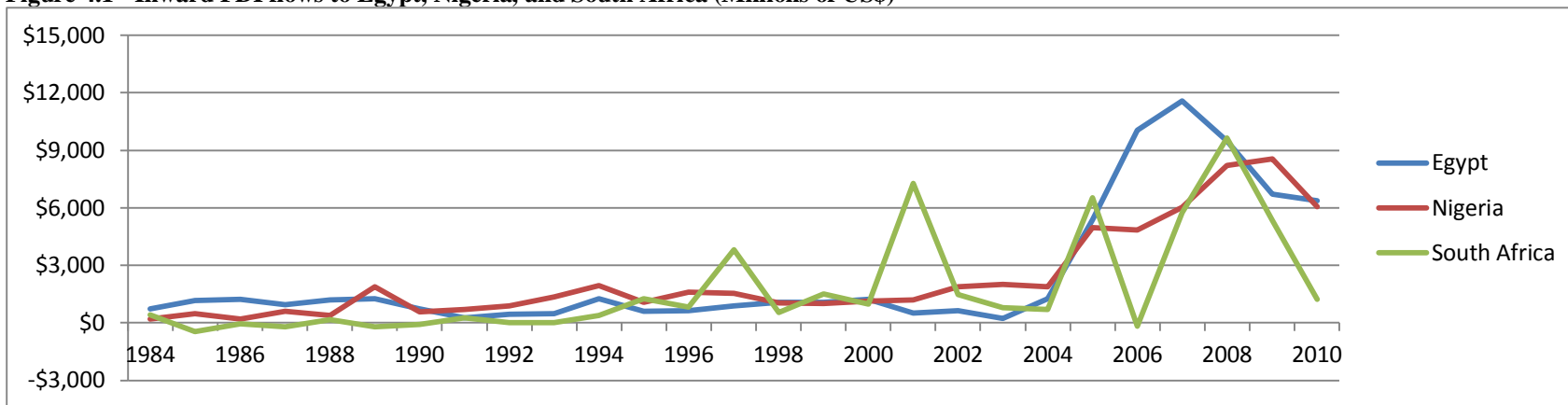
Source: World Bank Indicators, 2011b

Figure 4.2 - Composite risk for Egypt, Nigeria, and South Africa
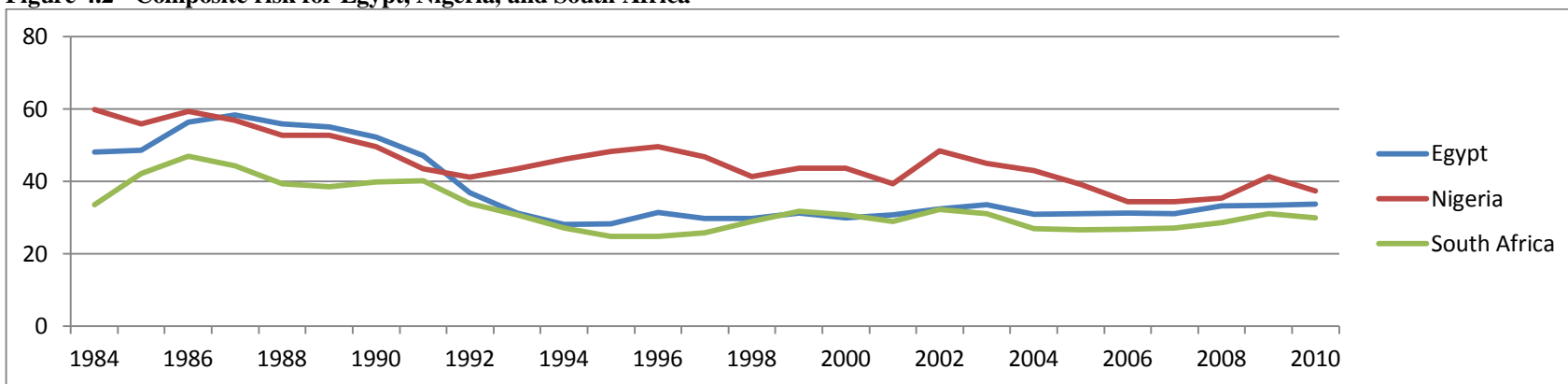
Source: ICRG Risk Ratings, 2012

Summary of the relationship between FDI inflows and composite risk ratings in Algeria, Sudan, and Tunisia

Figure 4.3 shows the annual inward FDI flows to Algeria, Sudan, and Tunisia. From this graph it can be seen that FDI flows into Algeria and Sudan have been rising since 1998. The FDI flows into Tunisia have been on an upward trend since 1992. Out of these three countries, Sudan received the largest amount of FDI flows between 1984 and 2010, followed by Tunisia and Algeria respectively. The FDI lows into Tunisia have fluctuated more than those received by Sudan and Algeria. Tunisia receives FDI in the software and information technology services, textiles, business services, coal, oil, natural gas as well as hotels and tourism (Ernst & Young, 2011b). Both Sudan and Algeria receive large amounts of foreign investment in their energy sectors.

Figure 4.4 shows the composite risk ratings for Algeria, Sudan, and Tunisia. Tunisia has the lowest average composite risk, followed by Algeria and Sudan respectively. The composite risk ratings of all the three countries have declined since 1984, although Tunisia's has been fairly stable since 1995. Algeria's composite risk rating increased in the 1990s and then started falling again from the year 2001. Sudan's composite risk rose in 1989 and stayed at this high level following the political instability in the country during this time. The composite risk for Sudan then started falling in 2000 and has been fairly stable since then. However, Sudan still has an average composite risk rating that is quite high in comparison to the other African countries.

After examining the average composite risk rating of all the countries from 1984 to 2010, Tunisia is ranked fifth, while Algeria is ranked ninth out of the 35 countries included in this research. Having strong economic health, financial strength, and political stability has benefited Tunisia and Algeria as they have been among the top recipients of FDI flows into Africa. Sudan is ranked number 33 out of the 35 countries included in this research, indicating that it needs to increase its level of economic health, financial strength, and political stability. However, Sudan has received large FDI investments in the energy sector despite having a high level of composite risk. Some foreign investors may consider the benefits of investing in this country greater than the risks that they have to bear.

Figure 4.3 - Inward FDI flows to Algeria, Sudan, and Tunisia (Millions of US$)
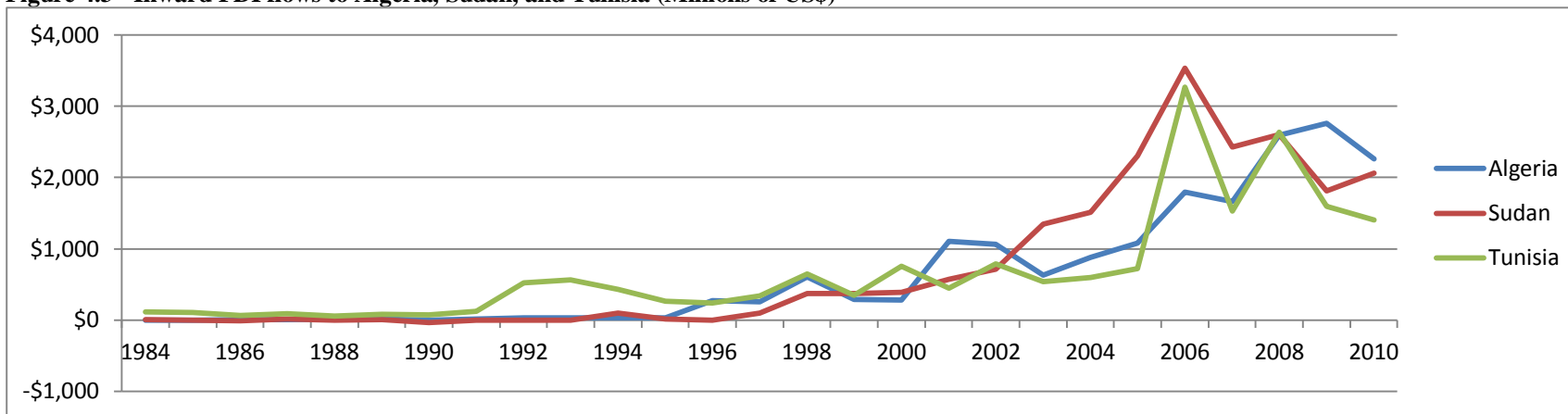
Source: World Bank Indicators, 2011b

Figure 4.4 - Composite risk for Algeria, Sudan, and Tunisia
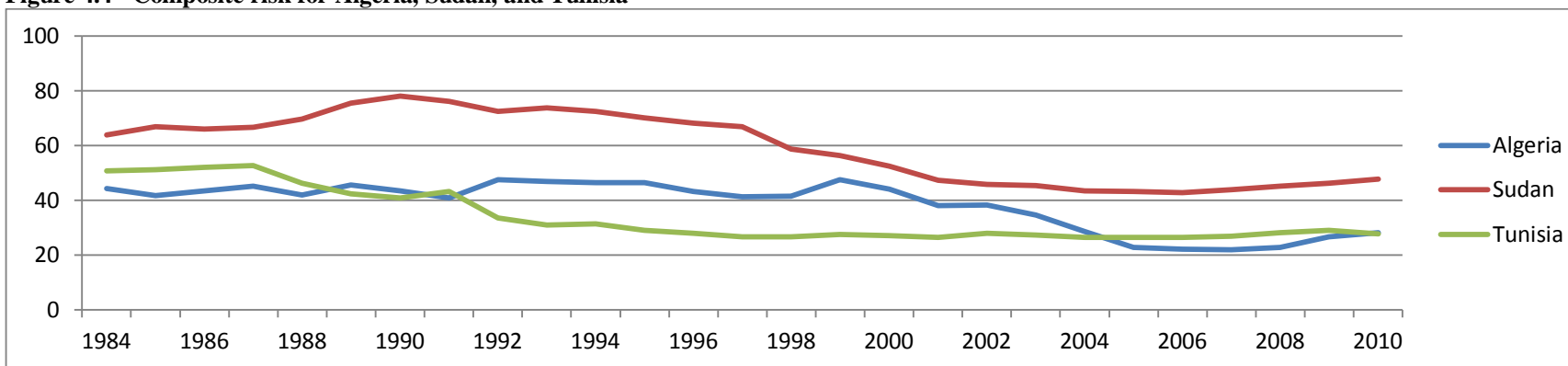
Source: ICRG Risk Ratings, 2012

Summary of the relationship between FDI inflows and composite risk ratings in Angola, Libya, and the Republic of the Congo

Figure 4.5 shows the annual inward FDI flows to Angola, Libya, and the Republic of the Congo (Congo). Of these three countries, Libya received the largest amount of FDI between 1984 and 2010, followed by Angola and Congo respectively. The graph shows that FDI flows into Angola had been rising since the early 1990s. However, in 2004 FDI inflows into Angola faced a sharp decline and then started rising again in 2008. In 2010, Angola also experienced a large decrease in its inward FDI flows. FDI inflows to Libya had been on the rise since 2004 and started declining in 2009. The FDI flows into the Congo had been rising since 2005. The FDI flows into Angola, Libya, and Congo mainly flow into the energy and mineral sectors. Angola has also received FDI flows into the beverages sector, business services, financial services, and transportation (Ernst & Young, 2011b).

Figure 4.6 shows the composite risk ratings for Angola, Libya, and Congo. Libya has the lowest average composite risk, followed by Congo and Angola respectively. The composite risk rating of all three countries has been declining since 1984. After examining the average composite risk rating of all the countries from 1984 to 2010, Libya is ranked sixth out of the 35 countries included in this research. Having strong economic health, financial strength, and political stability has benefited Libya as it has been amongst the top recipients of FDI flows into Africa.

Angola is ranked number 25, while Congo is ranked number 18, out of the 35 countries used in this research. Both Angola and the Congo have a composite risk rating that is relatively high and should work on increasing the economic health, financial strength, and political stability in their countries. Nevertheless, there have been substantial FDI investments into Angola and the Congo, as investors seek to get access to the natural resources available in these countries.

Figure 4.5 - Inward FDI flows to Angola, Libya, and the Republic of the Congo (Millions of US$)
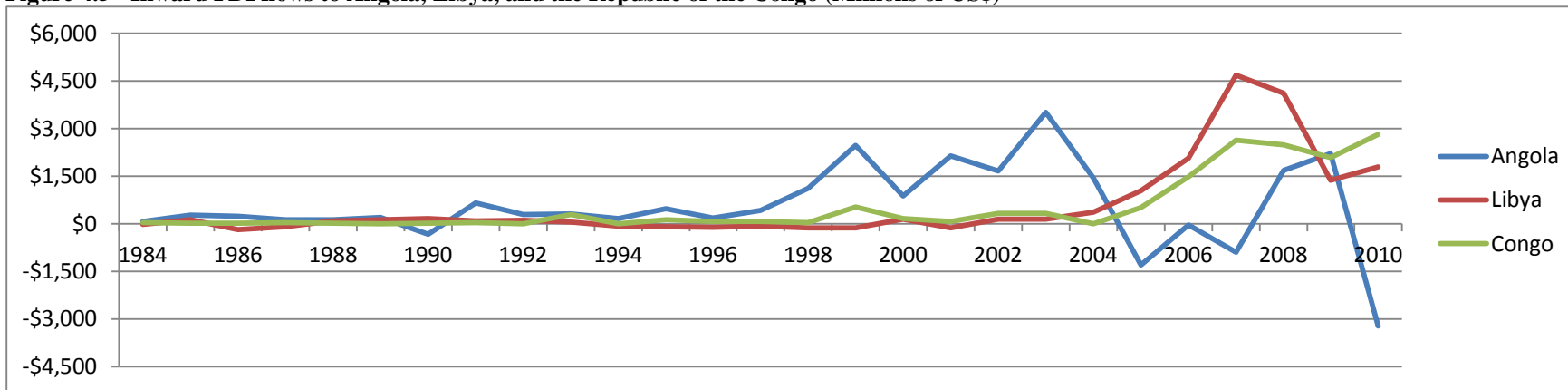
Source: World Bank Indicators, 2011b

Figure 4.6 - Composite risk for Angola, Libya, and the Republic of the Congo
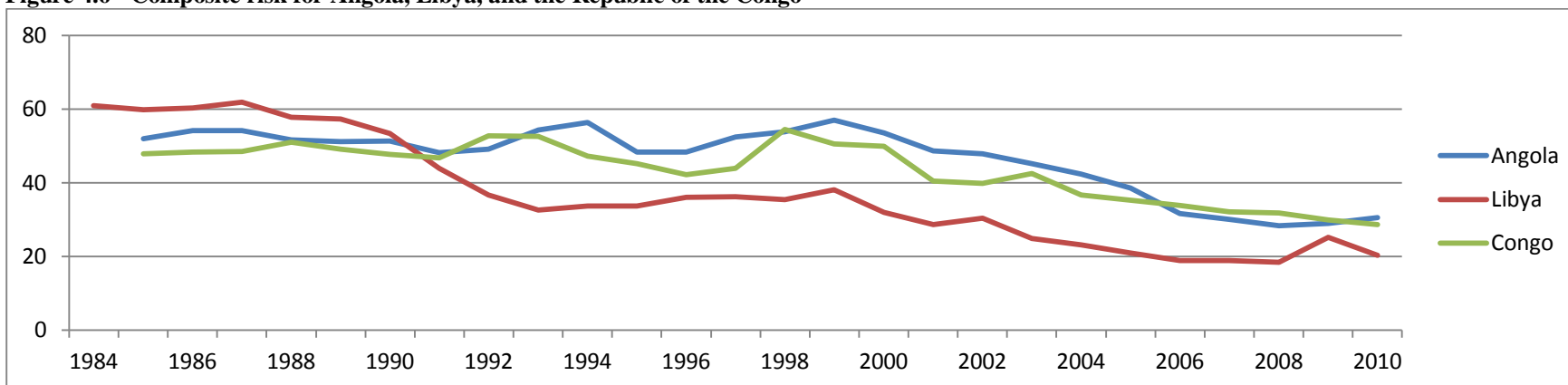
Source: ICRG Risk Ratings, 2012

Summary of the relationship between FDI inflows and composite risk ratings in the Democratic Republic of the Congo, Ghana, and Zambia

Figure 4.7 shows the annual FDI flows into the Democratic Republic of the Congo (DRC), Ghana, and Zambia. Out of these three countries, Ghana received the largest amount of FDI between 1984 and 2010, followed by Zambia and the DRC respectively. The graph shows that FDI inflows into the DRC, Ghana, and Zambia increased substantially from 2005 onwards. These countries also faced a decline in FDI inflows in 2009 following the Global Financial Crisis, but FDI inflows increased again in 2010 for all three countries.

The FDI flows into the DRC mainly flow into metals, financial services, coal, oil, natural gas, minerals, industrial machinery, equipment, and tools (Ernst &Young, 2011). Ghana receives a large amount of foreign investment in coal, oil, natural gas, financial services, metals, business services, food, and tobacco (Ernst & Young, 2011b). Zambia receives FDI in mining, financial services, alternative and renewable energy, chemicals, and communications (Ernst & Young, 2011b).

Figure 4.8 shows the composite risk ratings for the DRC, Ghana, and Zambia. Ghana has the lowest average composite risk followed by Zambia and the DRC respectively. The composite risk ratings for Ghana and Zambia have been on a downward trend since 1984. The composite risk rating of the DRC increased in 1991, following increased political instability in the country during this time. Nevertheless, DRC's composite risk rating declined in the year 2000 and has been fairly stable since then.

After examining the average composite risk rating for all the countries from 1984 to 2010, Ghana is ranked number 13 out of the 35 countries included in this study. Having fairly strong economic and financial strength, coupled with political stability, has benefited Ghana as it has been amongst the top recipients of FDI in Africa. Zambia is ranked number 22, while the DRC is ranked number 34 out of 35. The DRC has a very high composite risk rating, indicating poor economic health, low financial strength, as well as political instability. Despite having a high composite risk rating, foreign investors have made large foreign investments in the DRC, thus gaining access to the large deposits of oil and minerals present in the country.

Figure 4.7 - Inward FDI flows to the Democratic Republic of the Congo, Ghana, and Zambia (Millions of US$)
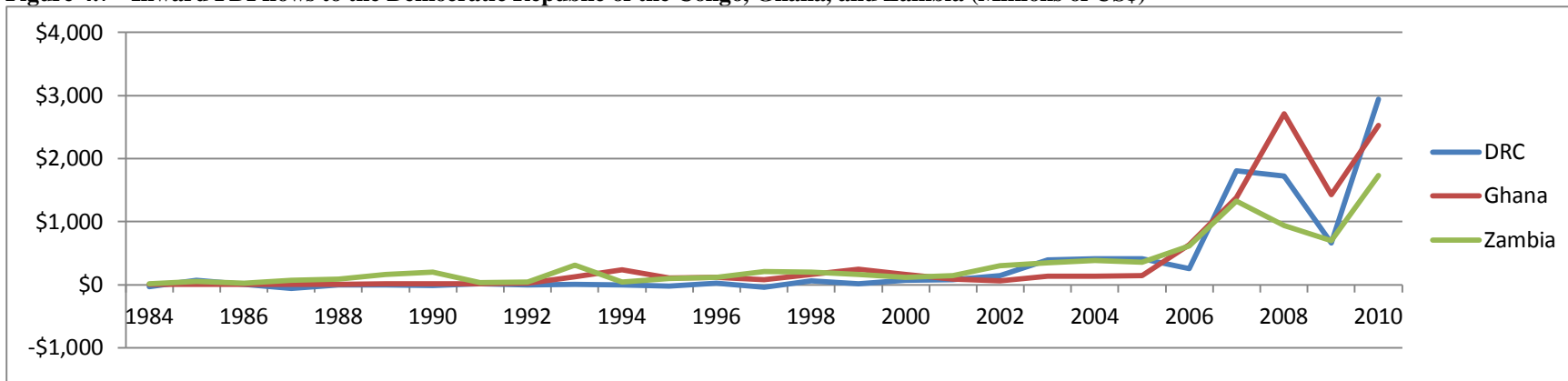
Source: World Bank Indicators, 2011b

Figure 4.8 - Composite risk for the Democratic Republic of the Congo, Ghana, and Zambia
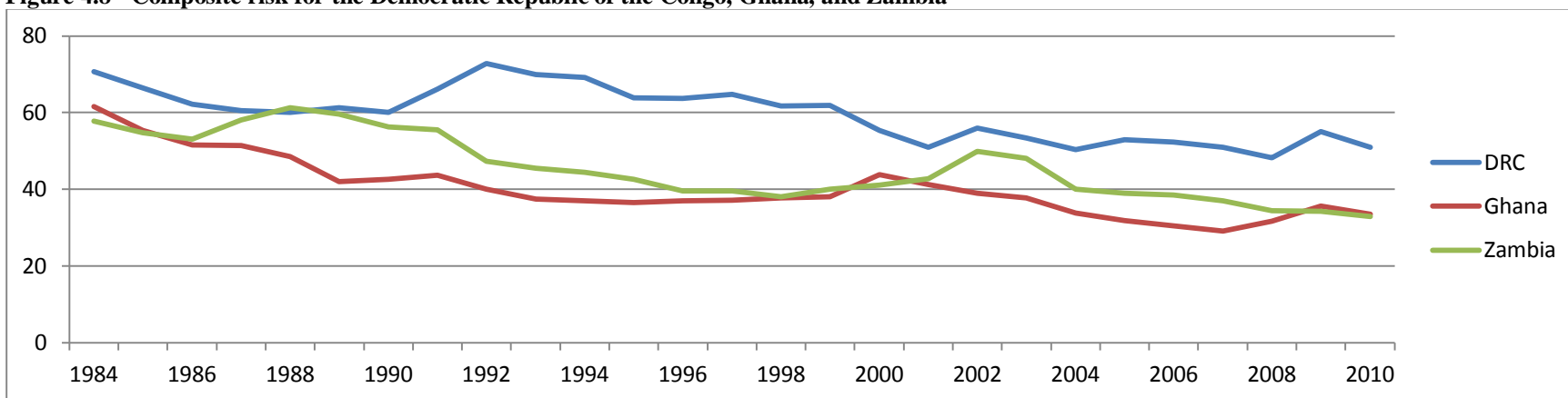
Source: ICRG Risk Ratings, 2012

Summary of the relationship between FDI inflows and composite risk ratings in Botswana, United Republic of Tanzania, and Uganda

Figure 4.9 shows the annual inward FDI flows to Botswana, United Republic of Tanzania (Tanzania), and Uganda. The FDI flows into these countries have been rising since the mid-nineties. Of these three countries, Botswana received the highest FDI inflows between 1984 and 2010, followed by Tanzania and Uganda respectively. The FDI inflows into Botswana increased substantially after 2001, following increased investments in the mining sector. However, these inflows declined sharply in 2009 following the effects of the Global Financial Crisis. In Botswana, the diamond mining sector receives large amounts of foreign investment. Other sectors that receive foreign investments include financial services, communications, real estate, hotel and tourism. Between 2003 and 2010, most FDI flows into Tanzania targeted financial services, metals, communications, building construction materials, and hotel and tourism (Ernst & Young, 2011b). The key sectors for investment in Uganda are agriculture, fisheries, forestry, manufacturing, and information technology (Uganda Investment Authority, 2011).

Figure 4.10 shows the composite risk ratings for Botswana, Tanzania, and Uganda. Botswana has the lowest average composite risk, followed by Tanzania and Uganda respectively. Botswana's composite risk rating is the lowest in Africa reflecting the country's strong economic health, financial strength, and political stability. The composite risk ratings of Botswana, Tanzania, and Uganda were on a downward trend from 1984 to 1997, indicating that these countries have been improving their economic, financial, and political climate. Since the mid-1990s, Botswana, Tanzania, and Uganda have had fairly stable composite risk ratings.

After examining the average composite risk rating of all the countries from 1984 to 2010, Botswana is ranked first, Tanzania is ranked number 16, while Uganda is ranked number 28 out of the 35 countries included in this research. Having strong economic health, financial strength, and political stability has benefited Botswana as it is among the top recipients of inward FDI in Africa. Tanzania and Uganda have also been successful in attracting large amounts of inward FDI.

Figure 4.9 - Inward FDI flows to Botswana, United Republic of Tanzania, and Uganda (Millions of US$)
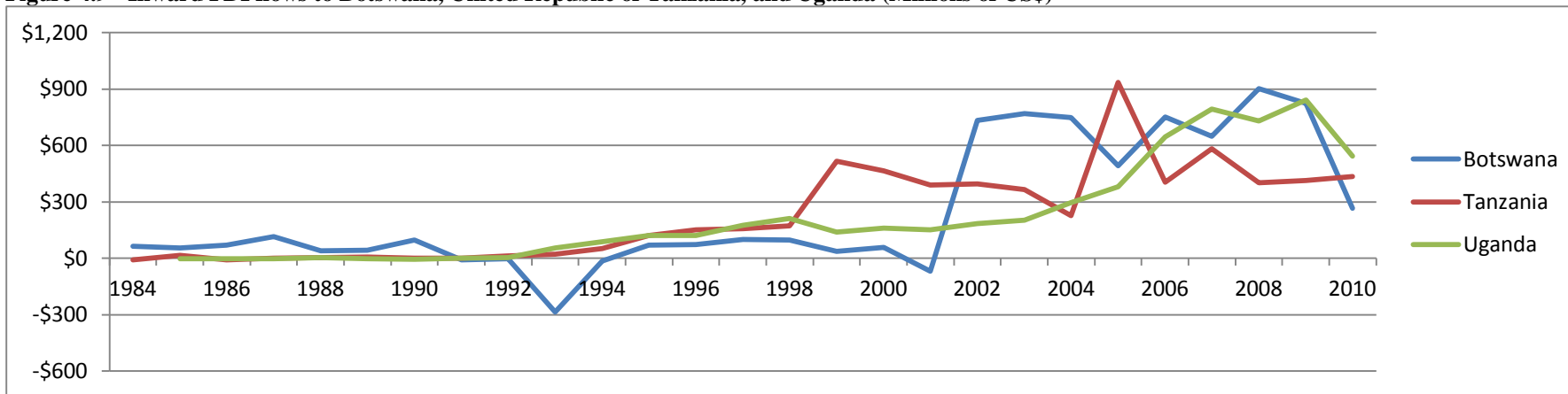
Source: World Bank Indicators, 2011b

Figure 4.10 - Composite risk for Botswana, United Republic of Tanzania, and Uganda
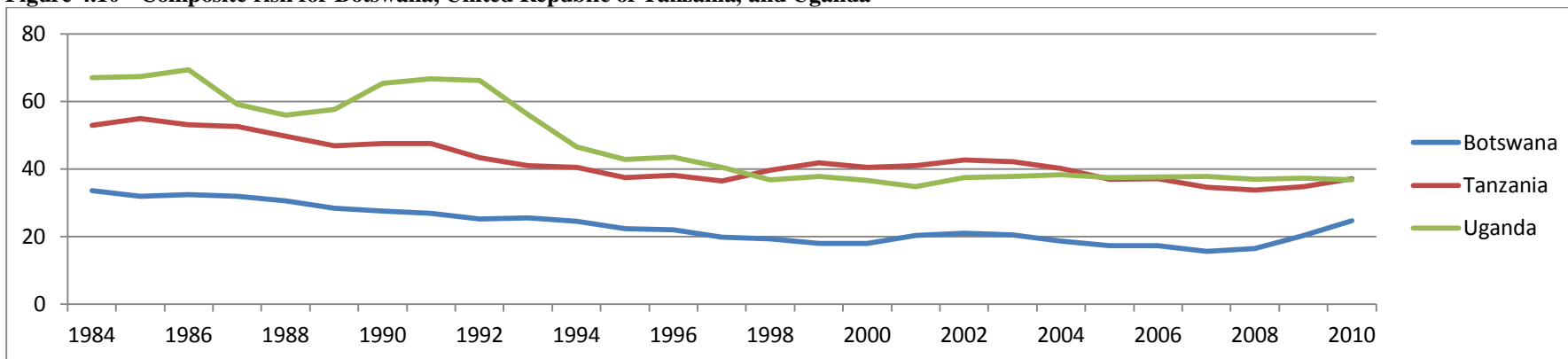
Source: ICRG Risk Ratings, 2012

Summary of the relationship between FDI inflows and composite risk ratings in Côte d'Ivoire, Madagascar, and Mozambique

Figure 4.11 shows the annual inward FDI flows to Côte d'Ivoire, Madagascar, and Mozambique. Of these three countries, Côte d'Ivoire received the largest amount of inward FDI flows between 1984 and 2010, followed by Madagascar and Mozambique respectively. The inward FDI flows to Côte d'Ivoire increased substantially from 1995, and have been fairly stable since 2000. FDI flows into Madagascar have been on an upward trend since 2005, while in Mozambique the inward FDI flows have been on an upward trend since the late 1990s.

Côte d'Ivoire is the world's largest producer and exporter of cocoa beans (Alliance of Cocoa Producing Countries, 2013). The country is also heavily involved in the production and export of coffee and palm oil. As such, large foreign investments have been received in the agricultural sector. The oil and gas sector is also a major recipient of FDI in Côte d'Ivoire. Madagascar receives FDI flows in the mining and extractive industry, manufacturing, financial services, hotels, and restaurants (Bureau of Economic, Energy and Business Affairs, 2011). The foreign investments into Mozambique are in coal, oil and gas, food, tobacco, metals, financial services, and communications (Ernst & Young, 2011b).

Figure 4.12 shows the composite risk ratings for Côte d'Ivoire, Madagascar, and Mozambique. Côte d'Ivoire has the lowest average composite risk rating, followed by Madagascar and Mozambique respectively. Côte d'Ivoire's composite risk rating was quite stable throughout the 1990s and increased slightly after 2000, following increased political instability during this time. Mozambique's composite risk has been on a downward trend since 1984. The composite risk rating for Madagascar decreased from 1984 to 2000 and has been fairly stable since then. After examining the average composite risk rating of all the countries from 1984 to 2010, Côte d'Ivoire is ranked number 14, Madagascar is ranked number 19, and Mozambique is ranked number 27 out of the 35 countries included in this research.

Figure 4.11 - Inward FDI flows to Côte d'Ivoire, Madagascar, and Mozambique (Millions of US$)
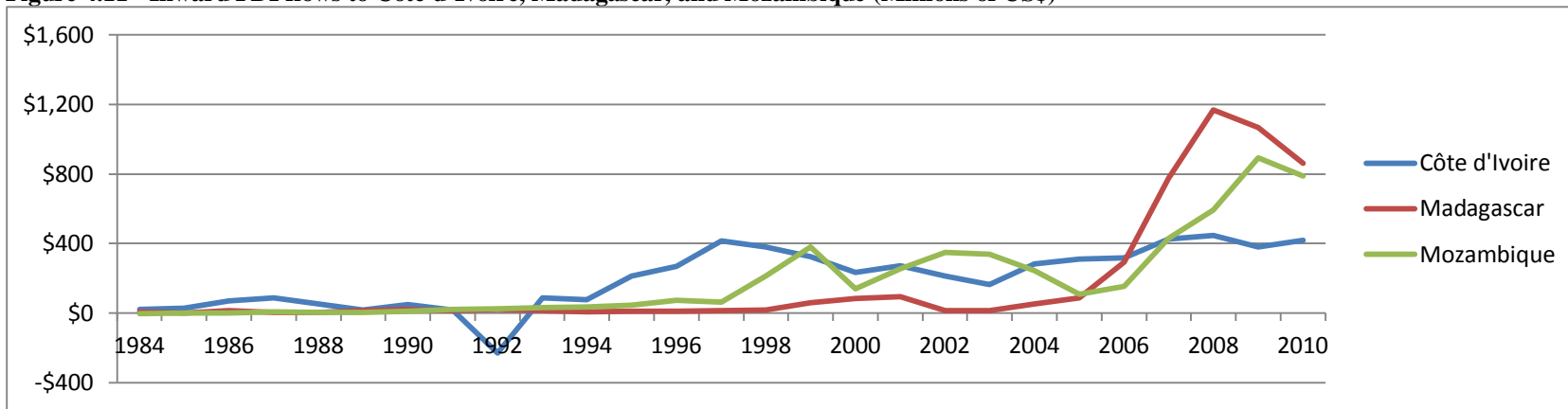
Source: World Bank Indicators, 2011b

Figure 4.12 - Composite risk for Côte d'Ivoire, Madagascar, and Mozambique
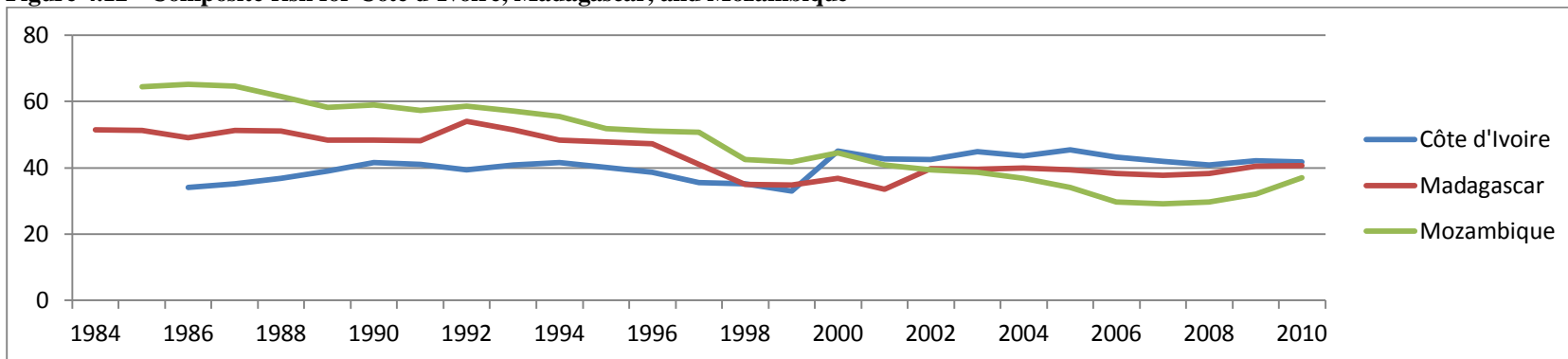
Source: ICRG Risk Ratings, 2012

Summary of the relationship between FDI inflows and composite risk ratings in Ethiopia, Liberia, and Namibia

Figure 4.13 shows the annual inward FDI flows to Ethiopia, Liberia, and Namibia. Of these three countries, Ethiopia received the largest inward FDI flows between 1984 and 2010, followed by Liberia and Namibia respectively. The graph illustrates that the inward FDI flows to Ethiopia have been volatile since 1997. The FDI flows into Liberia have been volatile since 1984. The volatility of inward FDI flows to Liberia may be explained by political instability that the country has faced in the past. Between 1986 and 2003, Liberia underwent periods of civil war. The FDI flows into Namibia have been quite stable since 1984 and have increased substantially since 2007.

Foreign investments into Ethiopia have been in sectors such as coal, oil, natural gas, financial services, food, tobacco, beverages, and communications (Ernst & Young, 2011b). In Liberia, there are opportunities to invest in agriculture, manufacturing, and the service sector. Liberia's main export is rubber and there is an increasing production of iron ore (Bureau of Economic and Business Affairs, 2012). Namibia receives large investments in the mining and extraction industry. Foreign investments into Namibia can also be made in agriculture, fishery, and tourism.

Figure 4.14 shows the composite risk ratings for Ethiopia, Liberia, and Namibia. Namibia has the lowest average composite risk rating, followed by Ethiopia and Liberia respectively. Namibia's composite risk rating is very low and has been stable since the mid-1990s. Ethiopia's composite risk rating declined from 1993 until 1998 and then stabilised from 2000 onwards. Liberia's composite risk rating is high reflecting the unstable political climate the country has faced in the past. Nevertheless, Liberia's composite risk has been on a downward trend since 1995. After examining the average composite risk rating of all the countries from 1984 to 2010, Ethiopia is ranked number 29, Liberia is ranked number 35, while Namibia is ranked second out of the 35 countries examined in this research. Namibia's strong economic health, financial strength, and political stability have allowed the country to receive constant FDI inflows. Liberia has the highest average composite risk out of the 35 countries considered in this research.

Figure 4.13 - Inward FDI flows to Ethiopia, Liberia, and Namibia (Millions of US$)

Source: World Bank Indicators, 2011b

Figure 4.14 - Composite risk for Ethiopia, Liberia, and Namibia
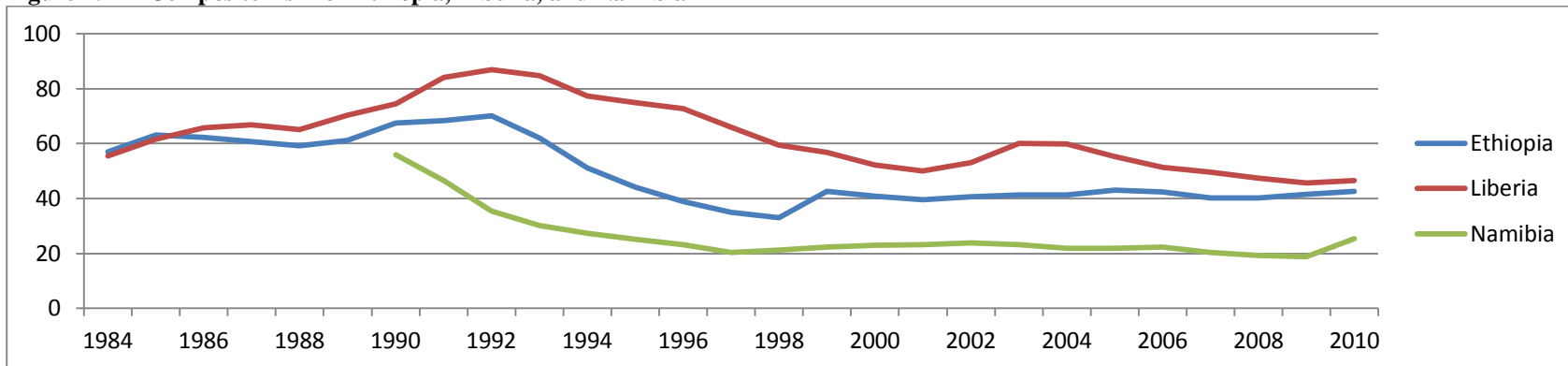
Source: ICRG Risk Ratings, 2012

Summary of the relationship between FDI inflows and composite risk ratings in Cameroon, Niger, and Senegal

Figure 4.15 shows the annual inward FDI flows to Cameroon, Niger, and Senegal. Of these three countries, Cameroon received the highest FDI inflows between 1984 and 2010, followed by Niger and Senegal respectively. The FDI inflows into Cameroon have been volatile since 2004. The FDI inflows into Niger have been stable since 1984, and experienced a large increase from 2007 onwards. The inward FDI flows to Senegal have been fairly stable since the mid-1990s, and rising sharply in 2006.

The sectors that receive foreign investments in Senegal include software and information technology services, automotive manufacturing, metals, financial services, and hotel and tourism (Ernst & Young, 2011b). Cameroon is rich in minerals, has favourable agricultural conditions, and oil reserves. As such, Cameroon has received foreign investments in these sectors. Niger is one of the largest uranium producers in the world and receives foreign investments in the mining sector. Niger also attracts FDI in the oil and communications sectors (globalEDGE, 2012c).

Figure 4.16 shows the composite risk ratings for Cameroon, Niger, and Senegal. Senegal has the lowest average composite risk, followed by Cameroon and Niger respectively. Senegal's composite risk has been fairly stable since 1984. Cameroon's composite risk has been on a downward trend since 1995 indicating that the country has had increasing economic health, financial strength, and political stability. The composite risk rating of Niger in 2010 is not very different from what it was in 1984. This indicates that Niger needs to take steps towards improving its economic health, financial strength, and political stability.

After examining the average composite risk rating of all countries from 1984 to 2010, Cameroon is ranked number 12, Niger is ranked number 21, while Senegal is ranked number 10 out of the 35 countries examined in this research. These countries still have components of economic health, financial strength, and political stability that they can improve on so as to make their countries even more attractive to investors.

Figure 4.15 - Inward FDI flows to Cameroon, Niger, and Senegal (Millions of US$)
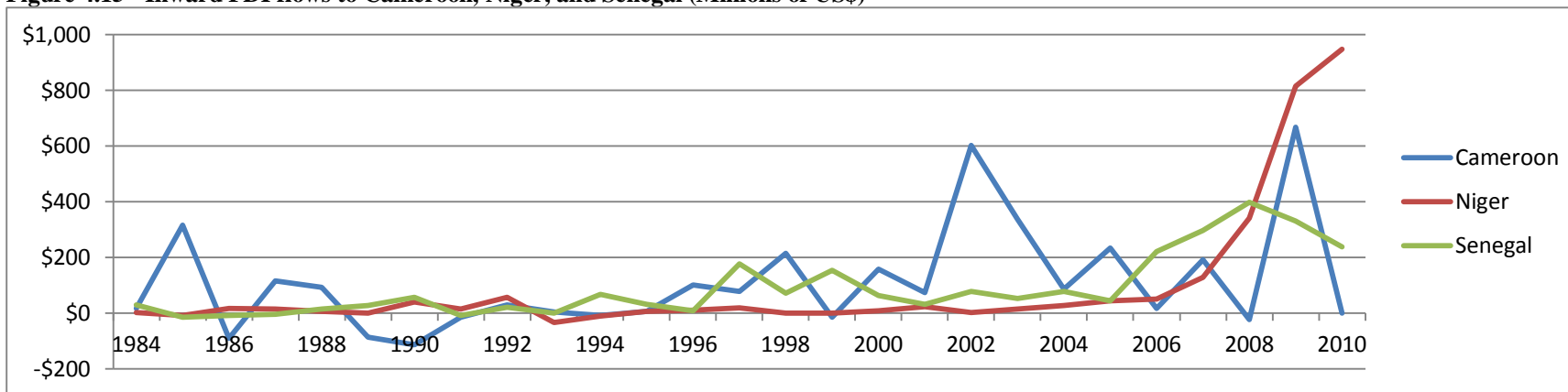
Source: World Bank Indicators, 2011b

Figure 4.16 - Composite risk for Cameroon, Niger, and Senegal
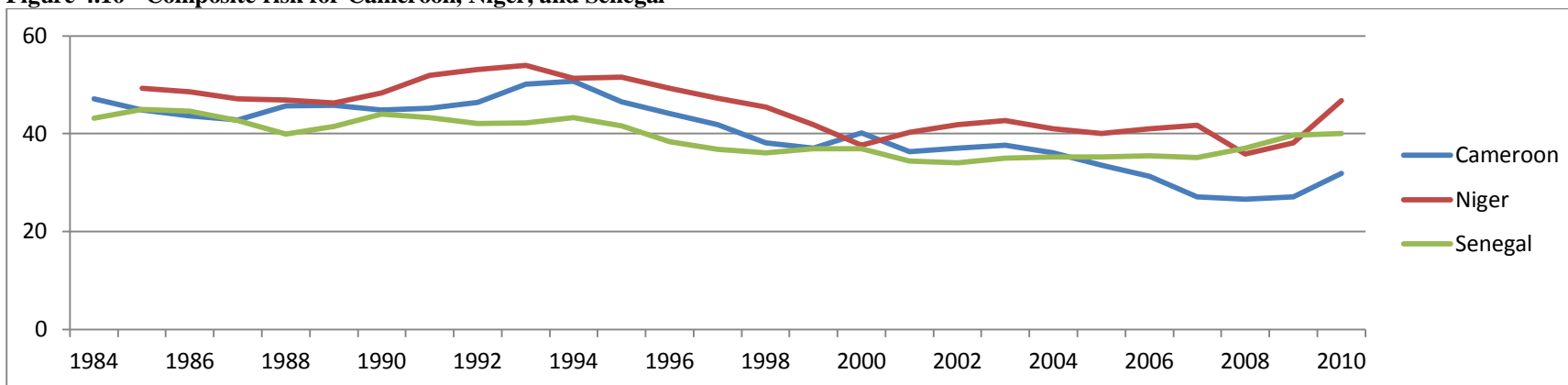
Source: ICRG Risk Ratings, 2012

Summary of the relationship between FDI inflows and composite risk ratings in Guinea, Kenya, and Mali

Figure 4.17 shows the annual inward FDI flows to Guinea, Kenya and Mali. Of these three countries, Guinea received the largest FDI inflows between 1984 and 2010 followed, by Kenya and Mali respectively. The FDI flows into Guinea, Kenya, and Mali have been on an upward trend since 2003. In 2008, Kenya had a sharp decline in inward FDI following the post-election violence that the country faced at the end of 2007 and early 2008. Guinea faced a decline in inward FDI in 2009, while Mali noticed a decrease in inward FDI in 2010. The decrease in FDI flows into Guinea and Mali may be the result of effects from the Global Financial Crisis.

Guinea has received investments in the mining and renewable energy sectors. The agricultural and fishing sectors in Guinea also offer a good opportunity for investment (globalEDGE, 2011). Kenya receives foreign investments in communications, financial services, software and information technology services, consumer electronics, food, and tobacco (Ernst & Young, 2011b). Mali receives FDI in mining, manufacturing, and food processing (Bureau of Economic and Business Affairs, 2012).

Figure 4.18 shows the composite risk ratings for Guinea, Kenya, and Mali. The composite risk ratings for these three countries were on a downward trend from 1984 to 2000. This shows that Guinea, Kenya, and Mali experienced increased economic health, financial strength, and political stability in their countries during this time. Since the year 2000, the composite risk ratings for Kenya and Mali have been stable. Guinea's composite risk rating rose in 2005, reflecting the country's increased political instability during this time. After examining the average composite risk rating of all the countries from 1984 to 2010, Guinea is ranked number 26, Kenya is ranked number 11, and Mali is ranked number 24 out of the 35 countries considered in this research.

Figure 4.17 - Inward FDI flows to Guinea, Kenya, and Mali (Millions of US$)
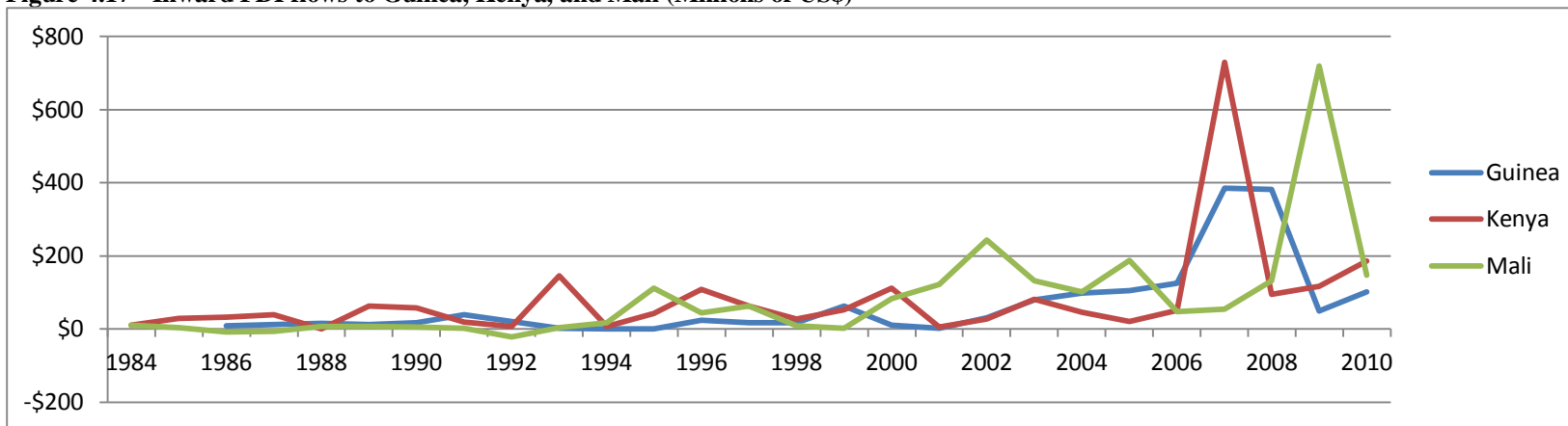
Source: World Bank Indicators, 2011b

Figure 4.18 - Composite risk for Guinea, Kenya, and Mali
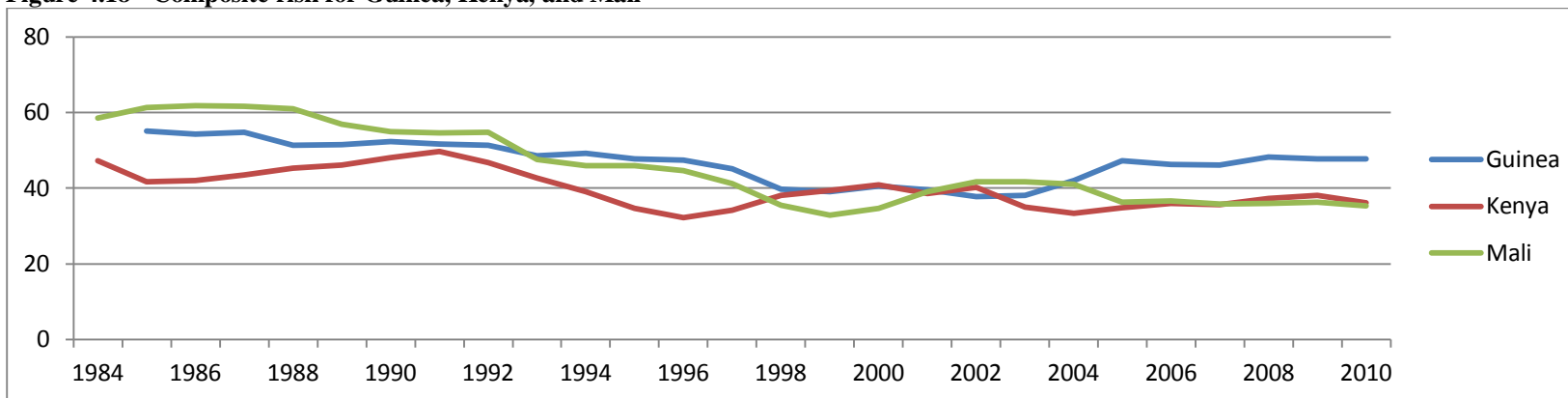
Source: ICRG Risk Ratings, 2012

Summary of the relationship between FDI inflows and composite risk ratings in Burkina Faso, Malawi, and Zimbabwe

Figure 4.19 shows the annual inward FDI flows to Burkina Faso, Malawi, and Zimbabwe. Of these three countries, Burkina Faso received the largest FDI inflows between 1984 and 2010, followed by Malawi and Zimbabwe respectively. The inward FDI flows to Burkina Faso have been stable since 1984 and increased substantially in 2007. However, in 2008 the FDI inflows to Burkina Faso experienced a decline. Malawi's FDI inflows have been on an upward trend since 2003. The FDI flows into Zimbabwe faced a sharp decline in 1999, but started increasing again from 2005.

The mining and agricultural sectors (especially livestock and cotton) in Burkina Faso make a large contribution to the country's GDP (globalEDGE, 2012a). Burkina Faso receives foreign investments in the mining sector, as well as in business services. Malawi's economy is heavily reliant on agriculture, and significant foreign investments have been made in this sector. There have also been FDI flows into the uranium sector in Malawi, with the opening of a large uranium mine in 2009 (globalEDGE, 2012b). The FDI inflows into Zimbabwe mainly flow into agriculture and mining.

Figure 4.20 shows the composite risk ratings for Burkina Faso, Malawi, and Zimbabwe. The composite risk ratings for these three countries were on a downward trend from 1984 to 1998. Since 1998, the composite risk ratings for Burkina Faso and Malawi have been fairly stable. However, the graph shows that Zimbabwe's composite risk rating started increasing from 1998 to 2005, and has remained at a high level since then. This shows that there has been decreasing economic health, financial strength, and political stability in Zimbabwe from 1998. It is noted that 1998 was the same year that Zimbabwe faced a large decline in FDI inflows. After examining the average composite risk rating of all countries from 1984 to 2010, Burkina Faso is ranked number 15, Malawi is ranked number 17, and Zimbabwe is ranked number 30 out of the 35 countries examined in this research.

Figure 4.19 - Inward FDI flows to Burkina Faso, Malawi, and Zimbabwe (Millions of US$)
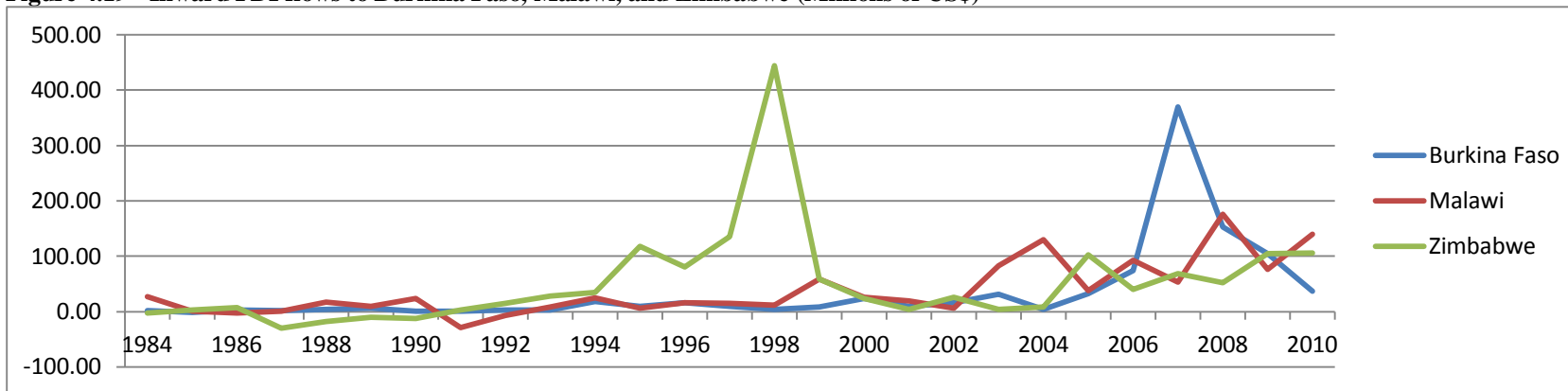
Source: World Bank Indicators, 2011b

Figure 4.20 - Composite risk for Burkina Faso, Malawi, and Zimbabwe
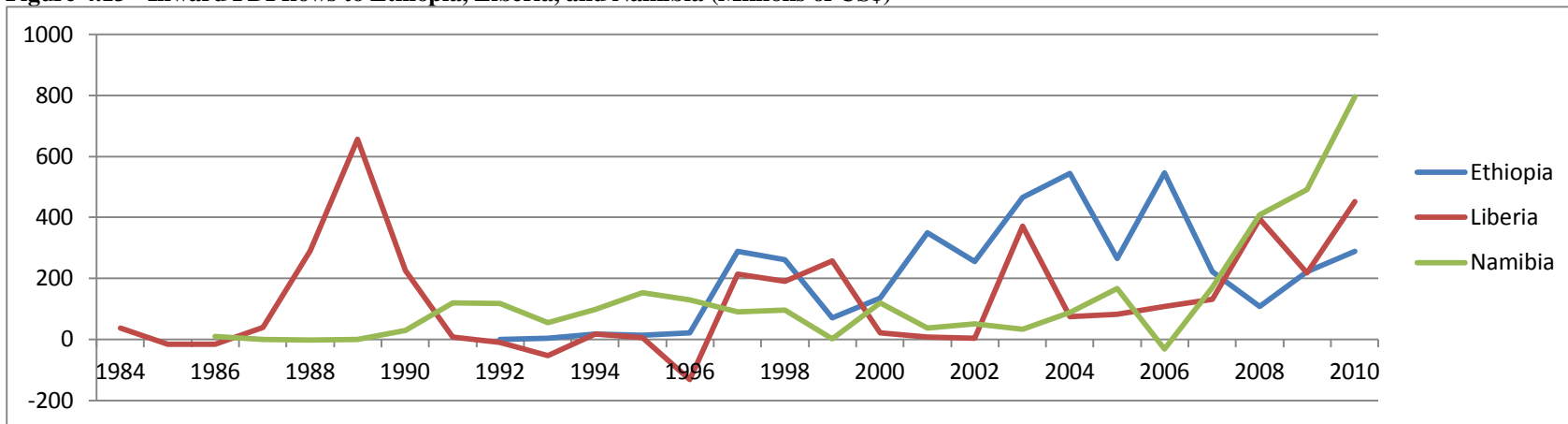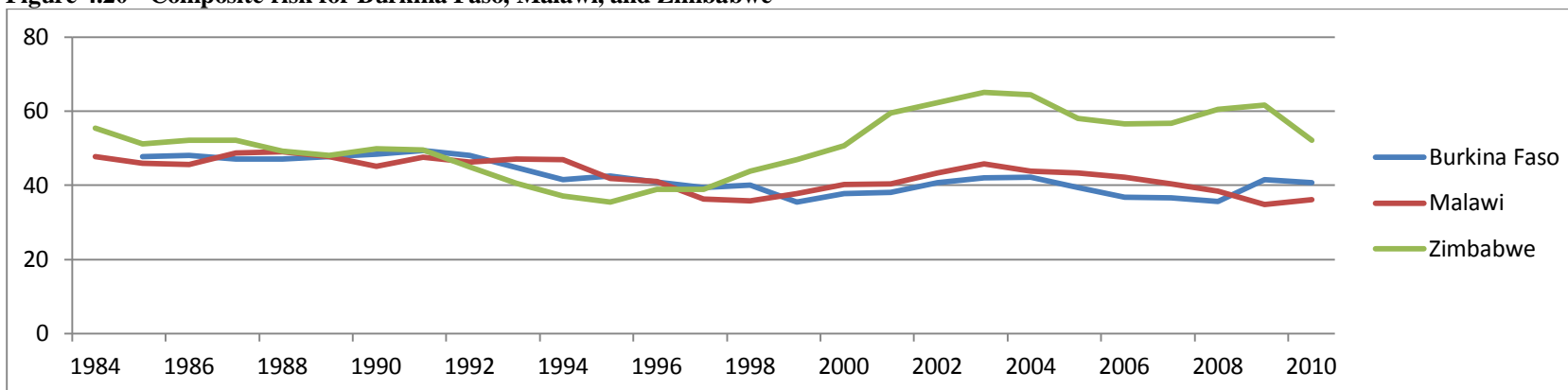

Source: ICRG Risk Ratings, 2012

Summary of the relationship between FDI inflows and composite risk ratings in Gabon, Gambia, and Togo

Figure 4.21 shows the annual inward FDI flows to Gabon, Gambia, and Togo. Of these three countries, Gabon received the largest inward FDI flows between 1984 and 2010, followed by Gambia and Togo respectively. The FDI flows into Gabon have been very volatile since 1984. The FDI flows into Gambia and Togo have been stable since 1984, and started rising gradually from 2004.

Gabon's economy is heavily reliant on oil production, and the country has received large foreign investments in this sector. Gabon also receives FDI in the timber and mineral sectors. The Togolese Government encourages foreign investments in the transportation, agriculture, and mining sectors (Bureau of Economic and Business Affairs, 2012). There are opportunities for foreign investors to invest in sectors that contribute to Gambia's economy, such as services, agriculture, manufacturing, telecommunications, mining, and quarrying (African Economic Outlook, 2012).

Figure 4.22 shows the composite risk ratings for Gabon, Gambia and Togo. Gabon has the lowest composite risk rating, followed by Gambia, and Togo respectively. Gabon's composite risk rating has been quite stable since 1984 and started declining further in 2005. This shows that there is increasing economic health, financial strength, and political stability in Gabon. Gambia's composite risk rating was on a downward trend between 1984 and 1994. Since 1998 Gambia's country's composite risk has been fairly stable and then started increasing in 2009. Togo's composite risk was on a downward trend from 1994 until 1998. Since 1998, Togo's composite risk rating has been stable.

After examining the average composite risk rating of all the countries from 1984 to 2010, Gabon is ranked fourth, Gambia is ranked number seven, and Togo is ranked number 20 out of the 35 countries examined in this research. Both Gabon and Gambia have composite risk ratings that are quite strong in comparison to other African countries. It is noted that both Gabon and Gambia have received substantial inward FDI as a percentage of their GDP.

Figure 4.21 - Inward FDI flows to Gabon, Gambia, and Togo (Millions of US$)
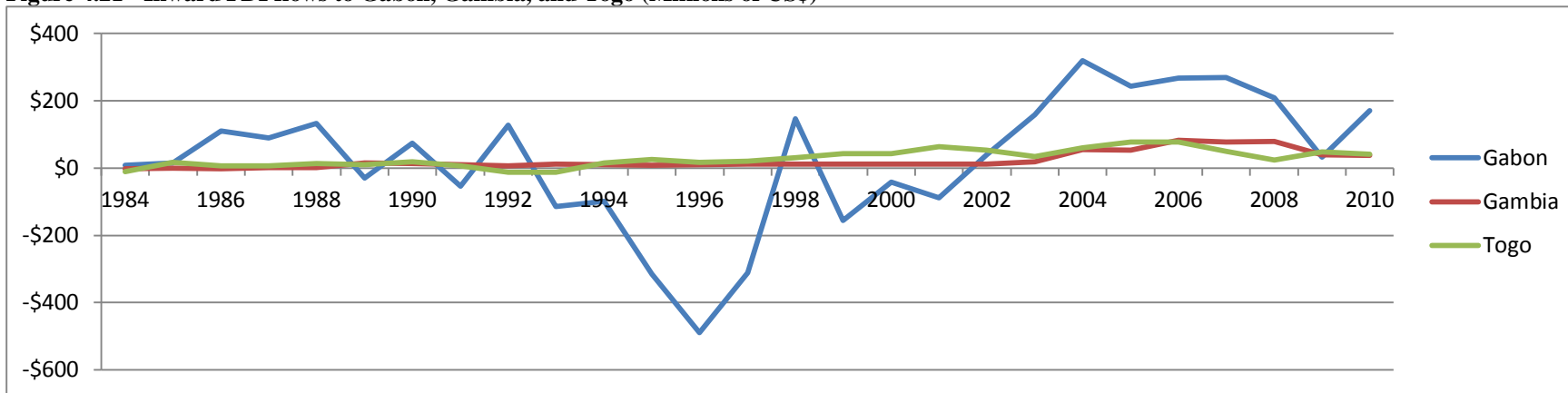
Source: World Bank Indicators, 2011b

Figure 4.22 - Composite risk for Gabon, Gambia, and Togo
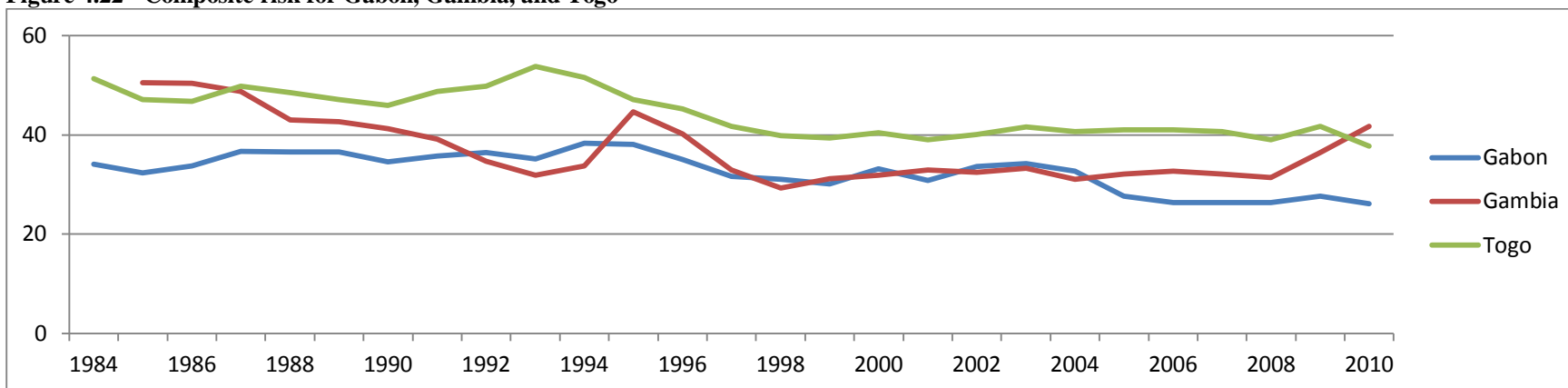
Source: ICRG Risk Ratings, 2012

Summary of the relationship between FDI inflows and composite risk ratings in Guinea-Bissau and Sierra Leone

Figure 4.23 shows the annual inward FDI flows to Guinea-Bissau and Sierra Leone. Between 1984 and 2010, Sierra Leone received more FDI inflows than Guinea-Bissau. The FDI flows into Sierra Leone were volatile in the 1980s, and then stabilised in the 1990s. Since 2004, the FDI flows into Sierra Leone have been on an upward trend. The FDI flows into Guinea-Bissau have been on an upward trend since 2005. Foreign investment opportunities in Guinea-Bissau are available in the oil sector, mining, agriculture, fishing, and tourism (Credit Agricole, 2013). Sierra Leone is rich in minerals and has received large investments in this sector. There have also been increased foreign investments in agriculture, energy, infrastructure, fishing, petroleum, and tourism in this country (Bureau of Economic and Business Affairs, 2012).

Figure 4.24 shows the composite risk ratings for Guinea-Bissau and Sierra Leone. The composite risk rating for Guinea-Bissau was stable between 1984 and 1994. However, since 1995 Guinea Bissau's composite risk has been on a downward trend. This indicates that the country is experiencing increasing economic health, financial strength, and political stability. The composite risk in Sierra Leone has been on a downward trend since the year 2000. However, between 1990 and 2000, there were periods of increased composite risk in Sierra Leone. The increased composite risk rating during this time reflects increased political instability that Sierra Leone faced following the civil war in that country between 1991 and 2002.

After examining the average composite risk rating of all the countries from 1984 to 2010, Guinea-Bissau is ranked number 32, while Sierra Leone is ranked number 31 out of the 35 countries examined in this research. Both Guinea-Bissau and Sierra Leone have had to deal with the challenges of civil war in their countries. The civil war in Guinea-Bissau took place between June 1998 and May 1999. The political instability that both of these countries went through has had a negative impact on their economic and financial strength as well. As such, Guinea-Bissau and Sierra Leone need to continue towards creating an environment that is able to attract investors in their countries. A good starting point would be to try and address the components that make up the ICRG economic, financial, and political risk ratings.

Figure 4.23 - Inward FDI flows to Guinea-Bissau and Sierra Leone (Millions of US$)
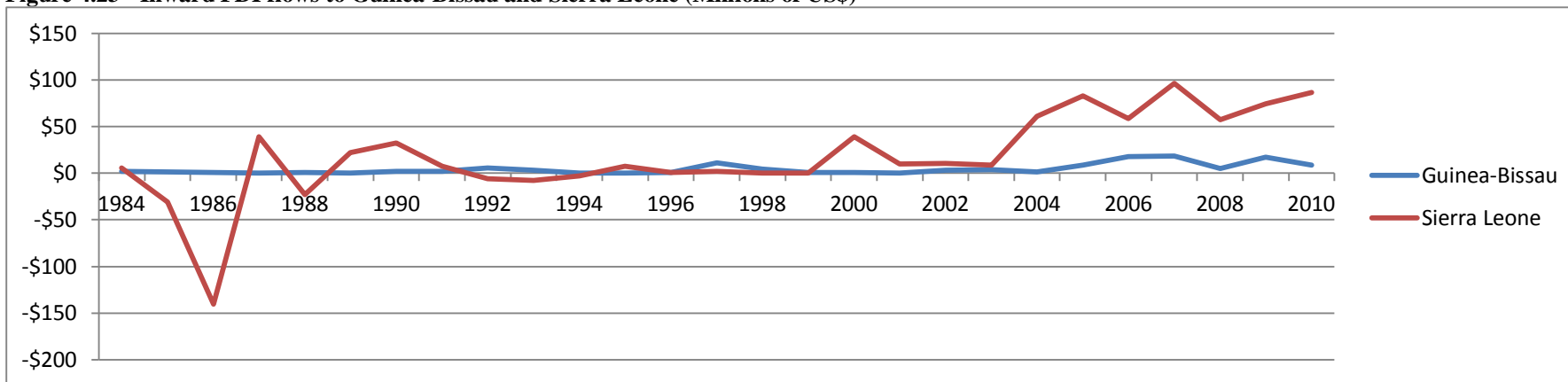
Source: World Bank Indicator, 2011b

Figure 4.24 - Composite risk for Guinea Bissau and Sierra Leone
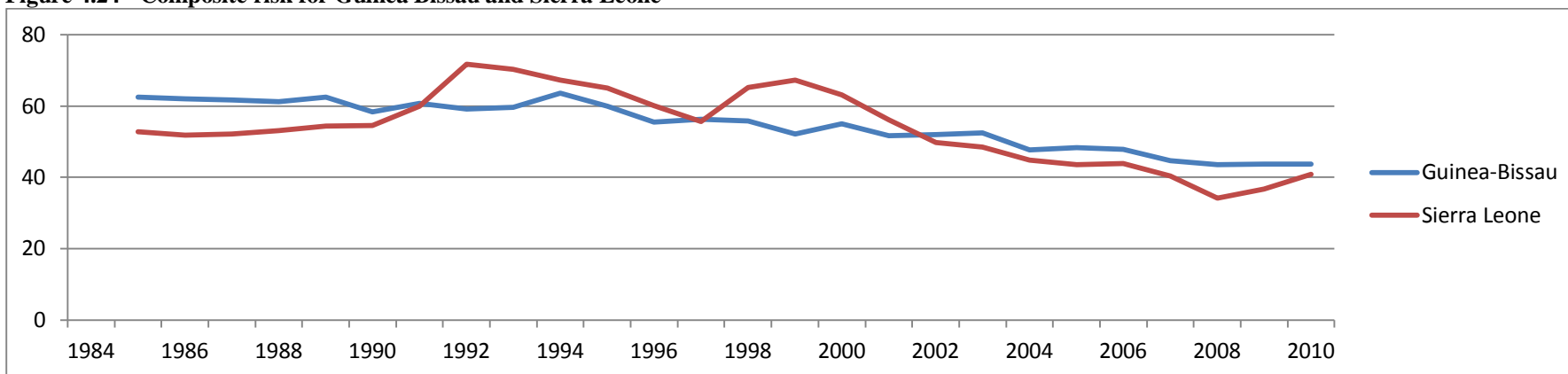
Source: ICRG Risk Ratings, 2012

4.11 Simple hypothesis testing for economic risk

The ICRG economic risk rating assesses a country's economic situation in terms of its GDP per capita, real GDP growth, annual inflation rate, budget balance as a percentage of GDP, and current account as a percentage of GDP. The economic risk rating is based on 50 points. The higher the risk rating, the lower the economic risk and vice versa. In this research, the economic risk data was multiplied by 2 to obtain a number based on 100 points. This number was then subtracted from 100 to obtain data that shows the higher the risk rating, the higher the economic risk (poor economic health); and the lower the risk rating, the lower the economic risk (strong economic health).

Of the 35 countries examined in this research, Botswana had the lowest average economic risk rating, while Mozambique had the highest average economic risk rating between 1984 and 2010. This indicates that Botswana had the highest economic health, while Mozambique had the lowest economic health. Botswana is known to be one of the most stable countries in Africa. Since its independence from the UK in 1966, Botswana has also maintained one of the highest economic growth rates in Africa. This has not been the case for many African nations facing high levels of poverty[65], large income inequality, and in some cases civil war. As a result of the good management of its economy and resources, Botswana has transformed itself from one of the poorest nations in the world into a middle income country (Central Intelligence Agency, 2012). Mozambique was faced with civil war between 1977 and 1992; however, this country is well on its path to recovery. There has been growth in mining projects (especially coal), improvements in infrastructure and credit expansion to the private sector. These factors have helped to drive the country's real GDP growth upwards (African Economic Outlook, 2013b).

Using the simple hypothesis test, it was possible to verify whether or not the average economic risk rating for the other countries was different from that of Botswana, which was used as the benchmark country. The null hypothesis is that the average economic risk rating for the country being examined is not different from that of Botswana. The alternative hypothesis is that the average economic risk rating for the

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[65]In 2010, 47.5% of the population in Sub-Saharan Africa was living on less than US$1.25 a day based on 2005 international prices (World Bank, 2013h).

country being examined is different from that of Botswana. As seen in Table 4.3 the p-value for each country was significant at the 1% significance level. The null hypothesis was rejected, and the alternative hypothesis stating that the average economic risk rating for all other nations is different from that of Botswana, was accepted.

Gabon had the second lowest average economic risk rating followed by Namibia. Gabon's economy has been heavily reliant on oil production since independence in 1960. Oil makes up 60% of government revenue, and 75% of export revenue (African Economic Outlook, 2013a). Nevertheless, Gabon is working on diversifying its economy, creating a business friendly environment, and reforming the financial sector. Namibia's economy slowed down in 2011, due to the weak performance in the mining and agricultural sectors. However, GDP growth is expected to be driven upwards by construction, livestock, crop farming, manufacturing, and mining (African Economic Outlook, 2013c). Namibia is ranked in the World Bank's *Doing Business* report as one of the best performers in Africa. In 2012, the country was ranked number 87 globally (World Bank, 2011a).

Table 4.4: Simple hypothesis test results for economic risk (1984 to 2010)

Test of Hypothesis: average economic risk rating for Botswana = 17.959

Country	Average economic risk rating	t-statistic	p-value
Algeria	32.637	5.245***	0.000
Angola	36.827	7.514***	0.000
Burkina Faso	34.490	17.508***	0.000
Cameroon	31.930	9.540***	0.000
Côte d'Ivoire	34.621	9.718***	0.000
DRC	50.352	16.320***	0.000
Egypt	35.264	8.501***	0.000
Ethiopia	42.685	13.325***	0.000
Gabon	22.561	3.025***	0.006
Gambia	35.099	7.578***	0.000
Ghana	42.103	21.304***	0.000
Guinea	40.094	18.043***	0.000
Guinea-Bissau	57.092	15.729***	0.000
Kenya	39.311	18.993***	0.000
Liberia	53.305	11.434***	0.000
Libya	30.637	4.318***	0.000
Madagascar	44.182	15.942***	0.000
Malawi	43.688	21.578***	0.000
Mali	39.712	12.261***	0.000
Mozambique	58.996	10.748***	0.000
Namibia	25.170	4.775***	0.000
Niger	39.686	18.101***	0.000
Nigeria	38.758	11.298***	0.000
Republic of the Congo	33.448	5.880***	0.000
Senegal	34.776	12.010***	0.000
Sierra Leone	51.314	17.542***	0.000
South Africa	30.382	15.022***	0.000
Sudan	46.413	10.356***	0.000
Tanzania	45.675	12.509***	0.000
Togo	35.654	19.612***	0.000
Tunisia	31.465	10.716***	0.000
Uganda	45.277	7.494***	0.000
Zambia	48.436	19.173***	0.000
Zimbabwe	55.584	14.240***	0.000

Significant t-values at *10%, **5% and ***1%

Figure 4.25: Average economic risk rating (1984 -2010)
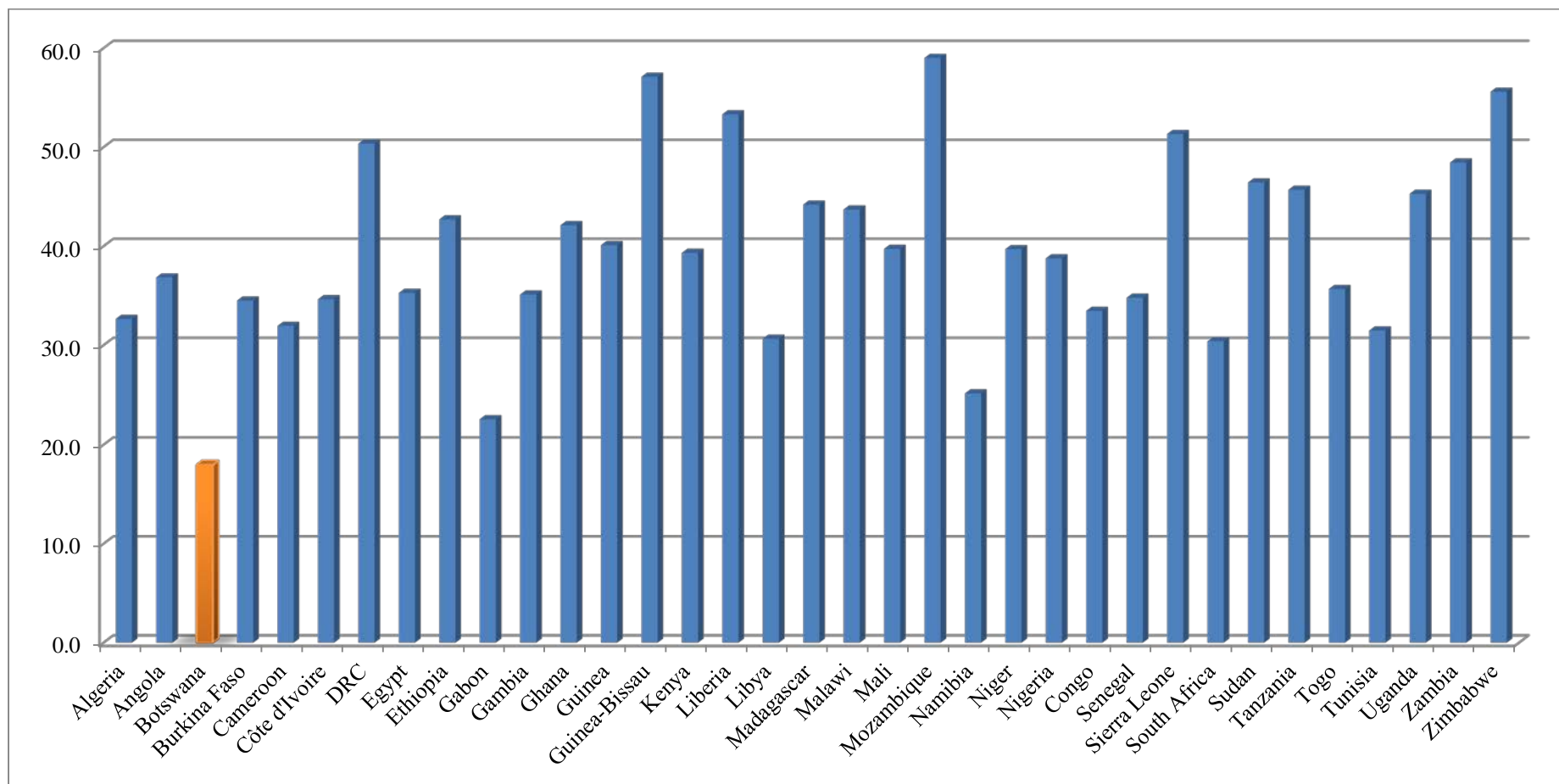
Source: ICRG Ratings, 2012. Countries: Algeria, Angola, Botswana, Burkina Faso, Cameroon, Côte d'Ivoire, Democratic Republic of the Congo, Egypt, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Libya, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Republic of the Congo, Senegal, Sierra Leone, South Africa, Sudan, United Republic of Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe.

4.12 Simple hypothesis testing for financial risk

The financial risk data aims to assess a country's financial situation in terms of its foreign debt as a percentage of GDP, foreign debt service as a percentage of exports of goods and services, current account as a percentage of exports of goods and services, net international liquidity as months of import cover, and exchange rate stability. The ICRG financial risk rating is based on 50 points. The higher the risk rating, the lower the financial risk and vice versa. In this research, the financial risk rating data was multiplied by 2 to obtain a number based on 100 points. This number was subtracted from 100 to obtain data that shows the higher the risk rating, the higher the financial risk (low financial strength); and the lower the risk rating, the lower the financial risk (increased financial strength).

Botswana had the lowest average financial risk rating out of all the countries examined in this research. This means that it was the country with the highest level of financial strength. Botswana's financial system is managed in a way that allows the country to make progress. Botswana has also been efficient in allocating its income from the mining of minerals in a way that promotes economic growth, thus benefiting the country. Liberia had the highest average financial risk rating, meaning that it had the lowest level of financial strength between 1984 and 2010. Liberia underwent its first civil war between 1989 and 1996; thereafter, a short period of peace was attained before the country went into its second civil war from 1999 to 2003. As expected, the internal conflict that Liberia faced has had a major impact on the country's economy thus leading to its low financial strength. Nevertheless, Liberia is working to improve the financial situation in the country. In 2011, the country received a US$5 million loan from the World Bank to improve fiscal policy management and financial control (World Bank, 2011c).

Using the simple hypothesis test, it was possible to test whether or not the average financial risk rating of the other countries was different from that of Botswana, which was used as the benchmark country. The null hypothesis is that the average financial risk rating for the country being examined is not different from that of Botswana. The alternative hypothesis is that the average financial risk rating for the country being examined is different from that of Botswana. As shown on Table 4.4 the p-value for each country was significant at the 5% significance level. The

alternative hypothesis was accepted, indicating that the average financial risk rating for all other nations in this study was different from that of Botswana. Namibia has the second lowest financial risk rating followed by Algeria.

Table 4.5: Simple hypothesis test results for financial risk (1984 to 2010)

Test of Hypothesis: average financial risk rating for Botswana = 20.265

Country	Average financial risk rating	t-statistic	p-value
Algeria	28.636	2.543**	0.017
Angola	47.385	7.407***	0.000
Burkina Faso	47.558	14.980***	0.000
Cameroon	37.111	8.276***	0.000
Côte d'Ivoire	37.823	12.112***	0.000
DRC	56.642	13.704***	0.000
Egypt	31.778	3.496***	0.002
Ethiopia	47.083	9.327***	0.000
Gabon	29.059	5.846***	0.000
Gambia	37.179	12.499***	0.000
Ghana	38.019	8.833***	0.000
Guinea	45.269	10.934***	0.000
Guinea-Bissau	58.750	33.218***	0.000
Kenya	34.688	7.350***	0.000
Liberia	70.821	23.217***	0.000
Libya	30.716	2.259**	0.033
Madagascar	48.622	11.752***	0.000
Malawi	43.846	18.121***	0.000
Mali	48.528	9.866***	0.000
Mozambique	42.624	11.445***	0.000
Namibia	26.996	2.122**	0.047
Niger	45.795	14.365***	0.000
Nigeria	36.315	4.108***	0.000
Republic of the Congo	45.822	8.825***	0.000
Senegal	37.537	12.678***	0.000
Sierra Leone	57.484	15.747***	0.000
South Africa	29.725	5.279***	0.000
Sudan	57.537	10.488***	0.000
Tanzania	44.796	11.078***	0.000
Togo	40.127	12.265***	0.000
Tunisia	34.895	6.178***	0.000
Uganda	43.315	7.495***	0.000
Zambia	50.466	12.934***	0.000
Zimbabwe	49.272	25.576***	0.000

Significant t-values at *10%, **5% and ***1%

Figure 4.26: Average financial risk rating (1984-2010)
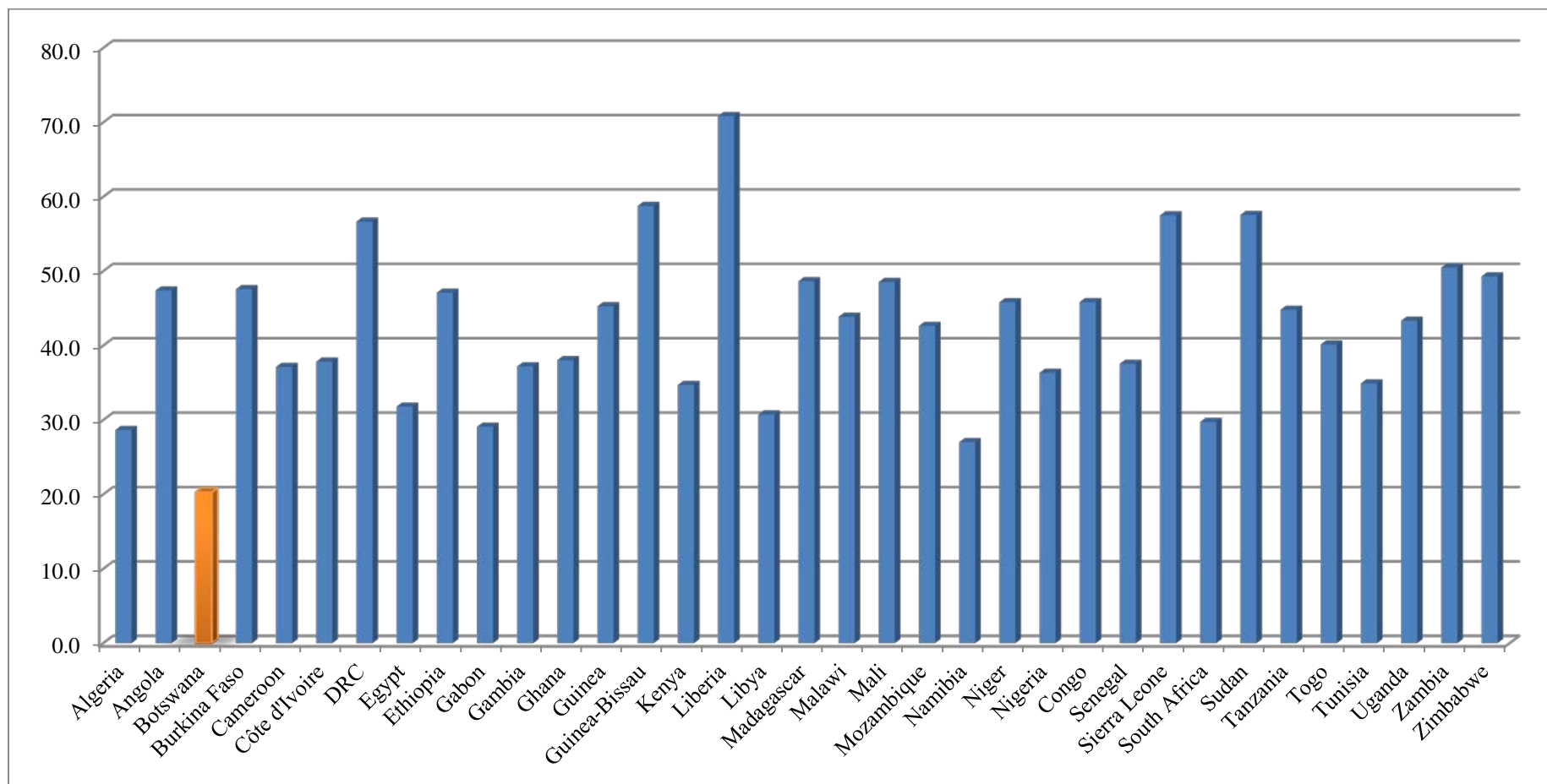
Source: ICRG Ratings, 2012. Countries: Algeria, Angola, Botswana, Burkina Faso, Cameroon, Côte d'Ivoire, Democratic Republic of the Congo, Egypt, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Libya, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Republic of the Congo, Senegal, Sierra Leone, South Africa, Sudan, United Republic of Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe.

4.13 Simple hypothesis testing for political risk

The political risk data assesses a country's political stability. The ICRG political risk rating is based on 100 points. The higher the risk rating, the lower the political risk and, vice versa. In this research, the original ICRG political risk data was subtracted from 100 in order to obtain data that shows the higher the risk rating, the higher the political risk (political instability); and the lower the risk rating, the lower the political risk (political stability).

Namibia had the lowest average political risk rating out of all the countries examined in the research. Botswana followed closely behind. Namibia and Botswana are among the most politically stable countries in Africa with the threat of civil unrest being low. The political situation in Namibia has been largely peaceful since its independence from South African control in 1990. In 2012, Namibia was ranked number 58 in the Transparency International Corruption Perceptions Index (Transparency International, 2012).

Botswana has been ranked as the country with the least amount of corruption in the African region. In 2012, Botswana was ranked number 30 out of the 176 countries covered in the Transparency International Corruption Perceptions Index (Transparency International, 2012). Sudan had the highest average political risk rating, showing that it was the most politically unstable country between 1984 and 2010. Sudan has had a long history of internal conflict between the people in the North and the South of the country. In July 2011, Sudan split into two countries, and South Sudan was formed. This decision was made so as to bring political stability to this region.

From this test, Namibia was chosen as the bench mark country. The null hypothesis is that the average political risk rating for the country being examined is no different from that of Namibia. The alternative hypothesis is that the average political risk rating for the country being examined is different from that of Namibia. The p-value for most of the countries was significant (Table 4.5). The null hypothesis is rejected and the alternative hypothesis that the average political risk of all the countries (except Botswana) is different from that of Namibia is accepted. Botswana had the second lowest average political risk rating, followed by Tunisia, the latter being

largely been a peaceful nation. However, it should be noted that the political situation in Tunisia has deteriorated since 2011. Many Tunisians were unhappy with the government and this led to large demonstrations throughout the country. This prompted the then-president Mr Zine el-Abidine Ben Ali, to step down. There is currently an interim parliament that was implemented in October 2011 (BBC, 2013a). Tunisia faced slowed economic growth in 2013 partly due to security concerns in the country and poor economic conditions in the European Union.

Table 4.6: Simple hypothesis test results for political risk (1984 to 2010)

Test of Hypothesis: average political risk rating for Namibia = 26.567

Country	Average political risk rating	t-statistic	p-value
Algeria	46.062	12.810***	0.000
Angola	50.929	18.063***	0.000
Botswana	27.503	1.057	0.300
Burkina Faso	43.788	12.785***	0.000
Cameroon	45.526	16.155***	0.000
Côte d'Ivoire	44.347	9.243***	0.000
DRC	66.022	44.168***	0.000
Egypt	42.097	10.432***	0.000
Ethiopia	53.829	11.123***	0.000
Gabon	39.519	32.703***	0.000
Gambia	37.978	7.387***	0.000
Ghana	40.448	8.099***	0.000
Guinea	51.288	35.687***	0.000
Guinea-Bissau	51.564	24.558***	0.000
Kenya	42.928	17.593***	0.000
Liberia	63.545	13.251***	0.000
Libya	43.418	7.857***	0.000
Madagascar	40.906	17.132***	0.000
Malawi	42.225	12.080***	0.000
Mali	47.406	10.165***	0.000
Mozambique	44.006	8.444***	0.000
Niger	48.034	17.015***	0.000
Nigeria	53.853	33.271***	0.000
Republic of the Congo	47.316	24.817***	0.000
Senegal	42.426	32.484***	0.000
Sierra Leone	53.606	11.351***	0.000
South Africa	34.733	6.392***	0.000
Sudan	66.951	20.904***	0.000
Tanzania	39.508	12.579***	0.000
Togo	50.864	24.872***	0.000
Tunisia	34.520	4.050***	0.000
Uganda	50.821	13.808***	0.000
Zambia	41.867	8.563***	0.000
Zimbabwe	50.040	12.445***	0.000

Significant t-values at *10%, **5% and ***1%

Figure 4.27: Average political risk rating (1984-2010)
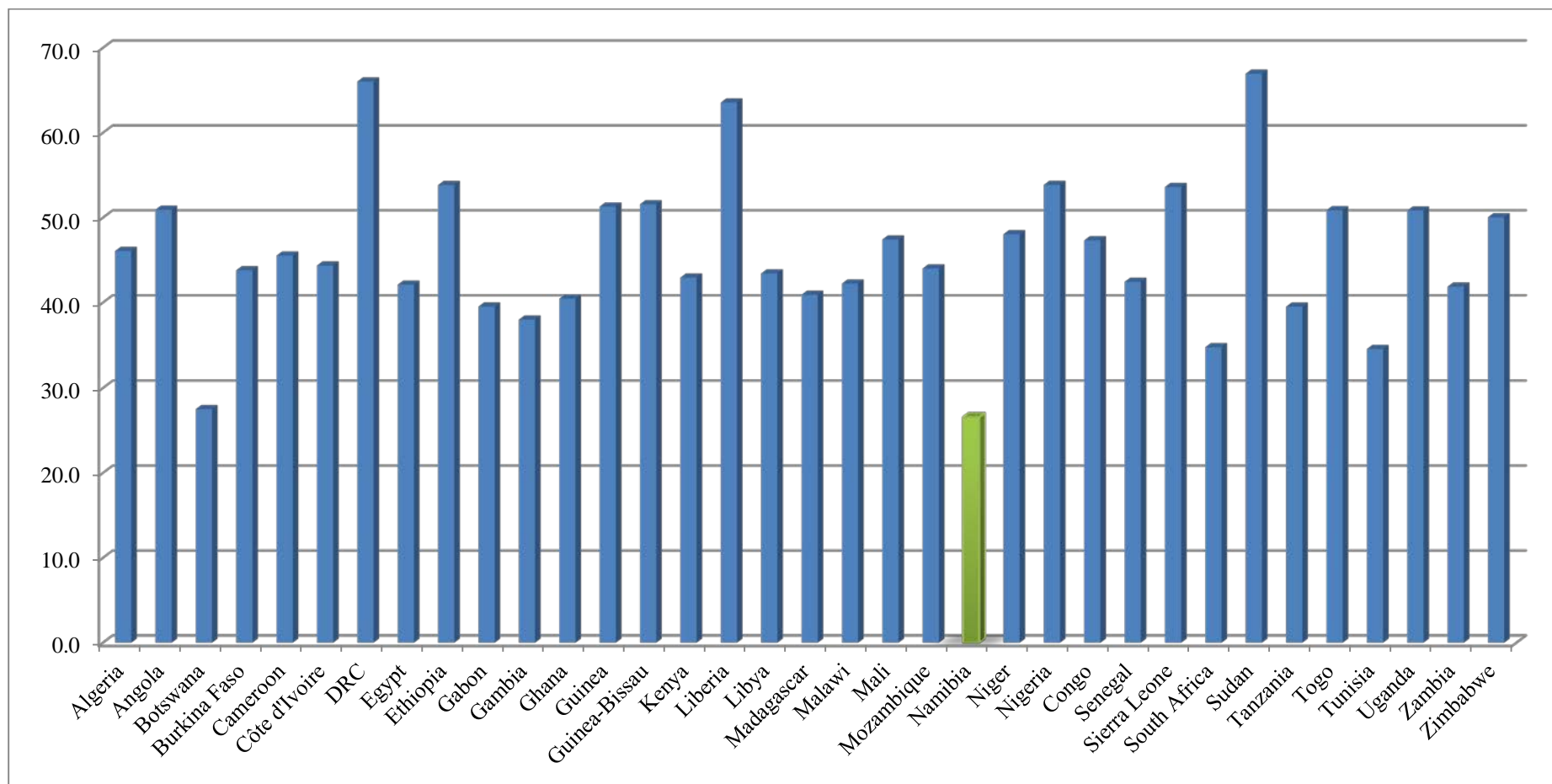
Source: ICRG Ratings, 2012. Countries: Algeria, Angola, Botswana, Burkina Faso, Cameroon, Côte d'Ivoire, Democratic Republic of the Congo, Egypt, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Libya, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Republic of the Congo, Senegal, Sierra Leone, South Africa, Sudan, United Republic of Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe.

4.14 Discussion of economic, financial and political risk ratings

Enjoying strong economic and financial strength, as well as political stability has benefited Botswana in being recognised as one of the most stable countries in Africa. This makes it an attractive country for foreign investment, which assists in further economic growth. Between 1984 and 2010, none of the other 34 countries had an average financial risk rating similar to that of Botswana. Further, Botswana had the lowest average financial risk rating (highest financial strength) followed by Namibia, Algeria, Gabon, and South Africa. Botswana was also found to have the lowest average economic risk rating (strongest economic health). This was followed by Gabon, Namibia, South Africa, and Libya.

South Africa is among the top recipients of inward FDI to Africa, with most investments flowing into manufacturing, mining, tourism, agriculture, construction, and services. Namibia, Botswana, and Gabon also attract significant amounts of foreign investment in the extractive industries. Algeria has received foreign investment in sectors such as energy (oil and natural gas), telecommunications, and tourism. The results further indicate that Liberia and Guinea-Bissau had the lowest average financial strength between 1984 and 2010, while Guinea-Bissau and Mozambique had the lowest average economic health. In the past, Guinea-Bissau, Liberia, and Mozambique have gone through civil war, with the subsequent negative impact on the economic and financial climate in their countries.

Namibia was found to be the most politically stable country in Africa, followed closely by Botswana. However, it should be noted that there is missing data for Namibia from 1984 until 1990. Sudan and the Democratic Republic of the Congo were found to be amongst the most politically unstable countries in Africa between 1984 and 2010. Nevertheless, both of these countries continue to receive substantial amounts of inward FDI due to the availability of natural resources, such as oil and other minerals. The top ten recipients of inward FDI in the Continent between 1984 and 2010 were Egypt, Nigeria, South Africa, Sudan, Tunisia, Algeria, Libya, Angola, Republic of the Congo, and Ghana (World Bank, 2011b).

4.15 Conclusion

This Chapter describes the data utilised in this research, as well as the methods undertaken for data analysis. The variables examined as determinants of FDI into African countries are: economic risk, financial risk, political risk, the Commodity Price Index performance, the World Stock Market Index performance, openness to trade, infrastructure and the availability of a stock market in a host country. The data range is from 1984 to 2010.

Preliminary analysis of the data is included in this Chapter, providing results of descriptive statistics, correlation between variables and the relationships between inward FDI and the composite risk ratings (combined economic risk, financial risk and political risk ratings). Simple hypothesis tests, which provide information about the economic health, financial strength, and political stability of the 35 countries included in this research, were also carried out.

The preliminary analysis was then followed by an estimation of the data using panel data regression models. Estimating the data using the unlagged regression model (Model 3.1) and the dynamic panel data model (Model 3.2) provided information about the variables significant in influencing FDI flows into African countries. The findings from the panel data regression models are included in the next Chapter.

CHAPTER FIVE

FINDINGS

This Chapter presents the main findings from the unlagged and dynamic panel data regression models. These models were used to analyse data relating to FDI flows into African countries. Prior to the regression models being carried out, it was essential to establish the presences or otherwise of heteroskedasticity and serial correlation in the regressions. This is ascertained by undertaking the heteroskedasticity test and serial correlation test. Corrections in the error terms were made to cater for the presence of heteroskedasticity and serial correlation in the data.

The initial analysis was an estimation of the unlagged random effects regression model. The random effects model was decided upon after carrying out the Hausman (1978) test. This test was used to provide direction as to whether a random effects or fixed effects model was suitable for analysis of the unlagged regression model. The unlagged regression model was corrected for the presence of heteroskedasticity and serial correlation using the White period method[66]. The Durbin Watson (1971) test was also used to determine if there was serial correlation present in the data.

The main analysis dealt with the dynamic panel data regression model. This model had the lagged dependent variable as one of the explanatory variables in the regression. The dynamic panel data model was estimated using one, two, and three-year lags on the lagged dependent variable. The results indicated that a one-year lag was the best fit for the regression model. As such, the dependent variable was lagged by one year (FDI_{it-1}). The dynamic panel data model was estimated using the LSDV model, which is also known as the fixed effects model. The LSDV estimation technique can be used when there is a lagged dependent variable in the regression and a long time period (large T).

An analysis was also undertaken in this section to examine the strength of exogeneity between the dependent (FDI) and explanatory variables. This analysis also provides a

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[66]The White period method assumes that the errors for a cross-section are heteroskedastic and serially correlated (cross-section clustered) (EViews, 2009). This method will correct for the presence of heteroskedasticity and serial correlation in the errors.

robustness test in examining the relationship between variables used in this research. Some of the explanatory variables may be useful in the prediction of the dependent variable (FDI) or there may be a reverse relationship whereby the dependent variable (FDI) is useful in the prediction of one or more of the explanatory variables. In order to examine this relationship, each of the explanatory variables was made into a dependent variable in separate dynamic panel data models. This analysis provided an understanding of how FDI behaves when it is an explanatory variable in a dynamic panel data model. A one-year lag on the dependent variable was found to provide the best fit for these dynamic panel data models. These results are included in Section 5.5 of this Chapter.

In order to smooth out cyclical fluctuations, the original annual data was averaged over three-year periods. These results provided an indication of the variables that are useful in the prediction of inward FDI to Africa in the long-run. Dynamic panel data model results using the averaged data (Table 5.16) indicated that the amount of FDI received in the previous year, the economic health, political climate, commodity prices and performance of stock markets in developed nations are all significant in influencing current FDI flows into the African Continent in the long-run.

The VECM was also undertaken as a robustness test to provide information on the long-run equilibrium relationship between FDI and the explanatory variables. The results indicated that the level of infrastructure in African countries is also useful in influencing the amount of FDI flows that are received into Africa in the long-run.

5.1 Heteroskedasticity Test

As part of the preliminary analysis for the unlagged regression model, the errors of the specified equation were tested for heteroskedasticity. Heteroskedasticity occurs when the variance of the error terms from an estimated regression is not constant. If OLS estimation is used to estimate the regression, the standard errors could be wrong thus leading to misleading conclusions. The EViews software was used to carry out the econometric regressions. However, this software does not allow testing for the presence of heteroskedasticity when the data are arranged as a panel. As such, the same data was organised into an unstructured work file and then the

heteroskedasticity test was carried out. The White (1980) test was used to test for heteroskedasticity. Table 5.1 below presents results from the White (1980) test.

Table 5.1: Heteroskedasticity Test

Heteroskedasticity Test: White Test			
F-statistic	1.756	Probability F(43,709)	0.002***
No. of observations x R-Squared	72.441	Probability Chi-Square(43)	0.003***
Scaled explained SS	108.042	Probability Chi-Square(43)	0.000***

Significant p-value at *10%, **5% and ***1%.

The null hypothesis proposes the absence of heteroskedasticity while the alternative hypothesis contends the presence of heteroskedasticity. The probability results above are significant at the 1% significance level. The null hypothesis of no heteroskedasticity is rejected, and the alternative hypothesis of heteroskedasticity is accepted. The presence of heteroskedasticity was corrected using the White period estimator available when using the EViews software for data analysis.

5.2 Serial Correlation Test

When estimating a regression, serial correlation occurs when the error terms are correlated with their lagged values. As part of the preliminary analysis, the presence of serial correlation in the unlagged regression model was investigated. The presence of serial correlation implies that OLS is not efficient in estimating a regression, the standard errors will be incorrect, and if there are lagged dependent variables on the right hand side of the equation, the OLS estimates are biased and inconsistent. In order to test for serial correlation, the Breusch-Godfrey (1978) Serial Correlation LM Test was undertaken. The EViews software does not allow testing for the presence of serial correlation when the data are arranged as a panel. As such, the data was organised into an unstructured work file and then the serial correlation test was carried out. Table 5.2 below presents results from the serial correlation test.

Table 5.2: Serial Correlation Test

Breusch-Godfrey Serial Correlation Lagrange Multiplier Test:			
F-statistic	322.759	Probability F(2,742)	0.000***
Number of observations x R^2	350.320	Probability Chi-Square(2)	0.000***

Significant p-value at *10%, **5% and ***1%.

The null hypothesis is that there is no serial correlation in the residuals, and the alternative hypothesis is that there is serial correlation in the residuals. The probability values are significant at the 1% significance level. The null hypothesis of no serial correlation was rejected in favour of the alternative hypothesis of serial correlation. This indicates that the residuals are serially correlated. The presence of serial correlation was corrected using the White period estimator. It is also noted that when a lagged dependent variable is included in the regression this usually eliminates serial correlation present in the model. The Durbin Watson (1971) test was also used to determine whether or not there was serial correlation present in the data.

5.3 Unlagged Regression Model

Before the unlagged regression was estimated, it was necessary to find out whether a random effects model or a fixed effects model was appropriate for estimating the unlagged regression. The Hausman (1978) test was carried out to provide direction. This test compares the fixed effects versus random effects. The null hypothesis is that the individual effects are uncorrelated with the other regressors in the model. If the individual effects are correlated with the explanatory variables, a random effects model produces biased estimates and therefore a fixed effects model is preferred (Ho, 2007).

Table 5.3 below presents the results from the Hausman test.

Table 5.3: Hausman Test – Unlagged Model

Test summary	Chi-Square statistic	Degrees of freedom	p-value
Cross-section random	12.460	8	0.132

Significant p-values at *10%, **5% and ***1%.

The Hausman (1978) test result shows that the p-value is not significant. The null hypothesis cannot be rejected and it is concluded that the random effects model is appropriate.

Table 5.4 below presents results from the unlagged random effects model.

Table 5.4: Unlagged Random Effects Model

Variable	Coefficient	Standard Error	t-Statistic	p-value
lneconrisk	-0.902	0.357	-2.527	0.012**
lnfinrisk	-0.237	0.230	-1.032	0.303
lnpolrisk	-0.512	0.628	-0.815	0.415
lncommindex	1.001	0.256	3.919	0.000***
lnworldindex	0.751	0.139	5.419	0.000***
lncapformation	0.356	0.156	2.278	0.023**
lnopen	1.371	0.248	5.523	0.000***
sm	0.567	0.247	2.294	0.022**
c	7.349	2.532	2.902	0.004***
Adjusted R-Squared	0.485			
Durbin Watson	1.092			
S.E. of regression	1.223			
F-statistic (p-value)	0.000			

Significant p-values at *10%, **5% and ***1%.

The unlagged regression results (Table 5.4) indicate there is a negative relationship between the economic risk rating and FDI inflows. The level of economic risk is significant in influencing FDI flows into African countries. A 1% increase in the level of economic risk will decrease FDI flows into the Continent by 0.90%. The financial risk and political risk variables have a negative relationship with FDI inflows as expected. This means that increased financial strength and political stability in African countries have a positive influence on FDI flows into the Continent. However, it is also noted that the relationship between the level of financial risk and inward FDI flows is insignificant, as is the relationship between political risk in Africa and inward FDI flows. Foreign investors may not be concerned about the financial and political climate facing some of the African nations.

The performance of the Commodity Price Index and the performance of stock markets in developed nations have a positive and significant influence on inward FDI flows to Africa. A 1% rise in the Commodity Price Index will lead to an increase of inward FDI to African countries by 1%. A 1% rise in the performance of stock markets in developed nations will lead to an increase of FDI flows into African countries by 0.75%. When the commodity prices rise in the global markets and stock

markets in developed nations perform well (that is, bull market), there are increased FDI flows into Africa.

The gross fixed capital formation (infrastructure) and openness to trade also indicate a positive and significant relationship with FDI inflows into Africa. The presence of strong infrastructure, and allowing trade with other nations, will attract FDI flows into African countries. A 1% increase in the level of infrastructure will lead to an increase of FDI flows into African countries by 0.36%. A 1% increase in openness to trade will lead to an increase of FDI flows to African countries by 1.37%. The stock market availability was also found to have a positive and significant influence on the inward FDI flows to African countries. These results indicate that there have been large foreign investments into Africa that have been made through the stock market. The adjusted R-squared is 0.49, indicating that 49% of the model can be explained by these explanatory variables.

The Durbin Watson (DW) value from the regression estimation results was used to determine if there is serial correlation in the data. If there is no serial correlation, the DW statistic is approximately 2. The DW statistic is below 2 when there is positive serial correlation and between 2 and 4 when there is negative serial correlation. In this instance, the DW statistic from the unlagged regression model was 1.09 indicating the presence of positive serial correlation. The unlagged regression was also estimated using the fixed effects model for comparison purposes. The results from the unlagged fixed effects model[67] are not significantly different to those of the unlagged random effects model.

5.4 Dynamic Panel Data Regression Model

The dynamic panel data model was estimated using the LSDV model, which is also the fixed effects model. The dynamic panel data model was specified at one, two, and three-year lags so as to find the best fit. The theoretical approach undertaken by Avinash Dixit and Robert Pindyck (1994) explains that most capital investments are irreversible and there lies an option value in waiting for better (but never complete) information. As such, there is likely to be a lag between the determinants of FDI

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[67]The results from the unlagged fixed effects model using annual data from 1984 until 2010 are included in Appendix Seven.

flows into African countries and the actual FDI flows received. The best fit for the model was found to be a lag of one year, where serial correlation was not a concern. This dynamic panel model provides information on the effect that FDI inflows received into Africa in the previous year have on current FDI inflows.

When the dependent variable (FDI) in the model was lagged by one year, the DW statistic was 1.93. As the DW value was close to 2, it was concluded that there was no presence of serial correlation in the regression model. The standard error term, which indicates the degree of uncertainty in the coefficient estimates, was 1.07. The adjusted R-squared was also at the highest level (76%) when the dependent variable was lagged by one year.

When the dependent variable (FDI) in the model was lagged by two years, the DW statistic was 1.29, indicating the presence of positive serial correlation. The standard error term was 1.15, while the adjusted R-squared was 71.70%. When the dependent variable (FDI) in the model was lagged by three years, the DW statistic was 1.28, again indicating the presence of positive serial correlation. The standard error term was 1.13 and the adjusted R-squared value was 72.70%. Table 5.5 shows the results from the dynamic panel data model when FDI is lagged by one, two, and three-year lags.

Table 5.5 below presents results from the dynamic panel data model when the dependent variable (FDI) is lagged by one, two, and three years.

Table 5.5: Dynamic panel data model: dependent variable (FDI) is lagged by one, two and three years

Variable	One-year lag: fdi(-1)				Two-year lag: fdi(-2)				Three-year lag: fdi(-3)			
	Coefficient	Standard Error	t-stat	p-value	Coefficient	Standard Error	t-stat	p-value	Coefficient	Standard Error	t-stat	p-value
lnfdi	0.413	0.034	12.095	0.000***	0.198	0.036	5.439	0.000***	0.119	0.036	3.300	0.001***
lneconrisk	-0.607	0.199	-3.055	0.002***	-0.599	0.220	-2.726	0.007***	-0.769	0.219	-3.507	0.001***
lnfinrisk	-0.124	0.147	-0.841	0.400	-0.146	0.165	-0.887	0.375	-0.172	0.168	-1.024	0.306
lnpolrisk	-0.436	0.313	-1.394	0.164	-0.856	0.356	-2.402	0.017**	-0.805	0.366	-2.200	0.028**
lncommindex	0.537	0.178	3.009	0.003***	0.790	0.196	4.038	0.000***	0.937	0.191	4.902	0.000***
lnworldindex	0.559	0.131	4.249	0.000***	0.720	0.160	4.490	0.000***	0.814	0.172	4.728	0.000***
lncapformation	0.279	0.138	2.021	0.044**	0.310	0.155	2.007	0.045**	0.356	0.154	2.307	0.021**
lnopen	0.813	0.217	3.748	0.000***	1.031	0.254	4.057	0.000***	1.119	0.264	4.237	0.000***
sm	0.083	0.157	0.528	0.598	0.240	0.179	1.339	0.181	0.339	0.185	1.829	0.068*
c	4.504	1.938	2.324	0.020**	6.684	2.200	3.038	0.003***	6.739	2.275	2.962	0.003***
Adjusted R^2	0.760				0.717				0.727			
Durbin Watson	1.931				1.293				1.279			
Standard error of regression	1.072				1.154				1.127			
F-statistic (p-value)	0.000				0.000				0.000			

Significant p-values at *10%, **5% and ***1%.

The results from the dynamic panel data model (Table 5.5) with a one-year lag on the dependent variable show that the level of economic risk has a negative and significant relationship with FDI inflows. African countries with poor economic health will find themselves receiving less inward FDI. A 1% increase in the level of economic risk will lead to a decrease of FDI flows into African countries by 0.61%. Financial risk has a negative relationship with the FDI flows coming into Africa. However, financial strength is not a significant variable in influencing FDI flows into African nations. The political risk variable also has a negative coefficient as expected, but is found be insignificant in influencing FDI flows into Africa. The results suggest that foreign investors are still willing to make investments in African countries even in the presence of financial and political risk in a country.

The performance of the Commodity Price Index has a positive and significant relationship with FDI flows coming into Africa. This indicates that when commodity prices are rising, there will be increased FDI flows into the African Continent. A 1% rise in the Commodity Price Index will lead to an increase of FDI flows into African countries by 0.54%. The performance of the World Stock Market Index is found to have a positive and significant relationship with inward FDI to the Continent. A 1% rise in the performance of stock markets in developed countries will lead to an increase of FDI flows into the African Continent by 0.56%.

Both gross fixed capital formation and openness to trade are significant determinants of FDI. These variables have a positive relationship with the FDI inflows as anticipated. A 1% increase in the level of infrastructure will lead to an increase of FDI flows received into African countries by 0.28%. When the openness to trade variable increases by 1%, this will lead to an increase of FDI into African countries by 0.81%. The results indicate that there is a positive relationship between presence of a stock market and amount of inward FDI received by an African country. However, having a stock market in a host country does not play a significant role in attracting inward FDI.

The lagged value of FDI is significant in influencing current FDI inflows. The results show that there is a positive relationship between current FDI inflows and the FDI flows received in the previous year. A 1% increase in the FDI flows received into

African countries in the previous year, will lead to an increase of 0.41% in FDI flows received in the current year. The adjusted R-squared is 0.76, indicating that 76% of the model can be explained by these explanatory variables. The DW statistic is 1.93 showing that there is no serial correlation present in the dynamic panel data model.

5.5 The question of exogeneity (robustness test)

The dynamic panel data model that treats FDI endogenously is not clear in explaining exogeneity between FDI and the explanatory variables in the regression model. One way to test for exogeneity is to treat each of the explanatory variables in a dynamic panel data model as endogenous. This provides information as to whether or not a two-way relationship exists between FDI and each of the explanatory variables.

Some of the explanatory variables may be useful in the prediction of the dependent variable (FDI), or there may be a reverse relationship whereby the dependent variable (FDI) is useful in the prediction of one or more explanatory variables. The results from the dynamic panel data model (see Table 5.5) that treats FDI endogenously show that most of the explanatory variables (for example, amount of FDI received in the previous year, level economic risk, performance of the Commodity Price Index, performance of the World Stock Market Index, level of gross fixed capital formation, and openness to trade) are useful in the prediction of FDI flows into Africa. However, FDI offers little or no prediction of many of the explanatory variables.

The following tables (Tables 5.6, 5.7, 5.8, 5.9, 5.10, 5.11 and 5.12) show the results when each of the explanatory variables was treated as a dependent variable in a dynamic panel data model, with the dependent variable lagged by one year. A one-year lag was chosen as this provided the best fit for the dynamic panel data models. In all of the following dynamic panel data models, FDI is treated as an explanatory variable.

Table 5.6 below presents results from the dynamic panel data model with the political risk rating as the dependent variable.

Table 5.6: Dynamic panel data model with political risk as the dependent variable

Dependent variable: political risk rating

Variable	Coefficient	Standard Error	t-statistic	p-value
lnpolrisk(-1)	0.818	0.020	41.122	0.000***
lnfdi	0.002	0.002	1.023	0.307
lnfinrisk	0.006	0.010	0.665	0.506
lneconrisk	0.036	0.013	2.865	0.004***
lncommindex	0.004	0.012	0.323	0.747
lnworldindex	0.010	0.008	1.140	0.255
lncapformation	-0.012	0.009	-1.421	0.156
lnopen	-0.013	0.014	-0.971	0.332
sm	-0.017	0.010	-1.759	0.079*
c	0.496	0.128	3.874	0.000***
Adjusted R-Squared	0.917			
Durbin Watson	1.626			
S.E. of regression	0.072			
F-statistic (p-value)	0.000			

Significant p-values at *10%, **5% and ***1%.

The results above show the variables that are significant in influencing political risk in African countries. The level of political risk a year ago has a positive, significant relationship with the current level of political risk. A 1% increase in the lagged political risk rating will lead to an increase of the current political risk rating by 0.82%. The level of economic risk is also significant, and has a positive relationship with the current level of political risk. A 1% increase in the level of economic risk will lead to an increase of political risk by 0.04%. The availability of a stock market in a host country is significant in influencing the current level of political risk. There is a negative relationship between the current level of political risk and the availability of a stock market in a host country.

The findings show that the current amount of FDI received into African countries has a positive relationship with the level of political risk; however, this relationship was not significant.

Table 5.7 below presents results from the dynamic panel data model with the financial risk rating as the dependent variable.

Table 5.7: Dynamic panel data model with financial risk as the dependent variable

Dependent variable: financial risk rating

Variable	Coefficient	Std. Error	t-statistic	p-value
lnfinrisk(-1)	0.813	0.021	39.401	0.000**
lnfdi	0.006	0.005	1.194	0.233
lneconrisk	0.212	0.027	7.910	0.000***
lnpolrisk	0.057	0.045	1.267	0.206
lncommindex	-0.099	0.025	-3.916	0.000***
lnworldindex	-0.035	0.018	-1.898	0.058*
lncapformation	0.035	0.019	1.860	0.063*
lnopen	-0.048	0.030	-1.606	0.109
sm	-0.005	0.021	-0.221	0.825
c	0.378	0.279	1.356	0.176
Adjusted R-Squared	0.911			
Durbin Watson	1.811			
S.E. of regression	0.157			
F-statistic (p-value)	0.000			

Significant p-values at *10%, **5% and ***1%.

The results above indicate the variables that impact financial risk in African countries. The level of financial risk a year ago has a positive, significant relationship with the current level of financial risk. A 1% increase in the lagged financial risk will lead to an increase of the current financial risk by 0.81%. Both economic risk and gross fixed capital formation have a positive and significant relationship with financial risk. A 1% increase in the level of economic risk will lead to an increase of financial risk by 0.21%. A 1% increase in gross fixed capital formation will lead to an increase of financial risk by 0.04%.

Both the Commodity Price Index and the World Stock Market Index have a significant, but negative relationship with the level of financial risk. A 1% rise in the Commodity Price Index will lead to a decrease of financial risk by 0.10%. A 1% rise in the World Stock Market Index will lead to a decrease of the financial risk rating by 0.04%. The current amount of FDI received into African countries has an insignificant relationship with the level of financial risk.

Table 5.8 below presents results from the dynamic panel data model with openness to trade as the dependent variable.

Table 5.8: Dynamic panel data model with openness to trade as the dependent variable

Dependent variable: openness to trade

Variable	Coefficient	Standard Error	t-statistic	p-value
lnopen(-1)	0.664	0.025	26.998	0.000***
lnfdi	0.012	0.005	2.680	0.008***
lncapformation	0.091	0.017	5.511	0.000***
lnworldindex	0.069	0.016	4.403	0.000***
lncommindex	-0.020	0.023	-0.875	0.382
lnpolrisk	0.071	0.039	1.817	0.070*
lnfinrisk	0.034	0.019	1.774	0.077*
lneconrisk	-0.022	0.025	-0.900	0.369
sm	-0.002	0.019	-0.094	0.925
c	0.240	0.243	0.990	0.323
Adjusted R-Squared	0.889			
Durbin Watson	1.983			
S.E. of regression	0.140			
F-statistic (p-value)	0.000			

Significant p-values at *10%, **5% and ***1%.

The results above show the variables that are significant in influencing the openness to trade in African nations. The openness to trade one year ago has a positive, significant influence on the current level of openness to trade in African countries. A 1% increase in openness to trade a year ago will lead to an increase of the current openness to trade by 0.66%. The amount of FDI received also has a positive, significant relationship with the openness to trade in African nations. A 1% increase in FDI will lead to an increase of openness to trade by 0.01%. Gross fixed capital formation, the World Stock Market Index, political risk, and financial risk all have positive and significant relationships with openness to trade.

Table 5.9 below presents results from the dynamic panel data model with the World Stock Market Index as the dependent variable.

Table 5.9: Dynamic panel data model with the World Stock Market Index as the dependent variable

Dependent variable: World Stock Market Index				
Variable	**Coefficient**	**Standard Error**	**t-statistic**	**p-value**
lnworldindex(-1)	0.762	0.018	42.730	0.000***
lnfdi	0.006	0.006	1.124	0.262
lncommindex	0.092	0.028	3.255	0.001***
lnpolrisk	-0.141	0.049	-2.874	0.004***
lnfinrisk	0.000	0.024	0.017	0.986
lneconrisk	-0.069	0.031	-2.219	0.027
lncapformation	-0.061	0.021	-2.900	0.004***
lnopen	0.073	0.033	2.184	0.029**
sm	0.047	0.024	1.960	0.051*
c	1.697	0.294	5.767	0.000***
Adjusted R-Squared	0.880			
Durbin Watson	2.030			
S.E. of regression	0.177			
F-statistic (p-value)	0.000			

Significant p-values at *10%, **5% and ***1%.

The results above indicate variables significant in influencing the World Stock Market Index. The performance of the World Stock Market Index in the previous year has a positive, significant relationship with the current performance of the Index. A 1% rise in the World Stock Market Index a year ago will lead to a rise in the current World Stock Market Index performance by 0.76%.

The Commodity Price Index, openness to trade, and availability of a stock market in African countries all have a positive, significant relationship with the World Stock Market Index. A 1% rise in the Commodity Price Index will lead to a 0.09% rise in the World Stock Market Index performance. A 1% increase in openness to trade will lead to a rise in the World Stock Market Index performance by 0.07%. Political risk and infrastructure both have significant, negative relationships with the World Stock Market Index. A 1% increase in political risk will lead to a decrease of the World Stock Market Index performance by 0.14%. A 1% increase in gross fixed capital formation will lead to a decrease of the World Stock Market Index performance by 0.06%. The flow of FDI is insignificant in influencing this Index.

Table 5.10 below presents results from the dynamic panel data model with the economic risk rating as the dependent variable.

Table 5.10: Dynamic panel data model with economic risk as the dependent variable

Dependent variable: economic risk rating

Variable	Coefficient	Standard Error	t-statistic	p-value
lneconrisk(-1)	0.747	0.027	27.168	0.000***
lnfdi	-0.011	0.005	-2.443	0.015**
lnfinrisk	0.054	0.020	2.616	0.009***
lnpolrisk	-0.003	0.043	-0.071	0.943
lncommindex	0.059	0.024	2.423	0.016**
lnworldindex	-0.021	0.017	-1.186	0.236
lncapformation	0.034	0.018	1.844	0.066*
lnopen	-0.027	0.029	-0.932	0.352
sm	0.017	0.021	0.811	0.418
c	0.779	0.264	2.953	0.003***
Adjusted R-Squared	0.850			
Durbin Watson	1.625			
S.E. of regression	0.150			
F-statistic (p-value)	0.000			

Significant p-values at *10%, **5% and ***1%.

The results in Table 5.10 show the variables that are significant in influencing the level of economic risk in African countries. The level of economic risk a year ago has a positive, significant relationship with the current level of economic risk. A 1% increase in the economic risk rating a year ago, will lead to an increase of the current economic risk rating of African countries by 0.75%.

Financial risk, Commodity Price Index, and gross fixed capital formation are all found to have a positive, significant relationship with the level of economic risk. A 1% increase in financial risk will lead to an increase of economic risk by 0.05%. A 1% rise in the Commodity Price Index will lead to an increase of economic risk by 0.06%, and a 1% increase in gross fixed capital formation will lead to an increase of economic risk by 0.03%.

The results indicate a negative, significant relationship between FDI and the economic risk rating in African countries. A 1% increase in FDI will lead to a decrease of economic risk rating by 0.01%.

Table 5.11 below presents results from the dynamic panel data model with the Commodity Price Index as the dependent variable.

Table 5.11: Dynamic panel data model with the Commodity Price Index as the dependent variable

Dependent variable: Commodity Price Index				
Variable	**Coefficient**	**Standard Error**	**t-statistic**	**p-value**
lncommindex(-1)	0.911	0.020	45.073	0.000***
lnfdi	0.007	0.004	1.960	0.050*
lnpolrisk	0.081	0.033	2.461	0.014**
lnfinrisk	-0.067	0.016	-4.287	0.000***
lneconrisk	0.003	0.021	0.138	0.890
lnworldindex	0.041	0.013	3.055	0.002***
lncapformation	0.027	0.014	1.874	0.061*
lnopen	0.051	0.022	2.273	0.023**
sm	-0.032	0.016	-1.988	0.047**
c	-0.277	0.206	-1.343	0.180
Adjusted R-Squared	0.842			
Durbin Watson	1.568			
S.E. of regression	0.119			
F-statistic (p-value)	0.000			

Significant p-values at *10%, **5% and ***1%.

There is a positive, significant relationship between the Commodity Price Index a year ago and the current Commodity Price Index. A 1% rise in the Commodity Price Index a year ago will lead to a rise in the current Commodity Price Index by 0.91%. The results also indicate that variables such as FDI, political risk, World Stock Market Index, gross fixed capital formation, and openness to trade have a positive, significant relationship with the Commodity Price Index.

A 1% increase in FDI will lead to a rise in the Commodity Price Index by 0.01%. A 1% increase in the political risk rating will lead to a rise in the Commodity Price Index by 0.08%. A 1% rise in the World Stock Market Index will lead to a rise in the Commodity Price Index by 0.04%. A 1% increase in gross fixed capital formation will lead to a rise in the Commodity Price Index by 0.03%, and a 1% increase in openness to trade will lead to a rise in the Commodity Price Index by 0.05%.

The results indicate that there is a negative, significant relationship between the financial risk rating and the Commodity Price Index. A 1% increase in financial risk will lead to a decrease of the Commodity Price Index by 0.07%. There is also a

negative and significant relationship between the Commodity Price Index and availability of a stock market in a host country.

Table 5.12 below presents results from the dynamic panel data model with gross fixed capital formation as the dependent variable.

Table 5.12: Dynamic panel data model with gross fixed capital formation as the dependent variable

Dependent variable: gross fixed capital formation				
Variable	**Coefficient**	**Standard Error**	**t-Statistic**	**p-value**
lncapformation(-1)	0.644	0.030	21.812	0.000***
lnfdi	0.005	0.008	0.583	0.560
lnworldindex	-0.068	0.028	-2.430	0.015**
lncommindex	0.082	0.039	2.075	0.038**
lnpolrisk	-0.150	0.068	-2.205	0.028**
lnfinrisk	0.016	0.033	0.495	0.621
lneconrisk	-0.031	0.043	-0.712	0.477
lnopen	0.261	0.045	5.758	0.000***
sm	-0.014	0.033	-0.411	0.681
c	0.537	0.422	1.273	0.204
Adjusted R-Squared	0.726			
Durbin Watson	2.105			
S.E. of regression	0.243			
F-statistic (p-value)	0.000			

Significant p-values at *10%, **5% and ***1%.

There is a positive and significant relationship between the level of gross fixed capital formation a year ago and the current level of gross fixed capital formation. A 1% increase in the lagged gross fixed capital formation will lead to a 0.64% increase in the current level of gross fixed capital formation.

The Commodity Price Index and openness to trade have a positive, significant relationship with gross fixed capital formation. A 1% rise in the Commodity Price Index will lead to an increase of gross fixed capital formation by 0.08%. A 1% increase in openness to trade will lead to an increase of gross fixed capital formation by 0.26%. The results indicate that the World Stock Market Index and political risk rating have a negative, significant relationship with gross fixed capital formation. A 1% rise in the World Stock Market Index will lead to a decrease of gross fixed capital formation by 0.07%. A 1% increase in the political risk rating will lead to a

decrease of gross fixed capital formation by 0.15%. There is an insignificant relationship between FDI and gross fixed capital formation.

Summary of the results relating to exogeneity (robustness test)

The results summarised on the following page (Table 5.13) show that when the dynamic panel data model is estimated with FDI as the endogenous variable, the amount of FDI received a year ago, level of economic risk (economic health), performance of the Commodity Price Index, performance of stock markets in developed countries, level of infrastructure, and openness to trade in African countries significantly influence FDI flows received by African nations. The results from the dynamic panel data models further indicate a two-way relationship running from FDI to some explanatory variables such as economic risk, the Commodity Price Index and openness to trade.

These results show that FDI is significant in influencing the level of openness to trade in African countries, the level of economic risk, as well as the Commodity Price Index. A 1% increase in FDI flows into Africa will lead to an increase of openness to trade in African countries by 0.01%. A 1% increase in FDI flows into African countries will lead to a decrease of economic risk (increased economic health) in Africa by 0.01%, and a 1% increase in FDI flows into African countries will lead to a rise in the Commodity Price Index by 0.01%.

However, it is noted that the level of influence that FDI has on openness to trade, the level of economic risk and the Commodity Price Index is minimal. Rather, a stronger effect is demonstrated to be running from these variables (economic risk, Commodity Price Index and openness to trade) to FDI as shown in Table 5.13. A 1% increase in the level of economic risk will lead to a decrease of FDI flows into African nations by 0.61%. A 1% rise in the Commodity Price Index will lead to an increase of FDI flows into African countries by 0.54%, and a 1% increase in openness to trade will lead to an increase of FDI flows into African countries by 0.81%.

Table 5.13: Summary of results from the dynamic panel data models

Explanatory variables	Dependent variables							
	FDI	**Econrisk**	**Finrisk**	**Polrisk**	**Commindex**	**Worldindex**	**Capformation**	**Openness to trade**
FDI		-0.011	0.006	0.002	0.007	0.006	0.005	0.012
		(0.015)	(0.233)	(0.307)	**(0.050)**	(0.262)	(0.560)	**(0.008)**
Econrisk	-0.607		0.212	0.036	0.003	-0.069	-0.031	-0.022
	(0.002)		**(0.000)**	**(0.004)**	(0.890)	**(0.027)**	(0.477)	(0.369)
Finrisk	-0.124	0.054		0.006	-0.067	0.000	0.016	0.034
	(0.400)	**(0.009)**		(0.506)	**(0.000)**	(0.986)	(0.621)	**(0.077)**
Polrisk	-0.436	-0.003	0.057		0.081	-0.141	-0.150	0.071
	(0.164)	(0.943)	(0.206)		**(0.014)**	**(0.004)**	**(0.028)**	**(0.070)**
Commindex	0.537	0.059	-0.099	0.004		0.092	0.082	-0.020
	(0.003)	**(0.016)**	**(0.000)**	(0.747)		**(0.001)**	**(0.038)**	(0.382)
Worldindex	0.559	-0.021	-0.035	0.010	0.041		-0.068	0.069
	(0.000)	(0.236)	**(0.058)**	(0.255)	**(0.002)**		**(0.015)**	**(0.000)**
Capformation	0.279	0.034	0.035	-0.012	0.027	-0.061		0.091
	(0.044)	**(0.066)**	**(0.063)**	(0.156)	**(0.061)**	**(0.004)**		**(0.000)**
Openness to trade	0.813	-0.027	-0.048	-0.013	0.051	0.073	0.261	
	(0.000)	(0.352)	(0.109)	(0.332)	**(0.023)**	**(0.029)**	**(0.000)**	
SM (dummy variable)	0.083	0.017	-0.005	-0.017	-0.032	0.047	-0.014	-0.002
	(0.598)	(0.418)	(0.825)	**(0.079)**	**(0.047)**	**(0.051)**	(0.681)	(0.925)
Lagged dependent variable (one-year lag)	0.413	0.747	0.813	0.818	0.911	0.762	0.644	0.664
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Adjusted R-Squared	0.760	0.850	0.911	0.917	0.842	0.880	0.723	0.889
Durbin Watson Statistic	1.931	1.625	1.811	1.626	1.568	2.030	2.105	1.983
Standard Error of Regression	1.072	0.150	0.157	0.072	0.119	0.177	0.243	0.140

p-values are in parenthesis. The significant p-values at the 1%, 5% and 10% significance levels are in bold.

The results from the dynamic panel data models also indicate that in each case, the lagged dependent variable plays a significant role in influencing the current dependent variable. This shows that events which occurred in the previous year are significant in influencing current events. For example, the amount of FDI flows received by African countries in the previous year significantly impacts on FDI flows received by African nations in the current year.

In most of the regression models where FDI is treated as an explanatory variable, it is found that this variable (FDI) is weakly exogenous as it cannot be explained by many of the dependent variables (for example, political risk, financial risk, World Stock Market Index, and gross fixed capital formation). In reality the model with the greatest explanatory power is that where political risk is treated endogenously. The FDI variable is insignificant in this model where political risk is treated endogenously. As FDI is the subject matter of this research, this variable is treated endogenously in the rest of this study. In another test of exogeneity, the non-stationary variables (FDI, financial risk, Commodity Price Index, and gross fixed capital formation) are applied to a VEC Block Exogeneity Wald test to examine Causality (Section 5.10). The results indicate that FDI is endogenous at an optimal lag of one year and that gross fixed capital formation is helpful in the prediction of FDI flows.

5.6 Time averaging the data (robustness test)

The annual data from 1984 until 2010 (27 years) was averaged over three-year periods so as to smooth out the cyclical fluctuations, and act as a proxy for a long-run model. The averaged data has a time period of nine years. It is essential for African countries to identify factors that influence FDI flows into their nations in the long-run, so as to develop and implement relevant economic, financial, and political policies. A similar approach to averaging data was undertaken by Islam (1995), Ghosh and Phillips (1998), Fölster and Henrekson (2001), Bengoa and Sanchez-Robles (2003), and Gillman and colleagues (2004). The above researchers averaged their data over five-year periods. Asiedu and Lien (2011) averaged their data over four-year periods. The preliminary analysis estimated an unlagged model, and the main analysis estimated a dynamic panel data model. The dynamic panel data model contains a lag of the dependent variable (FDI_{it-1}). The dependent variable was

lagged by one year, as this was found to be the best fit for estimating the dynamic panel data model.

Unlagged Regression Model (averaged data)

Before the unlagged regression was estimated, it was essential to find out whether a random effects model or a fixed effects model was appropriate for estimating the unlagged regression. Therefore, the Hausman (1978) test was carried out.

Table 5.14 below presents results from the Hausman test.

Table 5.14: Hausman Test – Unlagged Model (average data)

Test Summary	Chi-Square Statistic	Degrees of freedom	p-value
Cross-section random	19.734	8	0.011

Significant p-values at *10%, **5% and ***1%.

The results from the Hausman (1978) test show that the p-value has a 5% significance level. The null hypothesis is rejected, indicating that the random effects model is not appropriate. The unlagged regression model was therefore estimated using the fixed effects model.

Table 5.15 below presents results from the unlagged fixed effects model. This model has been corrected for the presence of heteroskedasticity and serial correlation.

Table 5.15: Unlagged Fixed Effects Model (average data)

Variable	Coefficient	Standard Error	t-statistic	p-value
lneconrisk	-0.767	0.406	-1.890	0.060*
lnfinrisk	-0.153	0.297	-0.515	0.607
lnpolrisk	-0.522	0.764	-0.683	0.495
lncommindex	0.934	0.308	3.027	0.003***
lnworldindex	0.919	0.133	6.918	0.000***
lncapformation	0.436	0.230	1.899	0.059*
lnopen	1.570	0.468	3.357	0.001***
sm	0.419	0.257	1.629	0.105
c	4.988	2.796	1.784	0.076*
Adjusted R-Squared	0.799			
Durbin Watson	1.524			
Standard Error of regression	0.925			
F-statistic (p-value)	0.000			

Significant p-values at *10%, **5% and ***1%.

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As expected, the level of economic risk has a negative and significant relationship with the FDI flows into Africa in the long-run. A 1% increase in the level of economic risk will lead to a decrease of FDI flows into African countries by 0.77%. The level of financial risk is found to have an insignificant relationship with inward FDI flows into Africa in the long-run. The level of political risk also has an insignificant relationship with FDI flows into African countries in the long-run.

The Commodity Price Index has a significant, positive relationship with FDI flows into Africa in the long-run. A 1% rise in the Commodity Price Index will lead to an increase of FDI flows into African countries by 0.93%. The performance of stock markets in developed nations also has a positive, significant relationship with inward FDI flows to Africa in the long-run. A 1% rise in the performance of stock markets in developed nations will lead to an increase of FDI flows to African countries by 0.92%. The level of infrastructure present in African nations and openness to trade with other nations also plays a positive, significant role in attracting FDI into African countries in the long-run. A 1% increase in the level of infrastructure will lead to an increase of inward FDI to Africa by 0.44%, and a 1% increase in openness to trade will lead to an increase of FDI flows into Africa by 1.57%.

Having a stock market present in an African nation has been found to play an insignificant role in attracting inward FDI in the long-run. The adjusted R-squared is 0.80. This means that 80% of the model can be explained by these explanatory variables. The DW statistic is 1.52, indicating the presence of positive serial correlation in the unlagged fixed effects model. An unlagged random effects model[68] was also estimated and these results were not very different to those obtained from the unlagged fixed effects model.

Dynamic Panel Data Model (averaged data)

The dynamic panel data model was estimated using the Arellano and Bond (1991) difference GMM and Blundell and Bond (1998) system GMM estimators. These two methods are appropriate, as the time period is now nine years for each country after

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[68]The results from the unlagged random effects model using data from 1984 to 2010, averaged over three-year periods are included in Appendix Eight.

the annual data are averaged over three years. The GMM estimation is appropriate for data with a large number of cross-sections and a short time series.

According to research undertaken by Judson and Owen (1999), the Arellano and Bond (1991) one-step estimator GMM is appropriate for unbalanced panel data that has a time period of less than or equal to 10 years. The research carried out by Flannery and Hankins (2012) using corporate finance data, find that both Arellano and Bond (1991) and Blundell and Bond (1998) GMM estimators have low root-mean squared errors in estimating the lagged dependent variable, and perform reasonably well in estimating the explanatory variables. The following tables show the results from the Arellano and Bond (1991) and Blundell and Bond (1998) GMM estimators[69].

Table 5.16 below presents results from the dynamic panel data model estimated using the Arellano and Bond (1991) difference GMM estimation. This model was computed using the one-step estimator.

Table 5.16: Arellano and Bond Difference GMM Dynamic Panel Data Estimation

Variable	Coefficient	Standard Error	z-statistic	p-value
lnfdi(-1)	0.182	0.108	1.690	0.092*
lneconrisk	-0.669	0.404	-1.660	0.098*
lnfinrisk	-0.005	0.353	-0.010	0.988
lnpolrisk	-0.683	0.664	-1.030	0.304
lncommindex	1.194	0.279	4.270	0.000***
lnworldindex	1.135	0.310	3.660	0.000***
lncapformation	0.271	0.278	0.970	0.331
lnopen	0.229	0.463	0.500	0.620
sm	0.003	0.285	0.010	0.991
c	5.004	3.915	1.280	0.201
Number of observations	176			
Number of groups	35			

Significant p-values at *10%, **5% and ***1%.

The Arellano and Bond (1991) difference GMM dynamic panel data results (Table 5.16) show the level of economic risk has a negative, significant relationship with FDI inflows. As the economic risk in African countries increases, there will be less

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[69]The Stata statistical software was used to perform the dynamic panel data analysis using the Arellano and Bond (1991) difference and Blundell and Bond (1998) system GMM estimators.

inward FDI flowing to Africa in the long-run. A 1% increase in the level of economic risk will lead to a decrease of inward FDI to African countries by 0.67%. The level of financial risk has an insignificant relationship with inward FDI to Africa in the long-run. The level of political risk also has an insignificant relationship with FDI flows into African countries in the long-run.

The Commodity Price Index has a positive, significant relationship with inward FDI flows to Africa. A 1% rise in the Commodity Price Index will lead to an increase of FDI flows into African countries by 1.19% in the long-run. The performance of stock markets in developed countries also has a positive, significant relationship with FDI flows into Africa. A 1% rise in the performance of stock markets in developed countries will lead to an increase of inward FDI to African countries by 1.13% in the long-run.

The level of infrastructure and openness to trade in African countries both have an insignificant relationship with inward FDI flows into Africa in the long-run. The presence of a stock market in a host country plays an insignificant role in attracting inward FDI in the long-run.

The lagged value of FDI is significant in influencing current FDI inflows. The results show that there is a positive relationship between FDI flows received in the previous year and current FDI inflows. A 1% increase in the FDI flows received into African countries in the previous year will lead to an increase of FDI flows received in the current year by 0.18% in the long-run.

Table 5.17 below presents results from the dynamic panel data model estimated using the Blundell and Bond (1998) system GMM estimation.

Table 5.17: Blundell and Bond System GMM Dynamic Panel Data Estimation

Variable	Coefficient	Standard Error	z-statistic	p-value
lnfdi(-1)	0.333	0.082	4.070	0.000***
lneconrisk	-0.703	0.404	-1.740	0.082*
lnfinrisk	0.188	0.352	0.540	0.593
lnpolrisk	-1.152	0.650	-1.770	0.076*
lncommindex	1.268	0.288	4.400	0.000***
lnworldindex	0.891	0.292	3.050	0.002***
lncapformation	0.072	0.285	0.250	0.800
lnopen	0.212	0.428	0.500	0.620
sm	-0.013	0.278	-0.050	0.961
c	5.417	3.853	1.410	0.160
Number of observations	221			
Number of groups	35			

Significant p-values at *10%, **5% and ***1%.

The Blundell and Bond (1998) system GMM dynamic panel data results (Table 5.17) show the level of economic risk has a negative, significant relationship with FDI inflows in the long-run. A 1% increase in the level of economic risk will lead to a decrease of FDI into African countries by 0.70%. The level of political risk also has a negative, significant relationship with FDI flows into African countries. A 1% increase in political risk in the Continent will lead to a decrease of inward FDI to African countries by 1.15% in the long-run. The financial risk rating variable has an insignificant relationship with inward FDI to Africa in the long-run, which is not expected.

The Commodity Price Index has a positive, significant relationship with inward FDI flows to Africa. A 1% rise in the Commodity Price Index will lead to an increase of FDI flows into African countries by 1.27% in the long-run. The performance of stock markets in developed countries also has a positive, significant relationship with FDI flows into Africa. A 1% rise in the performance of stock markets in developed countries will lead to an increase of inward FDI to African countries by 0.89% in the long-run.

The level of infrastructure in African countries and openness to trade both have an insignificant relationship with FDI flows received into the Continent in the long-run. Having a stock market present in an African country plays a negative role in attracting inward FDI. This may indicate that individuals are undertaking portfolio investments on the stock market rather than large FDI investments (Hailu, 2010). The results of this model show that the availability of a stock market in a host country does not play a significant role in attracting inward FDI in the long-run.

The results show that there is a positive, significant relationship between FDI flows received in the previous year and current FDI inflows. A 1% increase in the FDI flows received into African countries in the previous year will lead to an increase of FDI flows received in the current year by 0.33% in the long-run.

The results from the Blundell and Bond (1998) System GMM estimator produce better results and are preferred to those of Arellano and Bond (1991) difference GMM. The research from Flannery and Hankins (2012), which examined various methods of analysing dynamic panel data, also finds that the Blundell and Bond (1998) GMM estimator emerged as one of the most accurate methodologies amongst the other methodologies that were used[70].

The Sargan (1958) test has been carried out on both Arellano and Bond (1991) difference GMM estimator and the Blundell and Bond (1998) system GMM estimator. This test is undertaken to find out if the over identifying restrictions are valid. The Sargan (1958) test results from both models show that the p-value is significant at the 1% significance level. The null hypothesis is rejected and it is concluded that the over identifying restrictions are not valid. It was not possible to carry out the autocorrelation test on both the Arellano and Bond (1991) difference and Blundell and Bond (1998) system GMM estimators. This is because the autocorrelation test cannot be computed for the one-step estimators.

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[70]The research from Flannery and Haskins (2012) evaluates and compares seven econometric methods for estimating dynamic panel data models. These methods are Ordinary Least Squares, Fixed Effects, Arellano and Bond (1991) difference GMM estimator, Blundell and Bond (1998) system GMM estimator, Four Period Long Differencing which replicates the Huang and Ritter (2009) implementation of the Hahn et al. (2007) estimator, an alternative adaptation of the Hahn et al. (2007) balanced panel estimator thus allowing for unbalanced panels, and the Corrected Least Squares Dummy Variable methodology.

5.7 Panel Vector Error Correction Model (robustness test)

A VECM is a restricted model, based on a Vector Autoregression (VAR) model. The VECM was carried out with non-stationary variables that are cointegrated and converted the variables into first differences. Unit root tests, a VAR model and the Johansen (1991) cointegration test were carried out before the VECM was estimated. This VECM was used to examine the long-run equilibrium relationship between FDI and the explanatory variables. In the short-run there may be disequilibrium; however with the error correction mechanism, a proportion of the disequilibrium is corrected in the next period.

A limitation of the panel VECM is that the data are annual and extend only over 27 years. It is therefore unlikely that all the variables found to be significant in the dynamic panel data model (Table 5.5) will be non-stationary at the level series. The unit root test[71] results indicated that the non-stationary variables are FDI, financial risk rating, Commodity Price Index, and gross fixed capital formation. As such, a panel VECM robustness test was undertaken on the non-stationary variables, using a one-year lag to test for cointegration and Granger causality.

5.8 Vector Autoregression Model

After the unit root tests were carried out, it was essential to find out if there was a cointegrating relationship between the dependent variable and the non-stationary explanatory variables. The Johansen cointegration test developed by Johansen (1991) was used to find the optimal number of cointegrating relations. However, the VAR model had to be estimated prior to the Johansen (1991) cointegration test being carried out.

The variables used for the VAR analysis were FDI, financial risk rating, Commodity Price Index, and gross fixed capital formation. A lag length of one year was chosen to estimate the VAR as this was found to be the best fit when estimating the dynamic panel data model with the lagged dependent variable (FDI_{it-1}) as shown in Table 5.5. The VAR model was found to be stable at a lag length of one year. The VAR stability results and VAR estimation results are included in Appendix Nine.

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[71]The panel unit root test results are included in Appendix Six.

5.9 Johansen Cointegration Test

The Johansen (1991) cointegration test[72] was used to identify the number of cointegrating equations between the dependent variable and explanatory variables. Table 5.18 below presents the results from the Johansen (1991) cointegration test.

Table 5.18: Johansen Cointegration Test

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of Cointegrating Equation(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**p-value****
None *	0.115	145.529	47.856	0.000
At most 1 *	0.081	71.665	29.797	0.000
At most 2 *	0.028	20.804	15.495	0.007
At most 3	0.006	3.431	3.841	0.064

Trace test indicates 3 cointegrating equations 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 Cointegrating Equation(s)	**Eigenvalue**	**Max-Eigen Statistic**	**0.05 Critical Value**	**p-value****
None *	0.115	73.864	27.584	0.000
At most 1 *	0.081	50.861	21.132	0.000
At most 2 *	0.028	17.373	14.265	0.016
At most 3	0.006	3.431	3.841	0.064

Max-eigenvalue test indicates 3 cointegrating equations at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The results from the Johansen (1991) cointegration test indicate that there are three cointegrating relations at the 5% significance level. The two types of test statistics reported are the trace statistics and the maximum eigenvalue statistics. These results illustrate that the variables in the VAR model have similar stochastic trends and together achieve equilibrium in the long-run. The Commodity Price Index and the level of gross fixed capital formation have also been found to be statistically significant variables in the dynamic panel data model (see Table 5.5).

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[72]The full results of the Johansen (1991) cointegration test are included in Appendix Ten.

5.10 Granger Causality

The Granger (1969) causality test is useful in determining whether one time series is useful in forecasting or predicting another. This test was carried out after the estimation of the VECM[73] and provided information about the short-run causality. The results from this section signify whether financial risk, the Commodity Price Index, and gross fixed capital formation assist in the prediction of FDI. There could also be a reverse causality, where FDI helps in the prediction of financial risk and gross fixed capital formation.

Table 5.19 below presents results from the Granger (1969) causality test/Block Exogeneity Wald test

Table 5.19: VEC Granger Causality test

Dependent variable: d(lnfdi)			
Excluded	Chi-square	Degrees of freedom	p-value
d(lnfinrisk)	0.087	1	0.769
d(lncommindex)	0.373	1	0.542
d(lncapformation)	3.063	1	0.080*
All	3.595	3	0.309
Dependent variable: d(lnfinrisk)			
Excluded	Chi-square	Degrees of freedom	p-value
d(lnfdi)	1.194	1	0.275
d(lncommindex)	1.312	1	0.252
d(lncapformation)	1.674	1	0.196
All	4.056	3	0.256
Dependent variable: d(lncommindex)			
Excluded	Chi-square	Degrees of freedom	p-value
d(lnfdi)	0.238	1	0.626
d(lnfinrisk)	0.090	1	0.764
d(lncapformation)	2.123	1	0.145
All	2.427	3	0.489
Dependent variable: d(lncapformation)			
Excluded	Chi-square	Degrees of freedom	p-value
d(lnfdi)	0.348	1	0.555
d(lnfinrisk)	1.175	1	0.278
d(lncommindex)	0.328	1	0.567
All	2.171	3	0.538

Significant p-value at *10%, **5% and ***1%.

The Granger causality results indicate that gross fixed capital formation (infrastructure) granger causes FDI at the 10% significance level. This means that

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[73]The VECM results are included in Appendix Eleven.

gross fixed capital formation contributes to the prediction of FDI flows into African countries in the short-run. This lends some support to the dynamic panel data model (Table 5.5), where gross fixed capital formation was identified as one of the significant drivers of inward FDI to African countries.

5.11 Conclusion

This Chapter presents results from the unlagged regression model and the dynamic panel data model. The unlagged regression model is part of the initial analysis, and gives an indication of the variables that are significant in influencing FDI flows into African countries. The results from the unlagged model show that the level of economic risk (economic health) in African countries, performance of the Commodity Price Index, performance of stock markets in developed nations, the level of infrastructure, and openness to trade of African countries are significant in influencing FDI flows into African countries.

In addition, the dynamic panel data model shows that the amount of FDI received by African countries in the previous year is significant in influencing the FDI flows that Africa receives in the current year. The unlagged regression model shows that the availability of a stock market in a host country plays a positive, significant role in attracting FDI flows into African countries. The dynamic panel data results also show that having a stock market in a host country plays a positive role in influencing FDI into African countries. However, results from the dynamic panel data model show that the presence of a stock market is not a significant determinant of FDI flows into Africa.

When tests of robustness in relation to the strength of exogeneity were performed, the results indicated evidence of two-way relationship between FDI and some of the explanatory variables. The dynamic panel data results show that FDI contributes to the prediction of openness to trade in African countries, the level of economic risk, and the Commodity Price Index. However, stronger exogeneity is found to run from these variables (economic risk, Commodity Price Index, and openness to trade) to FDI; that is, these explanatory variables are stronger in predicting the movement of FDI.

As a further test of robustness, the data were also averaged over three years so as to smooth out cyclical fluctuations and provide information about the variables that influence FDI into African countries in the long-run. The results from the Blundell and Bond (1998) system GMM dynamic panel data model show that the amount of FDI received in the previous year, level economic risk (economic health), level of political risk (political stability), movement of commodity prices, and performance of stock markets in developed nations are significant in influencing the amount of FDI received into African countries in the long-run. A panel VECM was also carried out as a test of robustness. The VECM was estimated using non-stationary explanatory variables that are also cointegrated. Results from the Granger (1969) causality test indicate that there is a short-run relationship between FDI and the level of infrastructure.

CHAPTER SIX
DISCUSSION

The following Chapter provides further discussion of the main results obtained in Chapter Five, with reference to the unlagged regression model and the dynamic panel data regression model. The unlagged regression model was carried out as part of the initial analysis to provide indication of the variables that are significant determinants of FDI flows into African countries. A dynamic panel data model was carried out as part of the main analysis. The dynamic panel data model also provided more information as to whether or not FDI flows received in African countries in the previous year have an impact on current FDI flows received in the Continent.

Reference is made to the hypotheses that relate to each explanatory variable and this section discusses whether or not the results from the unlagged and dynamic panel data models support the hypotheses presented in Chapter Three. The robustness tests reported in Section 5.5 of Chapter Five using a dynamic panel data model indicate that there is a two-way relationship running from FDI to some of the explanatory variables. However, stronger exogeneity is demonstrated to be running from most of the explanatory variables (economic risk rating, Commodity Price Index, World Stock Market Index, gross fixed capital formation, and openness to trade) to FDI. This shows that these explanatory variables contribute to the prediction of FDI. Where there is a two-way relationship between FDI and some of the explanatory variables (for example, economic risk rating, Commodity Price Index and openness to trade), it is found that FDI is not very useful in the prediction of these explanatory variables.

Further discussion of the results obtained from the time averaged data and the VECM are also included here. These results identify the variables that influence FDI flows into African countries in the long-run. The policy implications for countries in Africa in relation to attracting FDI inflows are included in Section 6.2 of this Chapter. Through the findings of this research, African countries will have a better understanding of policies to amend or implement so as to increase inward FDI flows. The results of this research will be of interest to government policy-makers in Africa. Results from the unlagged model and the dynamic panel data model indicate that

factors such as the level of economic health in African countries, infrastructure, and the openness to trade play a significant role in influencing FDI flows into African nations. Therefore, African policy-makers should put measures in place that encourage strong economic health, investment in infrastructure, and openness to trade in their countries.

The results from the unlagged and dynamic panel data models also indicate that strong commodity prices play a positive, significant role in influencing FDI flows into African countries. The strong performance of stock markets in developed countries will also lead to more FDI flowing into African nations. Increased FDI flows translate to an increase in capital flows, which may in turn lead to an increase in inflation due to the increase of money supply in the economy. Increased capital flows may also have an impact on the county's exchange rate. Central banks will therefore be interested in this study, as they are in charge of maintaining a strong financial system. These results will also be useful to producers and exporters of commodities in Africa. The unlagged model and dynamic panel data model results indicate that availability of a stock market in a host country plays a positive role in influencing FDI flows into African countries. This result is important for African countries that either have a stock exchange, or are considering setting up one.

The AU body deals with economic, financial, and political matters that impact African countries. The results of this study will be of interest to the AU as it provides insight into how the level of economic health, financial strength, political stability, the movement of commodity prices, the performance of stock markets in developed nations, the level of infrastructure, openness to trade, and the availability of a stock exchange in a host country influence FDI flows into member countries. The new and unique information obtained from this research is highlighted in Section 6.3. Limitations of this research are also outlined in Section 6.4 of this Chapter, together with recommendations for future study.

6.1 Discussion of the findings

In order to examine factors that are important in influencing FDI flows into African countries, an unlagged model was carried out in the initial analysis followed by a dynamic panel data model in the main analysis. The dynamic panel data model

contains the lagged dependent variable (FDI_{it-1}) as one of the explanatory variables. The variables included in the regression models are: economic risk rating, financial risk rating, political risk rating, the Commodity Price Index (UNCTAD free-market Commodity Price Index), the World Stock Market Index (MSCI World Index), gross fixed capital formation (as a proxy for infrastructure), openness to trade, and a dummy variable representing the availability of a stock market in a host country.

H$_1$: There is a negative and significant relationship between economic risk and inward FDI.

Based on research literature, it is anticipated that results of this research will find a negative, significant relationship between FDI flows into African countries and the level of economic risk (economic health) present in these nations. Both the results from the unlagged regression and the dynamic panel data model support the hypothesis, which states that there is a negative, significant relationship between economic risk and inward FDI.

The preliminary results from the unlagged regression (Table 5.4) show that there is a negative, significant relationship between the level of economic risk (economic health) and the FDI flows received into African countries. The dynamic panel data results (Table 5.5) also indicate a negative, significant relationship between the level of economic risk and inward FDI to Africa. This negative relationship shows that an increase in the level of economic risk (poor economic health) in African countries will lead to less FDI flows into the Continent. According to the dynamic panel data model results, a 1% increase in the level of economic risk in African countries will lead to a decrease of FDI flows into African nations by 0.61%. Alternatively, as the economic health in an African country improves, there will be an increase of foreign investments.

The economic risk rating variable examines GDP per head, real GDP growth, annual inflation rate, budget balance (including grants) as a percentage of GDP, and current account as a percentage of GDP in each country. When a country is facing a rise in economic risk, it may signify that the GDP per capita is declining, there is slower economic growth, an increasing annual inflation rate, increasing government

expenditure as a percentage of GDP, and an increasing amount of imports flowing into the host country in comparison to the level of exports as a percentage of GDP.

These results support previous literature, which has found that the economic health of African countries plays a significant role in influencing inward FDI to these nations. This study used a dynamic panel data model estimated using the LSDV model as part of the main analysis. Past studies have used Ordinary Least Squares estimation, fixed effects models, random effects models as well as the Generalised Method of Moments estimation technique.

Bengoa and Sanchez-Robles (2003) find that economic stability is important in attracting FDI flows into Latin American countries. Economic stability is also important for African countries that wish to attract more FDI flows (Bartels et al., 2009). The research undertaken by Walsh and Yu (2010) also finds that strong macro-economic management (for example, low inflation, strong economic growth, and openness) will lead to more FDI flows into emerging markets and developed economies. The results from Twimukye (2006), Asiedu (2006), and Hailu (2010) indicated that a high rate of inflation has a negative effect on attracting inward FDI to African countries. Inflation was also found to be a significant determinant of FDI flows into African countries by Nonnemberg and Cardoso de Mendonça (2004), Onyeiwu and Shrestha (2004), Twimukye (2006), and Naudé and Krugell (2007). Improvements in the economic climate can increase a country's attractiveness with respect to investment. These findings are supported by research undertaken by Onyeiwu and Shrestha (2004), and Sekkat and Veganzones-Varoudakis (2007).

The robustness tests reported in Chapter Five, Sections 5.5 indicate a two-way relationship between FDI and economic risk. However, stronger exogeneity is found to run from the economic risk variable to FDI; that is the economic health of African countries is more useful in the prediction of FDI flows into Africa. The flow of FDI into African countries was not found to be very useful in the prediction of the level of economic risk present in these countries. It is therefore important for African countries to have a stable and healthy economy so as to be able to attract more foreign investments.

The significance of the economic risk rating in influencing FDI flows into African countries also implies that a country's market size plays a significant role in influencing FDI inflows. The ICRG economic risk rating used in this study includes GDP per head and real GDP growth as part of the five components that make up this risk rating. Some past studies that have examined FDI flows into African countries, have used GDP growth or GDP per capita to account for the market size in an economy. Studies were undertaken by researchers such as Bende-Nabende (2002) who find growing markets to be a long-run determinant of FDI in Sub-Saharan Africa. Research undertaken by Tarzi (2005) found market size to be important in influencing FDI flows into developing nations. Further research by Asiedu (2006), Twimukye (2006), Asiedu and Lien (2011), Anyanwu (2012), and Ezeoha and Cattaneo (2012) found that large local markets play a role in attracting inward FDI to Africa. The results from Fedderke and Romm (2006) showed that market size growth can increase FDI flows into South Africa, and research undertaken by Mhlanga and colleagues (2010) found that market size promotes FDI into the Southern African Development Community (SADC)[74] countries. Mohamed and Sidiropoulos (2010) contended that size of the economy influences FDI into Middle East and Northern African (MENA) countries. The results of this study together with those from previous research, indicate that investors are willing to make market-seeking investments in African countries as they continue to achieve economic growth.

H$_2$: There is a negative and significant relationship between financial risk and inward FDI.

Based on empirical literature, it was anticipated that the results of this research would show a negative, significant relationship between the level of financial risk (financial strength) in African countries and the amount of FDI flows received in these nations. Results from both the unlagged regression and the dynamic panel data model partially support the hypothesis, which states that there is a negative and significant relationship between financial risk and inward FDI.

Preliminary results from the unlagged regression model (Table 5.4) indicate that there is a negative relationship between the level of financial risk and FDI flows received into African countries. However, the level of financial risk is not significant

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[74]Seychelles was not included in this study.

in influencing FDI flows into the African Continent. The dynamic panel data results (Table 5.5) also find the level of financial risk to have an insignificant relationship with FDI flows into African countries. This indicates that foreign investors are still willing to invest into Africa even when some African countries are financially weak.

The financial risk variables taken into consideration in this study include: foreign debt as a percentage of GDP, foreign debt services as a percentage of exports of goods and services, current account as a percentage of exports of goods and services, net international liquidity as months of import cover, and exchange rate stability. When a country faces increasing financial risk (low financial strength) it means that the country may be accumulating increasing foreign debt as a percentage of GDP, increasing foreign debt services as a percentage of exports of goods and services, increasing imports of goods and services in comparison to the amount of exports as a percentage of goods and services, decreasing net international liquidity as months of import cover, and facing an increasingly volatile exchange rate.

Past research indicates that factors such as volatile exchange rates and heavy external debt discourage FDI into African countries. For example, Aryeetey and colleagues (2012) find that heavy debt in African countries discouraged FDI as it poses a risk to economic growth. Kandiero and Chitiga (2006) find an inverse relationship between real exchange rate appreciation and inward FDI to African countries. Research carried out by Twimukye (2006) noted that unexpected movements in the exchange rate may have an impact on FDI flows into Africa. Further, research undertaken by Kyereboah-Coleman and Agyire-Tettey (2008), find that real exchange rate volatility had a negative influence on inward FDI to Ghana.

Results of this research do not support some of the findings from past literature as shown above. This may be due to the fact that this study used a financial risk rating, which includes five components as a way of analysing the financial risk (financial strength) in an African country. Previous studies have focused on one variable, to see the effect of that particular variable on FDI flows into African countries. This study suggests that foreign investors may find the benefits of investing into the Continent greater than the overall financial risks.

Figure 4.26 in Chapter Four presents the average financial risk of the 35 countries examined in this study. The countries with the highest average financial risk (low financial strength) between 1984 and 2010 were Liberia, Guinea-Bissau, Sudan, Sierra Leone, Democratic Republic of the Congo, Zambia, Zimbabwe, Madagascar, Mali, and Burkina Faso. Among these countries, Sudan, Democratic Republic of the Congo, Zambia, and Madagascar were among the top 20 recipients of inward FDI flows to African countries.

It is noted that Sudan, Democratic Republic of the Congo, Zambia, and Madagascar are rich in natural resources. As such, this indicates that foreign investors may be willing to invest in countries that are rich in such resources even when they exhibit low financial strength. However, African countries should continue working on financial strength as this plays a significant role in achieving strong macro-economic stability.

H$_3$: There is a negative and significant relationship between political risk and inward FDI.

The findings from past literature indicate that there is likely to be a negative, significant relationship between the level of political risk (political stability) in African countries and the amount of FDI flows received in these countries. An increasing level of political risk (political instability) in African countries is expected to lead to less FDI flows being received into Africa. Results from both the unlagged model and the dynamic panel data model partially support the hypothesis, which states that there is a negative, significant relationship between political risk and inward FDI.

The results from the unlagged regression model (Table 5.4) indicate a negative relationship between the level of political risk (political stability) and the FDI flows received into African countries. However, the level of political risk is insignificant in influencing FDI flows into the African Continent. Results from the dynamic panel data model (Table 5.5) also show an insignificant relationship between the level of political risk in African countries and the amount of inward FDI flows to these countries.

Political risk variables taken into consideration in this study are: government stability, socioeconomic obligations (socioeconomic pressures in a country relating to unemployment, consumer confidence and poverty), investment profile, internal conflict, external conflict, corruption, military in politics, religious tensions, law and order, ethnic tensions, democratic accountability (government's response to its citizens), and bureaucracy quality (institutional strength).

When there is a rising political risk (political instability) in a country, there may be less support for the government, increasing social dissatisfaction, and an increasing risk of investing in that country in relation to contract viability, profit repatriation and payment delays. There may also be a threat of civil war, coup, terrorism or political violence, which may impact governance of the local government, foreign pressures (for example, sanctions and diplomatic pressures) on the ruling government, and cross-border conflict. Political risk can also bring with it increasing corruption in business dealings, increasing military participation in government, increasing religious and ethnic tensions, decreasing impartiality of the legal system, falling observance of the law, and decreasing responsiveness of the government to its citizens. A country with high political risk may also face a decline in institutional strength and bureaucracy quality, which is at risk of changing considerably with a change in government.

The insignificance of political risk (political stability) on FDI may imply that this variable is not important for many foreigners making investment decisions in the African Continent. The findings from Section 4.13 in Chapter Four show that some countries with a high level of political risk (political instability) have received large amounts of FDI inflows from 1984 to 2010, despite being politically unstable. This finding is mainly associated with countries that have natural resources. Foreign investors may find the benefits they gain from investing in these countries to be greater than the political risk that they have to bear. The option of taking out political risk insurance may also be available to multi-national companies that wish to invest in African countries considered to be politically risky. The data used in this research is from 35 African nations. It shows that on average, the ten most politically unstable countries between 1984 and 2010 were Sudan, Democratic Republic of the Congo, Liberia, Nigeria, Ethiopia, Sierra Leone, Guinea-Bissau, Guinea, Angola, and Togo.

From these countries Nigeria, Angola, and Sudan were among the top 10 recipients of FDI flows into Africa between 1984 and 2010.

Results of this study also support some findings presented in previous research. For example, findings from research undertaken by Asiedu (2002) and Kandiero and Chitiga (2006) indicated that political risk may not be an important determinant of FDI in African countries. These researchers did not find the political risk variable to be significant in influencing FDI flows into African nations. The data reviewed by Asiedu (2002) was from 1988 to 1997 and was estimated using Ordinary Least Squares. The data used by Kandiero and Chitiga (2006) was from 1980 to 2001 and was estimated using the Arellano and Bond (1991) one-step Generalised Method of Moments estimator. This study used a dynamic panel data model estimated using the LSDV model.

There are some researchers who find the level of political risk in a country to be important in influencing FDI inflows. Examples of such researchers include Akinkugbe (2005), Asiedu (2006), Dupasquier and Osakwe (2006), Fedderke and Romm (2006), Busse and Hefeker (2007), Naudé and Krugell (2007), Sekkat and Veganzones-Varoudakis (2007), Bartels and colleagues (2009), and Hailu (2010) all of who found that the political situation in a country is an important consideration for foreigners wanting to invest in African countries.

Government policies in a host country also influence FDI inflows as presented in Dupasquier and Osakwe (2006), Mohamed and Sidiropoulos (2010), and Anyanwu (2012). Results from Busse and Hefeker (2007) indicated that government stability, internal and external conflicts, law and order, ethnic tensions, and bureaucratic quality are important determinants of FDI. These researchers examined the 12 components included in the ICRG political risk rating, and considered how each component influenced FDI into 83 developing countries (34 of them in Africa).

Although the results of this research do not find the political risk variable to be significant in influencing FDI flows into Africa, it is important that governments of these countries work on maintaining political stability in order to give confidence to foreign investors. Results from the time averaged data (Table 5.16) also show that

the political risk variable is significant in influencing FDI flows into African countries in the long-run.

H$_4$: There is a positive and significant relationship between the performance of the Commodity Price Index and inward FDI.

The UNCTAD Commodity Price Index was used to track the performance of the principal commodities that are exported from developing countries[75]. The results from the unlagged regression and dynamic panel data model both support the hypothesis, which states that there is a positive, significant relationship between the performance of the Commodity Price Index and inward FDI.

The preliminary results from the unlagged regression model (Table 5.4) indicate that there is a positive, significant relationship between the performance of commodity prices and the FDI flows received into African countries. The results from the dynamic panel data model (Table 5.5) also show that there is a positive, significant relationship between the Commodity Price Index performance and inward FDI flows to African nations. The dynamic panel data model indicates that a 1% rise in the Commodity Price Index will lead to an increase of FDI flows into the African Continent by 0.54%. When commodity prices perform well in international markets, foreign investors are willing to invest in the African Continent so as to benefit from the rising commodity prices.

Previous literature examined FDI into African countries, but did not include the Commodity Price Index as one of the explanatory variables influencing FDI flows into the African Continent. The findings from this research add new information to literature examining FDI into Africa, by showing a positive and significant relationship between the performance of the Commodity Price Index and FDI flows received by African countries. The results of the robustness tests presented in

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[75]Developing countries in Africa as classified by the United Nations Conference on Trade and Development: Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Côte d'Ivoire, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Republic of the Congo, Rwanda, Saint Helena, São Tomé and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Swaziland, Togo, Tunisia, Uganda, United Republic of Tanzania, Western Sahara, Zambia, and Zimbabwe.

Chapter Five, Section 5.5, indicate a two-way relationship between FDI and the Commodity Price Index. However, it was revealed that greater strength of exogeneity ran from the Commodity Price Index to FDI; that is, the movement of the Commodity Price Index is more useful in the prediction of FDI flows into Africa. The FDI flows into African countries have not been found to be very helpful in the prediction of the Commodity Price Index performance.

Currently, many African nations are involved in the trade of commodities such as coffee, tea, vegetable oils, agricultural goods, minerals, ores, oil, and metals. Commodities still account for a large share of developing countries' export revenue. For example, in 2009 approximately 81% of the export revenue in African countries came from the sale of primary commodities (United Nations Development Programme, 2011). The presence of natural resources in Africa continues to attract foreign investors that wish to benefit from an increase in commodity prices. As such, resource seeking investments are a large driver of FDI into African countries.

H$_5$: There is a positive and significant relationship between the performance of the World Stock Market Index and inward FDI.

Based on previous research, it was anticipated that the results of this research would indicate a positive, significant relationship between the performance of stock markets in developed countries and FDI flows received by African countries. The MSCI World Index was used to track the performance of stock markets in 24 developed nations[76]. As expected, both the results from the unlagged regression and dynamic panel data model support the hypothesis, which states that there is a positive, significant relationship between the performance of the World Stock Market Index and inward FDI.

Preliminary results from the unlagged regression model (Table 5.4) indicate that there is a positive, significant relationship between the performance of stock markets in developed nations and the FDI flows received by African countries. The dynamic panel data results (Table 5.5) also show that there is a positive, significant

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[76]The 24 countries included in the MSCI World Index are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, United Kingdom and the United States of America.

relationship between the performance of major stock markets in developed nations and FDI flows into Africa. The dynamic panel data results show that a 1% rise in the World Stock Market Index will lead to 0.56% increase in FDI flows into African countries.

Previous literature, which has examined FDI into African countries, has not included the performance of stock markets in various developed countries as one of the explanatory variables influencing FDI flows into the African Continent. However, stock market indices have been shown to be useful macro-economic indicators (for example, Mahdavi and Sohrabian, 1991; Duca, 2007; and Sandte, 2012). The strong performance of stock markets in developed countries usually leads to an increase in GDP (thus economic growth) in these nations. This increased economic growth in turn leads to increased financial outflows from these developed countries, with some of those flows being directed towards African nations. These results indicate that the performance of stock markets in developed countries can provide a signal to African countries as to whether or not they are likely to experience an increase of inward FDI flows from developed nations. These results support the findings from Nonnemberg and Cardoso de Mendonça (2004), who find the Dow Jones Index to be significantly and positively correlated to FDI flows into developing nations. The Dow Jones tracks the performance of 30 large publicly-owned companies based in the USA. The MSCI World Index used in this study tracks the performance of large and mid-cap companies that are based in the USA, as well as in other developed countries.

The results of robustness presented in Chapter Five, Section 5.5 indicate a one-way relationship between FDI and the World Stock Market Index. Strong exogeneity is found to run from the World Stock Market Index to FDI; that is, the movement of the World Stock Market Index is useful in the prediction of FDI flows into Africa.

H$_6$: There is a positive and significant relationship between gross fixed capital formation (used as a proxy for infrastructure) and inward FDI.

Evidence from previous literature indicates the likelihood of a positive, significant relationship between gross fixed capital formation and FDI flows into African countries. Gross fixed capital formation has been used as proxy for the level of infrastructure in a country. Results from both the unlagged regression and the

dynamic panel data model, support the hypothesis, which states that there is a positive, significant relationship between gross fixed capital formation and inward FDI.

Preliminary results from the unlagged regression model (Table 5.4) indicate that there is a positive, significant relationship between the level of infrastructure present in African countries and inward FDI flows. The results from the dynamic panel data model (Table 5.5) also show a positive, significant relationship between the level of infrastructure and FDI into African countries. According to the dynamic panel data model results, a 1% increase in the level of infrastructure in African countries will lead to a 0.28% increase in FDI flows into these countries.

Results from the unlagged and dynamic panel data models suggest that African nations should ensure they have strong infrastructure present in their countries, as this supports greater efficiency in conducting business. The results of robustness outlined in Chapter Five, Section 5.5 indicate a one-way relationship between FDI and the level of infrastructure. Strong exogeneity is found to run from the level of infrastructure in African countries to FDI inflows; that is, the level of infrastructure in African countries is useful in the prediction of FDI flows into Africa.

These results also support previous literature that has found the level of infrastructure to be significant in influencing FDI inflows. The findings from Asiedu (2002), Tarzi (2005), Asiedu (2006), Dupasquier and Osakwe (2006), Sekkat and Veganzones-Varoudakis (2007), Bartels and colleagues(2009), Walsh and Yu (2010), and Ezeoha and Cattaneo (2012) indicated that infrastructure is significant in attracting FDI flows into African countries. Infrastructure development has a positive effect on FDI flows into Africa as shown in Akinkugbe (2005), Hailu (2010), and Mhlanga and colleagues (2010). Research undertaken by Kandiero and Chitiga (2006) find that the African Continent has been receiving little FDI due to poor infrastructure.

However, research by Onyeiwu and Shrestha (2004), and Twimukye (2006) did not find infrastructure to be a significant variable in relation to FDI flows into the African Continent. Nevertheless, this study, together with majority of past research

did find that having strong infrastructure is important for an African country seeking to receive inward FDI.

H$_7$: There is a positive and significant relationship between openness to trade in African countries and inward FDI.

It was anticipated that results of this research would indicate a positive, significant relationship between openness to trade in African countries and FDI flows received in these nations. When African countries are open and willing to trade with other nations, they are likely to receive increased foreign investments. Results from both the unlagged regression and the dynamic panel data model, support the hypothesis, which states that there is a positive, significant relationship between openness to trade in African countries and inward FDI.

Preliminary results from the unlagged regression model (Table 5.4) indicate a positive, significant relationship between the level of openness to trade in African countries and the FDI flows received. The dynamic panel data results (Table 5.5) also indicate a positive, significant relationship between openness to trade in African countries and FDI flows received by these nations. The results from the dynamic panel data model show that a 1% increase in the level of openness to trade in African countries will lead to a 0.81% increase in FDI flows into these nations.

The results of robustness presented in Chapter Five, Section 5.5 indicate a two-way relationship between FDI and the level of openness to trade in African countries. However, it was found that stronger exogeneity ran from openness to trade to FDI; that is, openness to trade in African countries is more useful in the prediction of FDI flows into Africa. The level of FDI flows into African countries was not found to be very helpful in the prediction of the level openness to trade present in these countries.

The findings from this study also support past literature that has found the level of openness to trade to be significant in influencing FDI flows into Africa. The research undertaken by Kandiero and Chitiga (2006) find that FDI responds well to openness in African countries. The findings from Asiedu (2002), Bende-Nabende (2002), Nonnemberg and Cardoso de Mendonça (2004), Onyeiwu and Shrestha (2004), Akinkugbe (2005), Yasin (2005), Twimukye (2006), Sekkat and Veganzones-

Varoudakis (2007), Hailu (2010), Mhlanga and colleagues (2010); Mohamed and Sidiropoulos (2010), Ezeoha and Cattaneo (2012), and Anyanwu (2012) showed that openness to trade is significant in influencing inward FDI to Africa. It is therefore important for African nations to be open to trade with other nations around the world. Nevertheless, the decision to allow foreign investors into a country should be made with prudence and with the country's national interests in mind.

H_8: There is a positive and significant relationship between the stock market availability in a host country and inward FDI.

This hypothesis proposes that having a stock exchange in a host country will encourage foreign investors to make large investments (10% or more shareholding in a firm) through the stock market. This could be in the form of a merger[77] or acquisition[78]. Results from the dynamic panel data model do not fully support this hypothesis, which states that there is a positive, significant relationship between the stock market availability in a host country and inward FDI.

Preliminary results from the unlagged regression model (Table 5.4) indicate that there is a positive, significant relationship between the availability of a stock market in a host country and the inward FDI flows received by African countries. The dynamic panel data model (Table 5.5) is the main model used in this study, and shows that that there is a positive, but insignificant relationship between the availability of a stock market in a host country and inward FDI flows to African countries.

The finding from this study is similar to that obtained by Hailu (2010). The research undertaken by Hailu (2010) proposed that the availability of a stock market in African countries plays a role in attracting inward FDI to those countries. Hailu (2010) finds a positive, but insignificant relationship between the stock market availability and FDI flowing into African countries. This positive relationship shows that some foreign investors are willing to make large investments into Africa (worth

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[77]Merger –When two or more companies come together through a takeover or creation of a new entity.

[78]Acquisition – A situation whereby a company purchases most or all of the target company's shareholding, thus having control of the target firm.

10% or more voting stock of an enterprise) through the stock market available in the host nation.

However, the number of investors who have used this channel to contribute FDI into African countries is insignificant. This may be due to the fact that, in the past, there were few companies listed on African stock markets and those that were, had low trade volumes. In many instances, the companies listed in African stock markets (with the exception of the Johannesburg Stock Exchange) do not fully represent the economic sectors that contribute to the GDP of their countries. For example, in Nigeria approximately 43% of the country's GDP comes from the industrial sector[79] (Central Intelligence Agency, 2013). However, there is a very small representation of industrial companies listed on the Nigerian Stock Exchange. This shows that for example, foreign companies wanting to gain a shareholding in a Nigerian energy company will most likely have to participate in a private equity deal rather than go through the stock market.

A similar finding is also found in the Egyptian Exchange (EGX) and Nairobi Securities Exchange (NSE) in Kenya. The companies listed on those stock markets do not fully represent the underlying economies of those countries. The EGX and NSE are both found to have a large proportion of listed companies from the financial sector (RisCura Fundamentals, 2013). However, in reality, the financial sector plays a smaller role in the overall contribution to GDP in both Egypt and Kenya.

It is also noted that many large investments into African countries tend to be greenfield investments, rather than mergers and acquisitions. This may also explain why a significant number of foreign investors have not used the stock market in the past as a way of making investments into African countries. However, stock markets can offer another avenue for foreign investment. African countries with a stock market should ensure that they are well-functioning and liquid. Policy-makers should also encourage the participation of companies from all sectors of the economy, especially those from the main sectors that contribute the country's GDP. It is also important for African nations to maintain strong economic health, financial strength, and political stability as these factors may have an impact on the performance of

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[79]The industrial sector includes mining, manufacturing, energy production, and construction.

local financial markets (for example, Heaney and Hooper, 1999; Kaminsky and Schmukler, 2002; and Simpson, 2012).

H₉: There is a positive and significant relationship between FDI received in the previous year and current inward FDI.

The amount of FDI received in the previous year by African countries was expected to influence the amount of FDI received in the current year by African nations. Results from the dynamic panel data model support the above hypothesis, which states that there is a positive, significant relationship between FDI received in the previous year and current inward FDI.

The findings from the dynamic panel data model (Table 5.5) indicate a positive, significant relationship between the FDI flows received in the previous year by African countries and current inward FDI flows into those countries. Results from the dynamic panel data model show that a 1% increase in FDI flows received in the previous year by African nations, will lead to an increase of FDI flows into African countries in the current year by 0.41%. Foreign investors are inclined to invest in a country that has received foreign investments in the past, as this suggests that the country is open to engaging in business dealings with other nations. Further, FDI projects tend to last for more than one year thus flowing into the current year.

The results of this study support the findings from previous literature. The research undertaken by Ezeoha and Cattaneo (2012), and Anyanwu (2012) finds that the presence of other foreign firms in Africa is significant in influencing FDI flows into the Continent. Studies carried out in countries outside of Africa also found the presence of other foreign firms to be significant in influencing FDI inflows (for example, Campos and Kinoshita, 2003; Blaise, 2005; Botrić and Škuflić, 2006; Walsh and Yu, 2010). African countries should therefore encourage more FDI flows into their countries each year, as this is likely to play a significant role in influencing the amount of FDI that they will receive in the following year.

The determinants of FDI inflows to African countries in the long-run

The dynamic panel data model was also estimated using annual data averaged over three-year periods. The original data had a time period of 27 years (1984 to 2010).

The time averaged data provides more information on the variables that influence FDI into African countries in the long-run. A dynamic panel data model was estimated using the Arellano and Bond (1991) difference GMM and the Blundell and Bond (1998) system GMM estimators. The GMM estimation method is suitable as the time averaged data has a short time period (T=9), and a large number of cross sections (N=35). In this study, the results from the Blundell and Bond (1998) system GMM estimator are preferred as they yield better results.

The time averaged data results (Table 5.17) indicate a long-run positive, significant relationship between FDI flows received into the Continent in the previous year and current FDI flows into African countries. This shows that in the long-run, the amount of FDI received in the previous year by African countries is significant in influencing the FDI flows received by African countries in the current year.

Other variables that have a positive and significant influence on African FDI inflows in the long-run include the performance of the Commodity Price Index, and the performance of stock markets in developed nations. In the long-run, an increase in commodity prices will lead to an increase of FDI flows into the African Continent. The strong performance of stock markets (bull market) in developed countries will also lead to an increase of FDI inflows into African nations in the long-run. Previous studies[80] have shown that the performance of stock markets in developed countries tend to have an impact on their economies.

The levels of economic risk (economic health) and political risk (political stability) have been found to have a negative, significant relationship with FDI flows into African countries in the long-run. These results indicate that as the economic risk in African nations increases (poor economic health), there will be a decrease of FDI flowing into Africa in the long-run. As the political risk rating in African countries goes up (increasing political instability), there will also be a decrease of FDI flows

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[80]Duca G. (2007) The relationship between the stock market and the economy: Experience from international financial markets. Bank of Valletta Review: University of Malta, 12.

Mahdavi S and Sohrabian A. (1991) The link between the rate of growth of stock prices and the rate of growth of GNP in the United. *American Economist* 35: 41.

Sandte H. (2012) Stock Markets vs GDP Growth: A complicated Mixture. (accessed 2 October 2012).

into the Continent in the long-run. This shows that even though some foreign investors may not be deterred by the current level of political risk in African countries, they may reduce their investments into some African nations in the long-run if these countries do not work towards reducing the level of political risk that is present in their countries.

The level of infrastructure in African countries, openness to trade of African countries with other nations, level of financial risk (financial strength) in African countries and availability of a stock market in a host country have not been found to be significant variables in influencing FDI flows into Africa in the long-run.

A panel VECM was also carried out as a test of robustness to examine the long-run equilibrium relationship between FDI and some of the explanatory variables proven through unit root tests to be non-stationary at the level series. These variables are financial risk rating, Commodity Price Index, and gross fixed capital formation. The results provide evidence of cointegration in the long-run among those variables. In addition, Granger (1969) causality tests indicated that a short-run dynamic relationship exists between FDI flows into African countries and the level of infrastructure present in those nations.

6.2 Policy implications

African countries have been working on implementing sound policies in their economies so as to attract investors from within and outside of the Continent. As the results of this research indicate, it is important for African countries to have a low level of economic risk (strong economic health), as this increases the amount of FDI flows received in the Continent. In order to achieve strong economic health, African Governments need to work towards increasing economic growth in their countries, having an increasing level of GDP per capita, having well-functioning central banks that will properly manage the level of inflation and maintain a strong financial system, managing government expenditure as a percentage of GDP, investing in projects that yield positive returns in the long-run, as well as avoiding accumulation of a large current account deficit as a percentage of GDP. As African countries continue to achieve economic growth and rising GDP per capita, they are likely to experience increased FDI flows into their countries. Increasing economic growth and

increasing GDP per capita in African countries will in turn attract foreign investors who wish to target their goods and services towards the host country's local population. The time averaged data (Table 5.16) also suggests that the level of economic health in African countries is important in influencing FDI flows into Africa in the long-run. Figure 4.25 in Chapter Four outlines the average economic risk of the 35 participant countries in this research over the period 1984 to 2010. The top five countries, with the least economic risk during this period, were Botswana, Gabon, Namibia, South Africa, and Libya. Of these countries, South Africa and Libya were among the highest recipients of FDI inflows during this period. Botswana and Namibia also received large FDI flows as a percentage of their GDP during this time.

The dynamic panel data results (Table 5.5) show that the financial risk (financial strength) variable is not significant in influencing FDI inflows into the African Continent. However, there is a negative relationship between the level of financial risk and FDI flows into African countries signifying that a high level of financial risk (low financial strength) will lead to less FDI flowing into Africa. It is therefore important for African nations to continue working on achieving financial strength in their economies.

In order to achieve low financial risk African Governments will need to work towards not accumulating substantial foreign debt as a percentage of GDP, avoiding accumulation of foreign debt services as a percentage of exports of goods and services, decreasing imports of goods and services in comparison to the amount of exports as a percentage of goods and services, increasing the level net international liquidity as months of import cover and having a stable exchange rate. The implementation of these policies by African Governments will play an important role in assisting their countries achieve financial strength in their economies. Increased financial strength will in turn have a positive effect on the level of FDI flowing into African nations.

Results of this study also show that political risk (political instability) facing some African nations is insignificant in influencing FDI flows into the Continent. This has been found to be the case especially for African countries that have natural resources,

which are in demand from foreign investors. However, there is a negative relationship between the level of political risk and FDI flows into African countries, indicating that having a high level of political risk (political instability) will lead to less FDI flowing into Africa. The time averaged data results (Table 5.17) also indicate having a low political risk (political stability) is important for African nations should they wish to continue receiving FDI in the long-run.

In order to achieve low political risk (political stability) African Governments will need to work towards reducing government instability, as well as the level of social dissatisfaction in the country in relation to employment, consumer confidence and poverty. Governments will also need to reduce investment risks for investors in relation to contract viability, repatriation of profits, and payment delays. There should also be a low threat of civil war, coup, terrorism or political violence, a low level of cross-border war or external pressures from other countries as well as minimal or no military participation in government. African countries are also encouraged to have low levels of religious and ethnic tensions, an impartial judicial system, observance of the law, a high level of institutional strength, and bureaucracy quality that will face minimal disruption even with a change in government.

Implementation of the above measures will certainly be challenging and occur in different stages. However, success in doing so will put African nations on the right path towards achieving low levels of political instability. Figure 4.27 in Chapter Four outlines the average political risk of the 35 countries examined in this research over the period 1984 to 2010. The top five countries with the least political risk during this period were Namibia, Botswana, Tunisia, South Africa, and Gambia. Of these countries, South Africa and Tunisia were among the highest recipients of FDI inflows during this period. Botswana, Namibia, and Gambia also received large FDI flows as a percentage of their GDP during this time.

With the mixed results of some of the hypotheses (that is, those relating to financial risk and political risk), it may be that there is a component of FDI that is risk based according to the risk-return trade-off, where some investment will be directed to higher risk and speculative investments and this may be evident in the mining sectors

of some countries. However, further research would need to be carried out to verify if this is the case.

The performance of the Commodity Price Index is found to have a positive influence on FDI inflows to the African Continent as indicated by the results of the dynamic panel data model (Table 5.5). It is anticipated that as the Commodity Price Index rises, more FDI will flow into the Continent. Commodity prices are expected to continue performing strongly as developed nations recover from the Global Financial Crisis along with increased demand from emerging economies such as Brazil, Russia, India, and China. African countries can expect to receive a large amount of FDI inflows targeting the commodities sector. The increase in FDI inflows will lead to an increase of money supply in the economy. Prices of assets such as houses may start rising in the economy, and this will need to be carefully monitored. Increased FDI inflows may also lead to exchange rate appreciation in a host country as foreigners demand more of the local currency to invest in that host country. As such, African Governments and central banks need to ensure they have controls in place to cater for increased FDI inflows.

African Governments need to ensure money is saved from the sale of commodities. This can be achieved through improving governance and transparency, doing away with corruption, and strengthening macro-economic policies (Anyanwu, 2009). Money saved during the commodity upswings can then be used during the downswing period to smooth economic volatility caused by commodity price changes. Small commodity exporters who are exposed to economic volatility caused by fluctuations in commodity prices can use counter cyclical fiscal policies for insulation (IMF, 2012). There is also interest among African countries to establish commodity exchanges, so as to obtain more benefits from the export of commodities. There are currently only eight commodity exchanges[81] on the African Continent. The Ethiopia Commodity Exchange (ECX) offers a good example to African countries as to the benefits that can be gained by establishing a commodity exchange. Since the establishment of the ECX in April 2008, Ethiopia has experienced an increase in the

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[81]Eight Commodity Exchanges in Africa: Agricultural Commodity Exchange for Africa, Abuja Securities and Commodity Exchange, Bourse Africa Limited, Ethiopia Commodity Exchange, Johannesburg Stock Exchange, Kenya Agricultural Commodity Exchange, Uganda Commodity Exchange, and Zambia Agricultural Commodities Exchange.

export of commodities together with increased profits for producers (Agence France-Presse, 2013). Improved conditions for producers in Ethiopia have also led to a rise in the quality of commodities produced in that country. African policy-makers should encourage the establishment of commodity exchanges in their countries, as this will be beneficial for the growth of their economies.

The results obtained from this research suggest that movement of stock markets in developed countries can be seen as an indicator of FDI inflows to be received in the African Continent from those nations. Results of this study show that strong performance of stock markets in developed countries has a positive influence on the FDI flows received into Africa. Stock markets in developed countries (for example, the USA, Japan and European countries) have been showing signs of improvement in 2013 after reaching very low levels during the Global Financial Crisis of 2008. At the end of May 2013, stock markets in the UK (FTSE 100) and Japan (Nikkei 225) were trading at their highest levels in five years (BBC, 2013). The Dow Jones Index in New York and Germany's DAX were also performing very strongly towards the end of May 2013.

As such, these developed countries are also showing signs of economic recovery and are expected to increase their outward capital flows. African countries can therefore anticipate receiving an increase of FDI flows from developed nations in the coming years. Once again, African policy-makers should ensure they have policies in place to cater for increased capital flows. As the performance of stock markets in the USA, Europe, and parts of Asia starts to improve, it may be an opportune time for African countries to engage in the promotion of investment opportunities available within their nations.

The results of this study also show that it is important for African nations to make a conscious effort to improve their infrastructure. Strong infrastructure makes it easier for businesses to operate efficiently, and plays a positive role in attracting FDI flows into the African Continent. With such strong infrastructure, enterprises do not need to worry about water and power interruptions, goods can be transported from one place to another at an affordable rate and with easy access, effective communication networks are available even in remote areas, and buildings are well-constructed.

African policy-makers need to ensure that sufficient funds are allocated towards implementing strong infrastructure in their economies and that the building of infrastructure is completed in an efficient and timely manner.

Results from the dynamic panel data model (Table 5.5) show that openness to trade in African countries has a positive, significant relationship with the level of FDI flows received into African nations. This indicates that African countries open and willing to trade with other nations are more likely to receive inward FDI flows. This result shows the importance of having external policies in an African country that encourage trade with other nations in the Continent, and outside of Africa. Nevertheless, African countries need to be prudent about setting up proper controls that monitor investments coming into a country. This ensures that the investments gained are needed, and will actually add value to the local economy.

This study has also shown that there is a positive relationship between the availability of a stock market in a host country and the amount of FDI flows that are received in African countries. There are currently 26 African countries that have their own stock market, or are included in a regional stock market[82]. However, the results of this research suggest that the relationship between availability of a stock market in African countries and inward FDI is insignificant. Nevertheless, it is anticipated that as African stock markets continue to develop, this relationship will become significant in the coming years. Research undertaken by Agbloyor and colleagues (2013) finds that stock market development plays a positive and significant role in attracting foreign investors into African countries.

Development of African stock markets and participation can be improved further through policies that aim to encourage a stable macro-economic environment, banking sector development, transparent and accountable institutions, shareholder protection, automation of the stock market, demutualisation, strengthening regulation and education about how the stock market works (Yartey and Adjasi, 2007). Policy-

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[82]Regional Stock Markets in Africa: 1. Bourse Régionale des Valeurs Mobilières (West African Regional Stock Exchange) - member countries are Benin, Burkina Faso, Guinea-Bissau, Côte d'Ivoire, Mali, Niger, Senegal, and Togo. 2. Bourse Régionale des Valeurs Mobilières d'Afrique Centrale (Central Africa's Regional Stock Exchange) - member countries are the Central African Republic, Chad, Cameroon, Republic of the Congo, Equatorial Guinea, and Gabon.

makers should also encourage companies from all sectors of the economy, especially those from major sectors that contribute to a country's GDP to participate on the stock exchange. This will give both local and foreign investors opportunity to be involved in the growth of companies that are making significant contributions to the country's economic growth.

Finally, it is noted that the amount of FDI received in the previous year by African countries is significant in influencing the amount of FDI flows that will be received in the current year by these African nations. It is important for African policy-makers to implement policies that will encourage FDI in their nations in the current year as these investments are likely to further encourage FDI inflows in the following year. The FDI flows in the following year could come from the same foreign institutions that are present in African countries, or from new firms that are encouraged by the presence of other foreign firms in Africa.

6.3 What is new and unique about this study?

New information has been added to the body of knowledge through results obtained from this research. This study has included the Commodity Price Index as one of the variables influencing inward FDI to African countries. Previous studies that have examined FDI flows into Africa have not included the performance of the Commodity Price Index as one of the variables that influences FDI flows into African countries. A study by Mash (1998) using a sample of six countries was undertaken to examine investment response to commodity price shocks. Mash (1998) finds that investment booms in response to commodity price shocks are likely, but not certain to take place. A boom at the end of the commodity price shock may occur. However, Mash (1998) did not focus on FDI and the study only included four African countries. This research has a focus on FDI into Africa and uses data from 35 African nations. Results of this study show that the performance of the Commodity Price Index plays a positive and significant role in influencing FDI flows into African nations.

Past studies have also not included the performance of stock markets in major developed countries as one of the variables that may influence FDI flows into African nations. This study used the MSCI World Index to track the performance of

stock markets in 24 developed nations and analysed the relationship that this Index has with inward FDI flows to Africa. Nonnemberg and Cardoso de Mendonça (2004) examined the relationship between the Dow Jones Index and FDI flows into developing nations (nine of them in Africa). However, the Dow Jones Index only tracks the performance of 30 large publicly-owned companies based in the USA. This study used an index that tracks the performance of large and mid-cap companies listed in the USA as well as in other developed countries. The results of this research show the performance of the stock markets in developed countries has a positive, significant relationship with the FDI flows received by African countries.

The economic, financial, and political risk ratings produced by the ICRG were used in this research to represent the economic health, financial strength, and political stability of African countries. The use of the ICRG risk ratings allows researchers to understand if these risk ratings can be used as a substitute for individual variables that are usually included to account for economic, financial, or political risk in a country. The findings of this research indicate that the ICRG economic, financial, and political risk ratings do act as a good proxy for economic health, financial strength, and political stability in African nations. Previous studies that examined FDI flows into African countries used a number of macro-economic variables to account for economic, financial, and political risk in a country. Other studies (for example, Asiedu, 2006; Asiedu and Lien, 2011; Busse and Hefeker, 2007, and Mijiyawa, 2012) used some components of the ICRG risk ratings in their research, whereas this research uses all the three ICRG risk ratings (that is, economic risk rating, financial risk rating, and political risk rating). It is recalled that there is a high correlation and interdependence among risk rating agencies (for example, Hammer et al., 2006; Güttler and Wahrenburg, 2007; Alsakka and ap Gwilym, 2010; and Simpson, 2012). It was appropriate to use the ICRG risk ratings in this research as they provide detailed and reliable monthly data over a long period of time, for a large number of countries.

A robustness test was performed to examine the strength of exogeneity between the dependent variable (FDI) and the explanatory variables. In this test, each of the explanatory variables was treated as a dependent variable in a dynamic panel data model, with the dependent variable lagged by one year. This robustness test was

performed so as to find out if any of the explanatory variables were useful in the prediction of the dependent variable (FDI) or if there was a reverse relationship whereby the dependent variable (FDI) was useful in the prediction of one or more of the explanatory variables. Previous studies have not used this methodology as a way of analysing the strength of exogeneity between variables. The Granger (1969) causality test was also taken as a test of robustness so as to examine causality between the dependent variable (FDI) and the explanatory variables. This test of robustness was carried out after cointegration had been established between the non-stationary variables selected. However, only FDI, financial risk rating, Commodity Price Index and gross fixed capital formation could be included in this analysis,[83] with evidence produced of Granger causality running from gross fixed capital formation to FDI.

The relationship between FDI flows into African nations and availability of a stock market in a host country has not been sufficiently explored. So far, a study carried out by Hailu (2010) has examined this aspect. This research has also obtained information with regard to the availability of a stock market in a host nation and the influence that this has on inward FDI to Africa. The availability of a stock market in an African country is found to have a positive influence on FDI inflows into the country.

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[83]Granger (1969) causality test: This test could only be carried out with four variables (FDI, financial risk rating, Commodity Price Index, and gross fixed capital formation). A Vector Error Correction Model (VECM) was estimated before the Granger (1969) causality test was undertaken. A VECM should be estimated with non-stationary variables that are cointegrated. Only the four variables were found to be non-stationary following the unit root test and cointegrated following the Johansen (1991) cointegration test. As such, these four variables were used for the Granger (1969) causality test.

6.4 Limitations of the study and future directions

The African Continent has 54 recognised countries. However, due to limited availability of data, this research was only able to cover 35 countries in the Continent. The ICRG economic, financial, and political risk ratings data was only available for 37[84] African countries for the time period starting 1984 to 2010. Somalia was not included in the research as there is insufficient data on the country with regard to the variables that are used for this study. Morocco was also not included in the research as the country is not a member of the AU.

A limitation of the data used in this research is that they are unbalanced and have an annual frequency. Most of the data relating to African countries is recorded on an annual basis by The World Bank and UNCTAD. There are also missing data for some of the countries, as this information may not have been recorded or was unavailable from local government authorities in a particular year. The variables used in this research have also been transformed into natural logarithms, except for the stock market availability dummy variable. It is acknowledged that net FDI inflows to an African country may be negative in a particular year. As such, changing such data to logarithm can reduce the number of observations available for estimation. However, an examination of the FDI flows into the African countries used in this study confirms that most of the FDI inflows were positive. As such, there was enough data on FDI inflows available to carry out the research throughout this period (1984 to 2010) even after the data were converted to natural logarithms.

Another limitation is the question of exogeneity. This study attempts to solve this by treating each variable endogenously in a dynamic panel data model and examining the relationship when all variables interact in a single system on an optimal lag of one year. In reality the model demonstrating the greatest explanatory power sheds further light on the question. The VEC Granger Causality test (used as a test of robustness) also adds information. Ultimately however, the study is about the

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[84]The ICRG Economic, Financial and Political risk ratings between 1984 and 2010 are available for these African countries: Algeria, Angola, Botswana, Burkina Faso, Cameroon, Côte d'Ivoire, Democratic Republic of the Congo, Egypt, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Libya, Madagascar, Malawi, Mali, Morocco, Mozambique, Namibia, Niger, Nigeria, Republic of the Congo, Senegal, Sierra Leone, Somalia, South Africa, Sudan, United Republic of Tanzania, Togo, Tunisia, Uganda, Zambia and Zimbabwe.

determinants of FDI and for the greater part of the study that variable is treated endogenously.

The use of structural breaks in this research was considered so as to examine the change in FDI flows into Africa in the presence of structural instability in key economic indicators. A structural break can also be defined as a structural change. When a structural change occurs, it means that the parameters of the model do not remain the same throughout the whole time period (Gujarati, 2004). Structural change in a model may be brought about by factors such as policy changes or external forces such as financial market movements and/or oil price movements.

An examination of graphs that show the mean of the variables used in this research was carried out so as to determine the presence or absence of a structural break in the data used in this research. The graphs examined relate to the following variables: FDI, economic risk, financial risk, political risk, Commodity Price Index, World Stock Market Index, gross fixed capital formation, and openness to trade. Examinations of the graphs that relate to the variables used in this research indicate that there is a structural break in 2007. This break can be seen on the graphs that relate to FDI, economic risk, Commodity Price Index, World Stock Market Index, gross fixed capital formation, and openness to trade. This structural change is a result of the Global Financial Crisis, which started mid-2007. These graphs are presented in Appendix Twelve.

However, the use of a structural break from 2007 was not applied in this research due to the time period covered and loss of degrees of freedom. It was considered to be inappropriate to split the sample from 2007. This research uses annual data with a time period of 27 years (1984 to 2010). The full period of the study will therefore include any effects of the Global Financial Crisis.

A panel VECM was considered as a test of robustness in this research so as to further examine the long-run relationship between inward FDI and the explanatory variables. In order to carry out the VECM, the explanatory variables should be non-stationary

at the level series and stationary at first differences. When the unit root tests[85] were carried out, the results indicated that some variables were stationary at the level series while others were non-stationary. As such, a limitation of this robustness test is that the VECM could not be estimated with all the variables that were included in the dynamic panel data model (Table 5.5). The VECM was estimated with only four of the variables (FDI, Commodity Price Index, financial risk rating, and gross fixed capital formation) that were included in the dynamic panel data model.

The UNCTAD free-market Commodity Price Index was used in this research to represent the price movement of principal commodities that are exported from developing nations. A limitation of this Index is that it does not include the price movement of energy commodities such as coal, oil, and gas, which contribute to the export revenue of some of the African nations (for example, major oil producers in Africa include Algeria, Angola, Egypt, Equatorial Guinea, Libya, Nigeria, and Sudan). The UNCTAD free-market Commodity Index could also be decomposed into agricultural export commodities and mineral export commodities. A future study can be undertaken to observe if FDI inflows into African countries are affected differently by agricultural and mineral commodities.

Future research will also look at incorporating more African countries in the study and using data that is more frequent (for example, quarterly data) so as to provide a clearer understanding of the factors that influence FDI flows into the Continent. A commodities index that captures price movements of energy commodities can also be used for future research. This will provide information on the relationship between the performance of energy prices and FDI flows into the African Continent. This information will be valuable for African countries that have reserves of energy resources and are involved in the trade of these energy commodities. Further studies could also be undertaken to observe the relationship between FDI flows into resource rich countries and FDI flows into poor resource countries.

This research established that there is a positive, significant relationship between the performance of stock markets in developed nations and FDI flows received into African countries. The performance of major stock markets in emerging economies

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[85]Panel unit root tests at the level series are included in Appendix Six.

may also have a significant influence on FDI flows into African countries (for example, Brazil, Russia, India, China and South Africa). These large emerging economies tend to have stock markets that represent their underlying economies. As such, a study examining the relationship between FDI flows into Africa and the performance of stock markets in emerging economies would contribute to the literature.

This research has also shown that there is a positive relationship between the stock market availability in a host country and FDI flows received in African countries. This result indicates that having a stock market in an African country has a positive influence of inward FDI to the host country. Nevertheless, this variable is not significant. Future research can focus on analysing the stock markets of selected African countries based on liquidity, number of listed companies, data availability and standards of governance (for example, South Africa, Egypt, Nigeria, Kenya, Mauritius, and Tunisia). The research can examine if these countries have been able to attract FDI investments through their stock markets as they have continued to develop to where they are today.

The findings from the dynamic panel data model (Chapter Five, Section 5.4) indicate that the level of political risk present in African countries is insignificant in influencing FDI flows into the Continent. Further studies could be undertaken to observe the relationship between FDI flows into African countries and the intensity and duration of civil war. The Peace Research Institute Oslo (PRIO) provides data that can be used to examine the intensity and duration of civil war. With regard to this research, the relevant data from PRIO would be 'Battle Deaths' data and the 'Onset and Duration of Intrastate Conflict' data.

Future research could also undertake an observation of FDI flows into the African Continent when countries that have undergone civil war (for example, Angola, Burundi, Chad, Côte d'Ivoire, Democratic Republic of the Congo, Republic of the Congo, Guinea Bissau, Liberia, Rwanda, Sierra Leone, Somalia, Sudan, and Uganda) are not included in the sample.

This research has established that there are eight[86] RECs in Africa. These regional communities aim to achieve greater economic integration and offer investors access to large markets. An area of future research could be to examine the relationship that FDI flows received into the various African RECs have with economic growth, political stability and trade patterns. This will offer additional information on the African regions and RECs that receive more FDI flows. Future studies can also be carried out to provide a better understanding of why certain RECs receive more FDI flows in comparison to others.

6.5 Conclusion

This Chapter includes a discussion of the main findings from the unlagged regression model and the dynamic panel data model. The results from these models are presented in Chapter Five. The unlagged regression model was analysed as part of the initial analysis while the dynamic panel data model formed the main analysis. The results obtained from the dynamic panel data model support most of the hypotheses that relate to the variables used in this research. The results from the dynamic panel data model (Table 5.5) fully support the following hypotheses:

- there is a negative, significant relationship between economic risk and inward FDI,
- there is a positive, significant relationship between the performance of the Commodity Price Index and inward FDI,
- there is a positive, significant relationship between the performance of the World Stock Market Index and inward FDI,
- there is a positive, significant relationship between gross fixed capital formation (used as a proxy for infrastructure) and inward FDI,
- there is a positive, significant relationship between openness to trade in African countries and inward FDI, and
- there is a positive, significant relationship between FDI received in the previous year and current inward FDI.

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[86] The eight Regional Economic Communities in Africa are: the Arab Maghreb Union, Common Market for Eastern and Southern Africa, Community of Sahel-Saharan States, East African Community, Economic Community of Central African States, Economic Community of West African States, Intergovernmental Authority on Development, and the Southern African Development Community.

However, it is found that the results from the dynamic panel data model (Table 5.5) partially support the following hypotheses:

- there is a negative, significant relationship between financial risk and inward FDI,

- there is a negative, significant relationship between political risk and inward FDI, and

- there is a positive, significant relationship between the stock market availability in a host country and inward FDI.

The results of this research show that the financial risk, political risk and stock market availability variables have the expected sign on their coefficient values. However, these variables are not found to be significant in influencing FDI flows into African countries between 1984 and 2010. Nevertheless, it is extremely beneficial for African countries to achieve financial strength and political stability. Stock markets in African countries may also become a significant determinant of FDI into Africa as these markets continue to develop and represent the economic sectors that contribute to the GDP of their countries.

The policy implications from this research will be useful to African policy-makers, African countries that have a stock market or would like to set up one, the bodies of the AU, central banks, producers and exporters of commodities in African countries, as well as investors who would like to obtain more information about investing in Africa. African nations should ensure that they have strong economic health, openness to trade, and sound infrastructure. Having a low level of political instability is also beneficial in the long-run. African policy-makers are advised that the performance of commodity prices has a positive and significant effect on inward FDI to their nations. The performance of stock markets in developed countries also has a positive and significant effect on inward FDI to African countries. Having a local stock market plays a positive role in attracting FDI inflows. It is anticipated that the development of local stock markets will encourage foreign investors to make large investments through the stock exchange.

Previous studies that examined FDI flows into Africa did not include the performance of the Commodity Price Index, nor the performance of stock markets in developed countries as some of the variables that may influence FDI flows into

African nations. The ICRG economic, financial and political risk ratings were used in this research to examine the economic health, financial strength, and political stability of African countries. Previous studies examining FDI flows into African countries used some components of the ICRG risk ratings in their study or used a number of macro-economic variables to account for economic, financial, and political risk in a country. This study also used dynamic panel data models to examine the strength of exogeneity between the dependent variable (FDI) and the explanatory variables. The results show that most of the explanatory variables are helpful in the prediction of FDI flows into African countries. The limitations of this study and areas of potential future research complete the content of this Chapter.

CHAPTER SEVEN

CONCLUSION

This concluding Chapter provides a summary of the research that has been undertaken in examining the determinants of FDI flows into African countries. A summary of the significance of this study, contents of each Chapter, and the main findings are presented.

7.1 Summary of the significance of this study

This research set out to find the significance of economic risk (economic health), financial risk (financial strength), political risk (political stability), performance of the Commodity Price Index, performance of the World Stock Market Index (Index tracking the performance of major stock markets in developed countries), gross fixed capital formation (infrastructure), openness to trade, and availability of a stock market in a host country in influencing FDI flows into African countries. These variables were drawn from their attention, or absence in the research literature.

Previous studies that examined the flows of FDI into African countries did not include the performance of the Commodity Price Index as one of the variables that influences FDI flows into African countries. This research used the UNCTAD free-market Commodity Price Index to track the free market prices of the main commodity exports from developing countries.

Studies undertaken in the past also did not include the performance of stock markets in developed countries as one of the variables that may influence FDI flows into African nations. This study used the MSCI World Index to track the performance of stock markets in 24 developed nations[87]. Including both the Commodity Price Index and the World Stock Market Index as determinants of FDI flows into African countries contributed new information to the body of knowledge.

The International Country Risk Guide (ICRG) economic, financial, and political risk ratings were used in this research to represent the economic health, financial

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[87]The MSCI World Index tracks the performancestock markets in these countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, United Kingdom, and the United States of America.

strength, and political stability of the African countries examined in this research. Using the ICRG risk ratings provided an indication as to whether or not previously studied variables could realistically be proxied by these risk ratings. The results of this research show that the ICRG economic, financial, and political risk ratings act as a good proxy for macro-economic variables represented in the literature to account for economic health, financial strength, as well as political stability. This finding also contributes new information to the body of knowledge.

A robustness test was performed to examine the strength of exogeneity between the dependent variable (FDI) and the explanatory variables (Chapter Five, Section 5.5). In this test, each of the explanatory variables was treated as a dependent variable in a dynamic panel data model, with the dependent variable lagged by one year. This robustness test was performed so as to find out if any of the explanatory variables were useful in the prediction of the dependent variable (FDI), or if the dependent variable (FDI) was useful in the prediction of one, or more of the explanatory variables. Previous studies did not use this methodology as a way of analysing the strength of exogeneity between variables.

The relationship between FDI flows into African nations and the availability of a stock market in a host country has not been adequately explored in past research. This research was able to obtain information in relation to the availability of a stock market in a host nation and the influence that this market has on inward FDI to Africa.

7.2 Research summary and main findings

In carrying out this research it was necessary to provide background information on the AU, which was launched in 2002. This information is contained in Appendix One. Chapter One includes information about FDI flows into the African Continent, and investment policies that are present in the various Regional Economic Communities. There is an increasing share of FDI flows into Africa from developing and emerging countries in Asia, South America, and the Middle East. However, most of the FDI flows into Africa still come from developed nations. This Chapter provides brief information about the significance of this study, theory and literature

that relates to FDI, data and methods of analysis that have been used to carry out this research, and the policy implications for African nations from this study.

Currently, most countries are open to the idea of FDI and allow this investment if it is in the nation's best interest. Chapter Two provides a review of the theory and current literature that relates to FDI flows. Modern FDI theory can be traced back to Classical Economics and the International Trade Theories of Smith (1776) and Ricardo (1817). Examples of other scholars who have made significant contributions to International Trade Theory include Heckscher (1919) and Ohlin (1933), Samuelson (1949, 1953), Jones (1965), Vernon (1966), Dunning (1981, 1988), Krugman (1987), Porter (1990), and Drucker (1992). The work undertaken by these researchers has made it easier to understand FDI and why it takes place. Chapter two also contains a discussion about the determinants of FDI flows into African countries. This Chapter has also carried out a review of the current literature that relates to FDI flows into developed, emerging, and developing countries in other regions.

Chapter Three introduces the hypotheses for the variables that were used in this research to investigate the determinants of FDI flows into African countries. These variables are economic risk, financial risk, political risk, Commodity Price Index, World Stock Market Index, gross fixed capital formation, openness to trade, and a dummy variable representing the availability of a stock market in the host nation. In addition, the hypothesis relating to the lagged dependent variable (FDI_{it-1}) is included in this Chapter. Chapter three also provides information about the regression models that were used to analyse the data. The initial analysis included an estimation of the unlagged random effects model (Model 3.1). This model was used to provide an indication of the variables that may be useful in influencing FDI flows into Africa. The main analysis involved the estimation of a dynamic panel data model (Model 3.2), which had the lagged dependent variable (FDI_{it-1}) as one of the explanatory variables. A one-year lag was found to be suitable in estimating the dynamic panel data model. This model was estimated using the LSDV model, also known as the fixed effects model.

Detailed information about the data used in this research is included in Chapter four. This Chapter informs the reader about the methodology undertaken in analysing the data as well as the preliminary analysis. The economic, financial, and political risk rating data was acquired from the Political Risk Services Group database and produced by the ICRG. The net FDI inflows data, gross fixed capital formation data, and openness to trade data were obtained from the World Development Indicators available from the World Bank database. The UNCTAD free-market commodity prices index data were obtained from the UNCTAD Statistics database. The MSCI World Index data were obtained from Datastream[88]. The stock market availability data were obtained from individual country stock market websites.

The methodology used in this research involved a preliminary analysis of the data followed by an estimation of regression models. Preliminary analysis provided information about descriptive statistics, correlation between the variables, and the relationship between FDI flows into African countries and the level of composite risk (that is, combined economic, financial, and political risk). A simple hypothesis test for economic, financial, and political risk was also carried out. This provided information about the economic health, financial strength, and political stability of the African countries examined in this research.

Following the preliminary analysis, an estimation of an unlagged regression model and a dynamic panel data model was undertaken. Robustness tests were also carried out. The first test of robustness provided information on the strength of exogeneity between the dependent variable (FDI), and the explanatory variables. The second test of robustness was undertaken by averaging the annual data over three-year periods. This test provided information about factors that influence FDI flows into African countries in the long-run. A VECM was also carried out as a test of robustness to provide information on the long-run relationship between FDI and the non-stationary explanatory variables.

Chapter Five provides the findings from this research after estimating the unlagged and dynamic panel data models. The results from the unlagged random effects model (Table 5.4) find that there is a negative, significant relationship between the

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[88]Datastream - database that offers access to a wide range of financial information.

economic risk rating and FDI flows into African countries. The financial risk and political risk variables also have a negative relationship with FDI flows into Africa. However, it is noted that the relationship between the level of financial risk and inward FDI flows is insignificant. Similarly, the relationship between political risk in African countries and inward FDI is insignificant. The performance of the Commodity Price Index, performance of stock markets in developed nations, infrastructure, openness to trade, and availability of a stock market all have a positive, significant influence on inward FDI to African countries.

The main results from the dynamic panel data model (Table 5.5) show that that the level of economic risk has a negative, significant relationship with FDI flows into Africa. Both financial risk and political risk have a negative relationship with inward FDI. However, the financial risk and political risk variables are insignificant in influencing FDI flows into African nations. The performance of the Commodity Price Index, performance of the World Stock Market Index, infrastructure, and openness to trade all have a positive, significant relationship with FDI flows into Africa. There is a positive relationship between having a stock market and the amount of inward FDI received by an African country. However, having a stock market in a host country does not play a significant role in attracting inward FDI. Finally, there is a positive relationship between FDI flows received in the previous year by African countries and current FDI flows into the Continent.

The tests of robustness indicated that FDI is helpful in the prediction of openness to trade in African countries, the level of economic risk, and Commodity Price Index. However, the influence that FDI has on those variables (economic risk, Commodity Price Index and openness to trade) is minimal. A much stronger effect is found to run from those variables to FDI. Data used in this research were also averaged over three years so as to smooth out cyclical fluctuations, and provide information about the variables that influence FDI into African countries in the long-run.

Results show that the amount of FDI received in the previous year, level of economic risk (economic health), level of political risk (political stability), movement of commodity prices, and performance of stock markets in developed nations are significant in influencing the amount of FDI received into African countries in the

long-run. A panel VECM was also carried out as a test of robustness on the non-stationary variables. The results from the Johansen (1991) cointegration test provide evidence of a long-run relationship among those variables. The Granger (1969) causality test is carried out after the cointegration test and the results indicate a short-run relationship between inward FDI to Africa and the level of infrastructure present in African countries.

A detailed discussion of the findings from this research is included in Chapter Six, together with the policy implications for African countries. There is also information about the limitations of this study, together with the future research directions. The results obtained from the dynamic panel data model (Table 5.5) support most of the hypotheses set out in Chapter Three. These results fully support the following hypotheses: there is a negative and significant relationship between economic risk and inward FDI, there is a positive and significant relationship between the performance of the Commodity Price Index and inward FDI, there is a positive and significant relationship between the performance of the World Stock Market Index and inward FDI, there is a positive and significant relationship between gross fixed capital formation (used as a proxy for infrastructure) and inward FDI, there is a positive and significant relationship between openness to trade in African countries and inward FDI, and there is a positive, significant relationship between FDI received in the previous year and current inward FDI.

However, it is found that the results from the dynamic panel data model (Table 5.5) partially support the following hypotheses: there is a negative and significant relationship between financial risk and inward FDI, there is a negative and significant relationship between political risk and inward FDI, and there is a positive and significant relationship between stock market availability in a host country and inward FDI. Results of this research show that the financial risk, political risk and stock market availability variables have the expected sign on their coefficient values. However, these variables were insignificant in influencing FDI flows into African countries from 1984 to 2010.

The policy implications from this research will be useful to African policy-makers, the AU, central banks, African countries that have a stock market or would like to

establish one, producers and exporters of commodities in African countries as well as foreign investors wishing to invest in the Continent. African nations are encouraged to pursue strong economic health, openness to trade, and sound infrastructure. It is also important for these countries to achieve political and financial stability in the long-run. African policy-makers need to be aware of the fact that the performance of commodity prices has a positive, significant effect on FDI flows into their nations. The performance of stock markets in developed countries also has a positive, significant effect on inward FDI to African countries. Having a local stock market plays a positive role in attracting FDI inflows. African policy-makers are therefore encouraged to implement policies that will assist in the development of local stock markets thus promoting greater investor participation.

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Appendix One – Background of the African Union

The AU was launched on 9 July 2002 in the Durban Summit, South Africa. The AU is a successor of the Organisation of African Unity (OAU) which commenced on 25 May 1963. The OAU charter was signed by representatives of 32 governments in Addis Ababa, Ethiopia and was essential in providing a meeting place for member countries to discuss matters that concerned Africa. The official working languages of the AU are Arabic, English, French, Spanish, and Portuguese.

Today, most countries in Africa are members[89] of the AU with the exception of Morocco. This is due to an ongoing dispute in relation to Western Sahara. Western Sahara is a territory located to the west of Morocco in North Africa, and was a Spanish colony. In November 1975, Spain gave up administrative power and negotiated a settlement with Morocco and Mauritania, known as the Madrid Agreement (BBC, 2013b). In February 1976, the Polisario Front (national liberation movement representing the Sahrawi people) declared the Sahrawi Arab Democratic Republic, which claims sovereignty over the entire area of Western Sahara. In August 1978, a peace deal was signed between Mauritania and the Polisario Front. Mauritania then withdrew from Western Sahara, and Morocco gained control of most of the territory. Today, the Polisario Front is still working for the independence of Western Sahara from Morocco. Meanwhile, Morocco opposes the Sahrawi Arab Democratic Republic membership of the AU.

The AU can suspend member states if they fail to comply with the rules of the Union. The AU has placed political sanctions on Madagascar, as well as suspended that country's membership. Madagascar was suspended from the AU after the 2009 Malagasy political crisis, in which Andry Rajoelina seized power from Marc Ravalomanana, who was the then president. Madagascar was suspended from the AU

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[89]AU Members (54 countries): Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Côte d'Ivoire, Democratic Republic of the Congo, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea-Bissau, Guinea, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Republic of the Congo, Rwanda, Sahrawi Arab Democratic Republic, Senegal, Seychelles, Sierra Leone, São Tomé & Principe, Somalia, South Africa, Sudan, South Sudan, Swaziland, Togo, Tunisia, Uganda, United Republic of Tanzania, Zambia, Zimbabwe. *suspended: Central African Republic, Egypt, Guinea-Bissau, and Madagascar.

because governments of member states are not allowed to come to power by unconstitutional means. Guinea-Bissau, the Central African Republic, and Egypt have also been suspended from the AU following coup d'états that took place in their countries. Guinea-Bissau was suspended from the AU in April 2012, the Central African Republic was suspended in March 2013, and Egypt was suspended in July 2013.

Objectives of the African Union

The Union aims to achieve unity between African countries and the people of Africa. The Union also has objectives to:

- "defend the sovereignty, territorial integrity, and independence of Member States,
- accelerate the political and socio-economic integration of the continent,
- promote and defend African common positions on issues of interest to the continent and its peoples,
- encourage international cooperation, taking due account of the Charter of the United Nations and the Universal Declaration of Human Rights;
- promote peace, security, and stability on the continent,
- promote democratic principles and institutions, popular participation, and good governance,
- promote and protect human and peoples' rights in accordance with the African Charter on Human and Peoples' Rights and other relevant human rights instruments,
- establish the necessary conditions which enable the continent to play its rightful role in the global economy and in international negotiations,
- promote sustainable development at the economic, social, and cultural levels as well as the integration of African economies,
- promote co-operation in all fields of human activity to raise the living standards of African peoples,
- coordinate and harmonise the policies between existing and future Regional Economic Communities for the gradual attainment of the objectives of the Union,

- advance the development of the continent by promoting research in all fields, in particular science and technology, and

- work with relevant international partners in the eradication of preventable diseases and the promotion of good health on the continent" (African Union, 2003c).

Bodies of the African Union

The Assembly

The Assembly is the supreme body of the AU and is made up of heads of state and government. Some of the functions of this body are to accelerate the regional socio-economic and political integration, monitor the implementation of AU decisions, give direction on conflict management, acts of terrorism, emergency situations and peace restoration, decide on intervention in a member state at the request of a member state or in situations such as war crimes, genocide and crimes against humanity, decide on the sanctions to be imposed on any member state if necessary, make decisions with regard to membership of the Union, receive reports and recommendations from other AU organs, appoint or terminate judges of the court of Justice, appoint the chairperson of the Commission, deputy chairperson, commissioners, and adopt the budget of the Union (African Union, 2003d).

The Executive Council

This is made up of ministers or authorities designated by the governments of member states. The Executive Council is responsible to the Assembly. This body coordinates and harmonises the policies, activities and initiatives of the Union in areas of interest to member countries; monitors the implementation of the policies, decisions and agreements adopted by the Assembly; promotes cooperation with the regional economic communities, African Development Bank, United Nations Economic Commission for Africa and other African institutions; determines policies encouraging cooperation between the Union and Africa's partners; promotes gender equality within AU programs and ensures that all activities are in line with the objectives of the AU (African Union, 2003f).

The Pan African Parliament

This organ aims to ensure that African people are involved in the governance, development and economic integration of their countries in the African Continent. This body encourages good governance, transparency and accountability in member countries. The parliament consists of elected representatives from the 54 member countries (African Union, 2003h).

African Court on Human and Peoples' Rights

This continental court deals with issues that relate to the promotion and protection of human rights in Africa. It is also there to assist with the interpretation of all the relevant human rights instruments that have been agreed upon by the members concerned (African Union, 2003b).

The Commission

This is composed of the chairperson, the deputy chairperson, eight commissioners and staff members. The Commission plays an important role in the everyday management of the AU. This organ also encourages socio-economic and political regional integration by working closely with the AU member countries; regional economic communities and African citizens (African Union, 2003e). The current Commission chairperson is Ms Nkosazana Dlamini-Zuma from South Africa.

The Permanent Representatives Committee

The Permanent Representatives Committee is responsible for preparing the work for the Executive Council. It is made up of permanent representatives from member states. The functions of this body include making recommendations on the areas of common interest within member countries; facilitating communication between the Commission and member states; making recommendations to the Executive Council with regard to the budget of the Union as well as administrative, budgetary and financial matters of the Commission. This committee also makes recommendations to the Executive Council with regard to programs that relate to regional socio-economic development and integration (African Union, 2003j).

The Specialized Technical Committees

The technical committees are made up of African ministers or senior officials who are responsible for sectors that fall within their area of expertise. The committees will deal with concerns such as "rural economy and agricultural matters; monetary and financial affairs; trade, customs and immigration; industry, science and technology; energy, natural resources and environment; transport, communications and tourism; health, labour and social affairs; education, culture and human resources" (African Union, 2003k).

The Peace and Security Council

The Peace and Security Council assists in providing timely and effective response to conflict and crisis situations in Africa. It is responsible for the promotion of peace, security and stability in Africa. This organ works to ensure that there is political stability in the Continent (African Union, 2003i).

The Financial Institutions

The AU has created the African Central Bank, the African Monetary Fund and the African Investment Bank. The establishment of these financial institutions is not complete and is an ongoing process. These institutions were created with the aim of assisting in trade within the Continent. These financial bodies will encourage regional economic and financial integration in the Continent (African Union, 2003g).

Economic, Social and Cultural Council (ECOSOCC)

This body is made up of different social and professional groups of the AU member countries. It assists in building strong relationships between governments and the African society. Some of the functions of ECOSOCC include:

- "contributing to the translation of the objectives, principles and policies of the Union into concrete programs as well as the evaluation of these programs,
- carrying out studies that are recommended by AU organs and submitting recommendations,
- contributing to the participation, sharing of best practices, expertise and realisation of the vision and objectives of the AU,

- contributing to the promotion of human rights, rule of law, good governance, democratic principles, gender equality and children rights,

- promoting and supporting efforts of institutions engaged in review of the future of Africa,

- fostering and consolidating partnership between the Union and civil society organisations through the public on the activities of the AU, and

- assuming functions referred to it by any other organ of the AU" (Economic, Social and Cultural Council, 2012).

African Union Commission on International Law (AUCIL)

This body aims to improve the development of international law in Africa as well as promote the acceptance and respect for the principles of international law (Akinkugbe, 2012). The AUCIL will assist in the teaching, study, publication and distribution of literature on international law. The AUCIL will also prepare studies in areas that have not yet been regulated by international law in Africa or sufficiently developed.

Advisory board on Corruption

This board aims to encourage the adoption and application of anti-corruption measures in the Continent, advise governments on how to deal with corruption in their own countries, develop ways of analysing the nature and degree of corruption in Africa, make the information that deals with corruption available to the public and promote the harmonisation of codes of conduct for public officials. This body will continue to build partnerships with the African Commission on Human and Peoples' Rights, African civil society, governmental, intergovernmental, and non-governmental organizations in the fight against corruption (African Union, 2003a).

Appendix Two – Summary of Literature

Table 2.1: Summary of literature on determinants of foreign direct investment into developing, emerging and developed countries.

Author(s)	Title	Variables	Methodology	Results
Zhang (2001)	What attracts foreign multinationals to China?	Inward FDI, market size, labour costs, labour quality, agglomeration, transportation network, FDI incentives, cultural and historical links, openness.	Ordinary least squares and fixed effects estimation.	China's large market size, liberalised FDI regime and improving infrastructure are attractive to multi-nationals. Regional distribution of FDI is influenced by FDI incentives, historical links with foreign investors, and other location factors.
Banga (2003)	Impact of government policies and investment agreements on FDI inflows (in selected Asian countries).	Inward FDI, current and potential market size, cost of labour, availability of skilled labour, cost of capital, availability of infrastructure, real exchange rate, exchange rate stability, rate of inflation, financial health, overall economic stability that includes political stability, tariff policies, investment incentives, removal of restrictions, bilateral investment treaties and regional investment agreements.	Random and fixed effects models.	Fiscal incentives do not have a significant impact on inward FDI and removal of restrictions attracts inward FDI. Lowering of restrictions attracts inward FDI from developed countries, while fiscal incentives and lower tariffs attract FDI from developing countries. Bilateral investment treaties, which emphasize non-discriminatory treatment of FDI, have a significant impact on FDI inflows. Bilateral investment treaties with developed countries rather than developing countries are found to have a significant impact on inward FDI to developing countries.

Author(s)	Title	Variables	Methodology	Results
Baniak et al. (2003)	On the determinants of foreign direct investment in transition economies.	Exchange rates, marginal cost of production and degree of risk aversion.	Formal model describing FDI in a country with an unstable macro-economic and legal environment.	Higher variability of macro-economic fundamentals reduces inward FDI; high volatility of fiscal and business regulations reduces inward FDI. The macro-economic and legal instability may lead to investment from firms interested only in short-run speculation. A stable economic and institutional environment is needed to attract long term capital inflows.
Bengoa and Sanchez-Robles (2003)	Foreign direct investment, economic freedom and growth: new evidence from Latin America.	Real GDP in constant dollars of 1985, nominal GDP, foreign direct investment, gross capital formation as a percentage of GDP (1985 prices), debt as a percentage of GDP and as a percentage of exports, inflation, literacy rate, primary school enrolment rate, black market premium, index of economic freedom and openness.	Random and fixed effects models.	Economic freedom in the host country is a positive determinant of FDI inflows. Inward FDI is positively correlated with economic growth in the host countries. The host country requires adequate human capital, economic stability and liberalised markets to benefit from long-term capital flows.
Campos and Kinoshita (2003)	Why does FDI go where it goes? New evidence from the transition economies.	Per capita FDI stock, lagged FDI, market size, labour cost, education, natural resources, distance from Brussels, telephone lines, inflation, external liberalisation, rule of law, bureaucracy, trade dependence, restrictions on FDI.	Fixed effects estimation and Generalised method of moments (Arellano and Bond 1991).	The main determinants are institutions, agglomeration and trade openness. In the Soviet Union, natural resources and infrastructure matter. In Eastern Europe and Baltic countries, agglomeration is significant.

Author(s)	Title	Variables	Methodology	Results
Asiedu and Lien (2004)	Capital controls and foreign direct investment.	Net FDI flows to GDP, capital controls (the existence of multiple exchange rates, restrictions on the capital account and restrictions on the repatriation of export proceeds), openness to trade, host country market attractiveness, infrastructure development, natural resource availability and country risk.	Fixed effects model.	The impact of capital controls on FDI flows has changed over time. In the 1970s and 1980s none of the policies were significant in influencing FDI. In 1990 all the three capital control policies were significant. Capital controls have no effect on FDI to Sub-Saharan Africa and Middle East. Capital controls affect FDI flows into East Asia and Latin America negatively.
Blaise (2005)	On the link between Japanese Overseas Development Assitance and FDI in China: A macroeconomic evaluation using conditional logit analysis.	Japanese FDI in China, Agglomeration effect, level of economic activity, production cost, infrastructure and human capital.	Conditional logit analysis.	Japanese aid flows have a significant positive impact on private investors location choice. The level of economic activity and agglomeration has a leading role in the location decision of Japanese investors. Foreign aid should be aimed at enhancing infrastructure development, acting as a pre-requisite for future direct investments. There is need for better cooperation between public and private sectors in development assistance programs.

Author(s)	Title	Variables	Methodology	Results
Karakaplan et al. (2005)	Aid and foreign direct investment: International evidence.	Share of FDI inflows in GDP, share of Overseas Development Agency records of aid; per capita GDP; loss in the real value of money; variation of the loss in the real value of money over the past 5 years; log of real effective exchange rate; openness to trade; growth in real GDP. All variables are moving averages over the past 3 years.	Dynamic panel data specification and Generalised method of moments.	FDI does not necessarily flow to countries that receive aid, or a country has received FDI flows in the past. Good governance and developed financial markets reinforce the positive effect of aid and former FDI flows on maintaining current FDI flows.
Neumayer and Spess (2005)	Do bilateral investment treaties (BITs) increase foreign direct investment to developing countries?	Amount of FDI going to a developing country, number of BITs a developing country has signed with OECD countries, per capita income, total population size, economic growth rate, dummy variable indicating if a country is a member of the World Trade Organisation, dummy for the number of bilateral trade agreements a developing country has, inflation, trade openness, secondary enrolment ratio, natural resource intensity, political stability and institutional quality.	Random effects and Fixed effects model.	There is evidence that a higher number of BITs raises the FDI that flows to a developing country. This result is very robust to changes in model specification, estimation technique, and sample size. BITs might function as substitutes for good domestic institutional quality. This result is not robust to different specifications of institutional quality.

Author(s)	Title	Variables	Methodology	Results
Botrić and Škuflić (2006)	Main determinants of foreign direct investment in the Southeast European countries.	Inward FDI, GDP, GDP growth, population, labour cost, ICT, openness to trade, inflation, external debt, service sector share, privatisation, financial sector development, private sector share.	Generalised Least Squares regression analysis.	For Southeast European countries, FDI inflows are dependent on the completion of the privatisation process. Privatisation and trade regime, as well as the density of infrastructure appear to be robust under different specifications. Agglomeration is also a significant variable.
Daude and Stein (2007)	The quality of institutions and foreign direct investment.	Outward stock of FDI from the source country to the host country, sum of the logs of the host country and the source country GDPs, squared difference in GDPs of the host and the source country, absolute difference between the host and source country GDPs, absolute difference between the countries' skilled labour, the squared difference of the skilled labour, distance between the countries' capitals, voice and accountability, political stability, government effectiveness, regulatory quality, control of corruption, rule of law, political stability and freedom, government efficiency.	Cross-section Ordinary least squares estimation, empirical model developed by Carr et al. (2001).	Better institutions have an overall positive and economically significant effect on FDI. Some institutional aspects matter more than others do, such as unpredictability of laws, regulations and policies, excessive regulatory burden, government instability, and lack of commitment, play a major role in deterring FDI.

Author(s)	Title	Variables	Methodology	Results
Mina (2007)	The location determinants of FDI in the GCC countries.	Foreign direct investment inflows divided by GDP, oil resources, world price of crude oil, market size, human capital, openness to trade, infrastructure development and institutional quality.	Stepwise OLS regression and random effects Generalised Least Squares estimation.	Oil potential and oil reserves have a negative influence on FDI flows into Gulf Cooperation Council (GCC) countries. The relative degree of oil utilisation has a positive influence on FDI inflows. Oil price has a negative influence on FDI inflows. Institutional quality, trade openness and infrastructure development have a positive effect on FDI inflows. Improvements in human capital discourage FDI inflows.
Quazi (2007)	Investment climate and foreign direct investment: A case study of selected countries in Latin America.	Lagged changes in FDI inflows, Economic freedom, trade openness, domestic market size, human capital, infrastructure and return on investment.	Generalised least squares model and random effects model.	The FDI inflow is increased by foreign investors' familiarity with the host economy, better infrastructure, higher return on investment and greater trade openness. FDI is affected by lack of economic freedom. FDI inflow is negatively correlated with policy changes resulting in higher trade barriers, more repressive taxation, more restrictive foreign investment code, more repressive financial system, price and wage controls. Excessive bureaucracy and inefficient financial markets are disadvantages for Mexico in comparison to other Latin American countries.

Author(s)	Title	Variables	Methodology	Results
Jeon and Rhee (2008)	The determinants of Korea's foreign direct investment from the United States, 1980-2001: An empirical investigation of firm-level data.	Real FDI inflows, real exchange rate, relative wages, relative wealth, interest rate differentials, exchange rate volatility, expected exchange rate changes, expected exchange rate differentials.	Ordinary least squares.	Korea's FDI inflows from the US have significant associations with real exchange rates, relative wealth, relative wage costs, expected exchange rate changes, and interest rate differentials. The extent and direction of the links has been varied depending on the different FDI regimes in Korea.
Al-Sadig (2009)	The effects of corruption on FDI inflows.	FDI inflows divided by the host country's total population, GDP per capita, growth rate of GDP, population growth rate, trade openness, inflation, illiteracy, secondary school enrolment, growth rate of urban population, agglomeration, corruption, institutional quality, political risk and democratic institutions.	Ordinary least squares cross-section regression.	Corruption in the host country has a negative effect on FDI inflows. After controlling for other factors such as quality of institutions, the negative effects of corruption disappear. A country's quality of institutions is more important than the level of corruption in encouraging FDI inflows.

Author(s)	Title	Variables	Methodology	Results
Mateev (2009)	Determinants of foreign direct investment in Central and Southeastern Europe: new empirical tests.	Bilateral flows of FDI from country i to country j, market size of the host country, potential demand of local consumers, geographical distance among markets, changes in costs of labour in host countries, literacy, trade openness, infrastructure, investment climate in host country, corruption, cultural similarities among countries, preferred methods of privatisation in host country.	Cross-section panel data analysis.	Distance, population, GDP, risk, labour costs and corruption can to a large extent explain the size of FDI flows in transition economies. Evidence about the role of privatisation in explaining the scale of inwardinvestment is ambiguous. FDI flows into different transition economies are determined by the same macro-economic factors and not by the timing of their accession to the European Union.
Zheng (2009)	A comparison of FDI determinants in China and India.	FDI from home countries to China and India, market size, market growth, labour cost, exports, imports, exchange rate, inflation, borrowing cost, country and political or policy liberalisation, geographic distance, culture and linguistic ties.	Pooled Ordinary least squares model and random effects model.	Market growth, imports, labour costs, country political risk or policy liberalisation are significant FDI determinants for China and India. Exports, market size and borrowing costs are important to China's FDI. Geographical and cultural distance factors are important to India's FDI.

Author(s)	Title	Variables	Methodology	Results
Biglaiser and De Rouen Jr (2010)	The effects of IMF programs on U.S. foreign direct investment in the developing world.	The holdings of U.S. residents in long term investments as a percentage of GDP, real GDP per capita, economic growth, inflation, total reserves, trade liberalisation, regime type and conflict, participation in IMF facilities(Standby Arrangements, Extended Fund Facilities, Poverty Reduction and Growth Facilities).	Treatment effects regression model and interviews with IMF staff researchers.	IMF borrowers tend to be more attractive to US investors, but not all IMF programs have the same effect. Specific fund programs matter for investment flows.
Kimura and Todo (2010)	Is foreign aid a vanguard of foreign direct investment? A gravity-equation approach.	FDI flows from country i to a least developed country j, total aid from all countries to j, total aid for infrastructure from all countries to j, aid from country i to j, aid for infrastructure from country i to j, aid for non-infrastructure from country i to j, GDP of country i, GDP of country j, distance between i and j, difference in GDP per capita between i and j, index of the regulatory quality, sum of 6 indices of governance.	Ordinary least squares and Generalised method of moments	Foreign aid in general does not have any significant effect on FDI. However, Japanese aid promotes FDI from Japan, but does not attract FDI from other countries.

Author(s)	Title	Variables	Methodology	Results
Leitão (2010)	localization factors and inward foreign direct investment in Greece.	Greek inward FDI, market size, openness to trade, taxes, inflation, real wages	Fixed effects and Generalised method of moments estimator	Results indicate that market size, trade openness and labour costs are significant factors in explaining inward FDI to Greece. Market size is also significant in influencing FDI into Greece. Results show that Greece has issues of macro-economic stability, which discourages investors.
Walsh and Yu (2010)	Determinants of foreign direct investment: A sectoral and institutional approach.	Inflow of FDI as a share of nominal GDP, Openness, real GDP growth, average inflation over the previous three years, GDP per capita, real effective exchange rate, stock of FDI.	Generalized method of moments approach.	Primary sector FDI has no strong linkages to macro-economic stability, level of development or institutional quality. Agglomeration and larger FDI stocks attract additional inflows into the primary sector. Secondary and tertiary FDI are affected by the country's income level, exchange rate valuation, financial depth, school enrolment, judicial independence, labour market flexibility and agglomeration.

Author(s)	Title	Variables	Methodology	Results
Asiedu and Lien (2011)	Democracy, foreign direct investment and natural resources.	Net FDI flows to GDP, democracy, natural resources, openness to trade, rate of inflation, level of infrastructure, GDP per capita, square of GDP per capita, institutional quality, political instability and FDI risk.	Dynamic panel data model.	The effect of democracy on FDI depends on the importance of natural resources in the host country's exports. Democracy facilitates FDI in countries where the share of natural resources in total exports is low. Democracy has a negative effect on FDI in countries where exports are dominated by natural resources.
Baek and Qian (2011)	An analysis on political risks and the flow of foreign direct investment in developing and industrialised economies.	Foreign direct investment per capita, market size, market development and market potential, openness to trade, and overall political risk in a host country.	The gravity model and system Generalised Method of Moments model.	Political risk is a significant determinant of FDI in both industrialised and developing nations. Not all aspects of political risk affect FDI stocks in industrialised and developing countries in the same way. Since the 9/11 attacks, political risks have become more important and significant determinants of FDI flows especially, in industrialised nations.

Author(s)	Title	Variables	Methodology	Results
Vukšić (2011)	Developing countries in competition for foreign investment.	Discussion of the structure of competing economies and their differences, the optimal policy in the absence of FDI, the profit function and behaviour of a foreign investor, the benefits for the host country when foreign investment takes place, non-preferential tax regime, preferential tax regime and cleared labour markets assumption in competing countries.	Models of competition for FDI.	If governments of competing countries are not allowed to discriminate between domestic and foreign firms, a less developed country may attract FDI, depending on labour cost differentials and responsiveness of foreign and domestic companies to changes in supply of public inputs. A less developed country may obtain FDI if the investment project is more labour intensive. If tax discrimination is allowed, the more developed country will always attract foreign investment.
Razmi and Behname (2012)	FDI determinants and oil effects on foreign direct investment: evidence from Islamic countries.	Foreign direct investment divided by population, market size, openness to trade, population growth, economic risk, economic infrastructure, extraction of oil and dummy variable for the financial crisis in Asia in the years 1997, 1998 and 1999.	Random effects model.	Economic growth attracts FDI in Islamic countries. The rate of inflation, oil extraction and openness to trade has a negative effect on FDI inflows. Islamic countries need to control economic risk and pay attention to economic growth so as to continue attracting inward FDI flows.

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Author(s)	Title	Variables	Methodology	Results
Jadhav (2012)	Determinants of foreign direct investment in BRICS economies: Analysis of economic, institutional and political factors.	Net FDI inflows, market size, natural resource availability, institutional variables, policy variables and political risk variables.	Multiple regression models.	Economic factors are more significant than institutional and political factors in influencing FDI flows into BRICS economies. Market size is significant in influencing inward FDI. Trade openness, natural resource availability, accountability, rule of law and voice are significant variables. Market size and openness to trade have a positive relationship with FDI inflows. Natural resource availability has a negative effect on inward FDI.
Ebbers and Rogmans (2013)	The determinants of foreign direct investment in the Middle East North Africa Region.	FDI inflows, market size, openness to trade, environmental risk, energy resource endowments and world market prices for these resources.	Multiple Ordinary least squares regression model.	Energy endowments have a negative impact on FDI flows into the MENA countries. The GDP per capita, openness to trade and oil prices have a positive impact on FDI inflows. Environmental risk or country risk is not a differentiating factor among countries in this region.

Author(s)	Title	Variables	Methodology	Results
Mathur and Singh (2013)	Foreign Direct Investment, Corruption and Democracy.	Net inward FDI flows, market size, openness to trade, host country cost considerations, factors affecting the country's overall financial performance, social factors, political factors related to the degree of corruption, tax rates, policies relating to capital flows, business conditions in neighbouring countries including variables such as the corruption perception index and democracy index.	Random effects Generalised Least Squares regression.	Foreign investors are more concerned about economic freedoms rather than political freedoms when deciding on where to invest. More democratic countries may receive less FDI flows if economic freedoms are not guaranteed.

Table 2.2: Summary of literature on determinants of foreign direct investment into Africa

Author(s)	Title	Variables	Methodology	Results
Asiedu (2002)	On the determinants of foreign direct investment to developing countries: Is Africa different?	Ratio of net FDI inflows to GDP, return on investment, infrastructure, openness, political risk, ratio of the liquid liabilities to GDP, ratio of government consumption to GDP, inflation, GDP growth rate.	Ordinary least squares.	High returns on investment and infrastructure have a positive impact on FDI to non-Sub-Saharan Africa (SSA) countries and no significant impact on FDI to SSA. Openness to trade promotes FDI. The benefit from increased openness is less for SSA.
Bende-Nabende (2002)	Foreign direct investment determinants in Sub Sahara Africa: A co-integration analysis.	Inward FDI, real wage rates, interest rates, foreign exchange rates, openness, liberalisation, current market size, market growth, human capital, export-orientation development strategy.	Cointegration.	Long-run determinants of FDI in SSA are market growth, export orientation policy, FDI liberalisation, real exchange rates, market size and openness. Results for real wage rates and human capital are inconclusive.
Nonnemberg and Cardoso de Mendonça (2004)	The determinants of foreign investment in developing countries.	Inward FDI, GDP, average rate of GDP growth over the previous 5 years, labour force level of schooling, trade openness, inflation, risk rating, per capita energy consumption, Dow Jones index, average rate of growth of the largest OECD exporters of FDI to developing countries.	Ordinary least squares, random effects and fixed effects model.	FDI is correlated to the level of schooling, openness, inflation, risk and average rate of economic growth. FDI is closely associated with stock market performance in developed countries. GDP granger causes FDI, but not vice versa.

Author(s)	Title	Variables	Methodology	Results
Onyeiwu and Shrestha (2004)	Determinants of foreign direct investment in Africa.	Net FDI inflows as a percentage of GDP, GDP growth, inflation, real interest rate, openness, international reserves as a percentage of GDP, external debt as a percentage of GDP, corporate profit tax rate, state of political rights, infrastructure, natural resource availability.	Fixed and random effects models.	Economic growth, inflation, openness of the economy, international reserves and natural resource availability are significant variables. Political rights and infrastructure were unimportant for FDI flows to Africa.
Akinkugbe (2005)	A two-part econometric analysis of foreign direct investment flows to Africa.	FDI inflows as a share of GDP, real per capita GDP, trade as a percentage of GDP, real interest rate, infrastructure, manufacturing value added as a percentage of GDP, indicator of economic cycle in advanced OECD countries, OECD external balance, gross national savings in OECD countries, dummy variable to capture events of 1990s, ores & metal exports, fuel exports, government final consumption expenditure as a percentage of GDP, taxes on income, profits and capital gains, inflation, political risk.	Two part econometric approach.	Combination of high per capita income, outward orientation to international trade, high level of infrastructure development and high rate of return on investment are significant variables.

Author(s)	Title	Variables	Methodology	Results
Krugell (2005)	The Determinants of Foreign Direct Investment in Africa	FDI inflows as a ratio of GDP, past FDI flows, market size and growth, domestic investment, openness of the economy, internal and external stability, quality of labour, and infrastructure.	Random effects model.	A stable macro-economic environment may be important for attracting inward FDI. Domestic investment boosts a country's productive capacity and may encourage FDI inflows. Open economies are encouraged for economic growth.
Naudé and Krugell (2005)	Human Resource Development: A Sine Qua Non for Foreign Direct Investment in South Africa	Market size and growth, labour costs, host government policies, tariff and trade barriers, openness to trade, exports, exchange rates, inflation, budget deficit, investment and infrastructure, political instability.	Discussion of factors that influence FDI inflows, including human resource development.	The lack of appropriate human resources may be an important factor limiting inward FDI to Africa and South Africa.
Tarzi (2005)	Foreign direct investment flows into developing countries: Impact of location and government policy.	Market size, economic growth, macro-economic stability, low political risk, transparent FDI policies, developed infrastructure, openness, productivity, worker habits and government policies.	Discussion of the different factors that determine FDI into developing countries	Market size growth, economic competitiveness, infrastructure, worker productivity encourage FDI. Repatriation and remittance of profits, setting up special economic zones, lowering regulatory burdens, and flexible labour policies attract FDI.

Author(s)	Title	Variables	Methodology	Results
Yasin (2005)	Official development assistance and foreign direct investment flows to Sub Saharan Africa.	FDI inflows, bilateral official development assistance, multilateral development assistance, trade openness, market size, resources availability, political instability, host country risk level.	Panel data analysis. Robust standard errors correction estimation technique (White's procedure).	Official development assistance, openness, labour force growth and exchange rates have a significant and positive influence on FDI. Multilateral development assistance, growth in GDP per capita, the country's composite risk level, index for political freedom and civil liberties do not have a significant effect on FDI.
Alsan et al. (2006)	The effect of population health on foreign direct investment inflows to low and middle income countries.	Total population, GDP per capita, openness, bureaucratic quality, corruption in government, life expectancy, education, infrastructure, distance to major markets, landlocked, percent of population with access to coastline/ocean navigable river.	Panel data analysis. Ordinary least squares.	Population health is a positive and significant determinant of FDI inflows to low and middle income countries.

Author(s)	Title	Variables	Methodology	Results
Anyanwu (2006)	Promoting of investment in Africa.	Reasons for low investment in Africa: low domestic resource mobilisation, high degree of uncertainty, poor governance, corruption, low human capital development, unfavourable regulatory environment, poor infrastructure, small individual country market size, high dependence on primary commodity exports, increased competition among developing countries, image issue, shortage of foreign exchange, burden of huge domestic and external debt, underdeveloped capital markets and volatile capital markets.	Discussion of investments in African countries.	Successful promotion of domestic investment, FDI, and portfolio investment will require measures at national, regional and international levels. There are investment opportunities in infrastructure and many African countries encourage investments in this sector. African countries need to improve governance and eliminate socio-political violence. African countries are encouraged to develop their domestic capital markets. African Government institutions should be modernised and upgraded.
Asiedu (2006)	Foreign direct investment in Africa: The role of natural resources, market size, government policy, institutions and political instability.	Ratio of net FDI inflows to GDP, market size, natural resources, infrastructure, literacy rate, inflation rate, openness to FDI, corruption, rule of law, political risk.	Fixed effects panel estimation.	Large local markets, natural resource endowments, good infrastructure, low inflation, efficient legal system and good investment framework promote FDI. Corruption and political instability have a negative effect on FDI.

Author(s)	Title	Variables	Methodology	Results
Dupasquier and Osakwe (2006)	Foreign direct investment in Africa: Performance, challenges, and responsibilities.	FDI inflows, image building, domestic regulatory reforms, investment opportunities, diversification of the economy, trade liberalisation, privatisation, market size, agency of restraint, promoting good governance, infrastructure development, improved market access, investment promotion & technical assistance.	Discussion of FDI.	Political and macro-economic instability, low growth, weak infrastructure, poor governance, inhospitable regulatory environments and ill-conceived investment promotion strategies are responsible for the poor FDI.
Du Toit et al. (2006)	Foreign Direct Investment: South Africa's Elixir of life?	Nominal inflow of FDI, market size, infrastructure, rand/US dollar exchange rate, openness to trade and dummy for sanctions.	Cointegration and error correction model techniques.	Market size, openness to trade, infrastructure, and the nominal exchange rate are significant in influencing FDI flows into South Africa.
Fedderke and Romm (2006)	Growth impact and determinants of foreign direct investment into South Africa, 1956-2003.	Inward FDI, real GDP, total employment, private sector fixed capital stock, real FDI liabilities (stock), corporate tax rate, labour capital ratio, average wage rate, property rights index, political rights index, political instability, exports as a percentage of GDP, imports as percentage of GDP.	Vector Error Correction Model.	Policy recommendations include reducing political risk, ensuring property rights, increasing market size growth, wage moderation, lowering corporate tax rates, and ensuring full integration of the South African economy into the world economy.

Author(s)	Title	Variables	Methodology	Results
Kandiero and Chitiga (2006)	Trade openness and foreign direct investment in Africa.	Ratio of FDI inflows to GDP, openness to trade for whole economy, openness to trade for primary, manufacturing and services sector, taxes on international trade, infrastructure, wages, real effective exchange rate, market size and corruption.	One-step Generalised method of moments estimator.	FDI to GDP ratio responds well to increased openness in the whole economy and in the services sector in particular. Further reduction in tariff and non-tariff barriers will increase FDI.
Twimukye (2006)	An econometric analysis of determinants of foreign direct investment: A panel data study for Africa.	FDI inflows, GDP, inflation, exchange rate, literacy rate, capital formation, percentage of paved roads, remoteness, openness, political stability, regional dummies.	Fixed effects feasible generalised least squares.	Gross domestic product, literacy rate, exchange rate and population size have a positive relationship with FDI. Inflation rate and remoteness have a negative relationship with FDI. Central, Eastern and Western regions have lower FDI than the Southern region.
Busse and Hefeker (2007)	Political risk, institutions and foreign direct investment.	FDI net inflows per capita, gross national income per capita, the real growth rate of GNI per capita, ratio of imports and exports to GDP, inflation, regional dummy variables and political risk indicators.	Country fixed effects, Arellano Bond dynamic panel-data estimation.	Government stability, internal and external conflict, corruption and ethnic tensions, law and order, democratic accountability and quality of bureaucracy are significant determinants of FDI.

Author(s)	Title	Variables	Methodology	Results
Naudé and Krugell (2007)	Investigating geography and institutions as determinants of foreign direct investment in Africa using panel data.	Ratio of net FDI inflows to GDP, openness, infrastructure, rate of return, growth, government expenditure, inflation, ratio of M2 to GDP, political stability, exports, investment, accountability, government effectiveness, regulatory burden, rule of law, graft, urban population, expropriation, literacy, ethnicity, land area, frost days, latitude, elevation, land locked, malaria.	One-step Generalized method of moments estimator.	Government consumption, inflation rate, investment, governance (political stability, accountability, regulatory burden, rule of law), and initial literacy are significant determinants of FDI. Geography does not seem to have a direct influence on FDI flows to Africa. It is important to have good policies made by sound institutions.
Sekkat and Veganzones-Varoudakis (2007)	Openness, investment climate, and FDI in developing countries.	FDI inflows, market size, per capita income, growth rate of real income, openness, human capital, infrastructure, economic and political risk,	Fixed effects model estimation.	Openness, infrastructure and sound economic and political conditions are important for South Asia, Africa and Middle East. The factors have a higher impact on FDI in the manufacturing sector than on total FDI.
Büthe and Milner (2008)	The politics of foreign direct investment into developing countries: Increasing FDI through international trade agreements?	Inward FDI flows, general Agreement on Tariffs and Trade or World Trade Organisation membership, Number of bilateral investment treaties, domestic political constraints, political instability, market size, economic development, and GDP growth.	Ordinary least squares with country fixed effects. Instrumental variable estimations.	Joining international trade agreements allows developing countries to attract more FDI and thus increase economic growth.

Author(s)	Title	Variables	Methodology	Results
Kyereboah-Coleman and Agyire-Tettey (2008)	Effect of exchange rate volatility on foreign direct investment in Sub Saharan Africa: The case of Ghana.	FDI inflows, real exchange rate, real exchange rate volatility, openness, GDP per capita, stock of FDI, political instability dummy variable.	ARCH and GARCH models. Co-integration and Error Correction Model.	Volatility of the real exchange rate has negative influence on FDI inflows. The liberalisation process has not led to a greater inflow of FDI in Ghana. Most foreign investors do not consider the size of the market in making a decision to invest in Ghana.
Bartels et al. (2009)	Foreign direct investment in Sub-Saharan Africa: Motivating factors and policy issues.	Political and economic stability, infrastructure, government support services, legal framework, transparency, quality of life, low labour costs, skilled labour, trade agreements, raw materials, local suppliers, incentive package, acquisition of existing assets, presence of joint venture partner, specific investment project proposal, local, regional and continental market, presence of key client(s).	Survey of 758 respondents in 10 Sub-Saharan African countries, Factor analysis.	Provision of transaction cost reducing information and utility services to investors before and after a firm's FDI decision is significant. FDI political economy considerations are also important. Labour and production input variables are not influential.
Hoarau (2009)	Foreign direct investment and regional integration: the case of the Common Market for Eastern and Southern Africa.	Macro-economic uncertainty and instability, lack of transparency, weak administrative system, limited size of local markets, underdeveloped infrastructure.	Discussion of the different factors that determine FDI into Africa and COMESA.	There are many barriers to international investment still present in Eastern and Southern Africa. Countries which have vast natural resources, such as oil exporting economies receive more FDI.

Author(s)	Title	Variables	Methodology	Results
Indopu and Tagne Talla (2010)	Foreign Direct Investment in Africa: A look into FDI Determinants	Foreign direct investment per capital net inflows, openness to trade, freedom from corruption, market size, natural resources and economic stability.	Ordinary least squares.	Oil supply and GDP have a positive and significant relationship with FDI inflows. Natural resources by themselves cannot attract foreign investors into Africa. Market size is an important determinant of FDI flows. Macro-economic instability is not significant in influencing FDI into Africa. Openness to trade and corruption are not important determinants of FDI into Africa.
Hailu (2010)	Demand side factors affecting the inflow of foreign direct investment to African countries: Does capital market matter?	FDI inflows, natural resources, stock market availability, infrastructure, labour quality, labour quantity, market accession of a country, openness to trade, political stability, inflation, domestic private investment, government expenditure.	Cross-section fixed effect least square dummy variable estimation technique.	Natural resource, labour quality, trade openness, market accession and infrastructure condition have a positive and significant effect. Availability of stock market has a positive, but insignificant effect on FDI.

Author(s)	Title	Variables	Methodology	Results
Mhlanga et. al (2010)	Understanding foreign direct investment in the Southern African Development Community: an analysis based on project level data.	FDI inflows, market size, gdp growth, openness, infrastructure, return on investment, political stability, financial depth and inflation, dummy variable to capture new investment venture, dummy variable to denote investment coming from a developing country, dummy variable capturing investments in the extractive and utility provision industries.	Ordinary least squares and fixed effects estimation.	Greenfield investments respond more to the growth potential of the market. The market size has a positive impact on FDI. Colonial ties and proximity of the investing country also matter.
Mohamed and Sidiropoulos (2010)	Another look at the determinants of foreign direct investment in Middle East and North African (MENA) Countries: An empirical investigation.	FDI inflows as a share of GDP, market size, financial development, investment profile, corruption, inflation, government spending, infrastructure, natural resources, market potential, growth expectation, global liquidity, trade openness.	Fixed and random panel data technique.	Key determinants of FDI in MENA countries are market size, government size, natural resources and institutional variables. Policy-makers in the MENA region should remove barriers to trade, develop their financial system, and build appropriate institutions.

Author(s)	Title	Variables	Methodology	Results
Reiter and Steensma (2010)	Human development and foreign direct investment in developing countries: The influence of FDI policy and corruption.	Improvement in human development, improvement in life expectancy, improvement in adult literacy, foreign direct investment inward flow, restricted sectors for foreign investors, foreign investor discrimination, corruption, foreign aid.	Panel data analysis. Fixed effects model.	FDI is positively related to improvement in human development when FDI policy restricts foreign investors from entering some sectors and when it discriminates against foreign investors relative to domestic investors. The relationship between FDI and improvement in human development is more positive when corruption is low.
Adjasi et al. (2012)	FDI and economic activity in Africa: The role of local financial markets.	Foreign direct investment, inflation, government expenditure, investment, population, liquid liabilities, domestic savings, private sector credit, openness to trade, corruption control, government effectiveness, polity index, regulatory quality, primary school enrolment, secondary school enrolment, tertiary enrolment, stock market dummy variable.	Random effects model and Instrumental Variable regression model.	Foreign direct investment is more productive in the presence of well-functioning local financial markets. African Governments should further develop their local financial markets so as to enjoy the full benefits of FDI inflows.

Author(s)	Title	Variables	Methodology	Results
Anyanwu (2012)	Why does foreign direct investment go where it goes?: new evidence from African countries.	FDI inflows as a percentage of GDP, urban population, GDP per capita, openness, financial development, inflation, exchange rate, infrastructure, human capital, foreign aid, GDP growth, first lag of FDI, corruption, regulatory quality, rule of law, dummy for net oil exporters, binary variable for regions in Africa.	Ordinary least squares, Feasible Generalised Least Squares and two-step Generalised method of moments estimation.	Market size, openness to trade, prevalence of the rule of law, foreign aid, agglomeration, natural resource endowment and exploitation have a positive relationship with FDI flows into SSA. Higher financial development has a negative effect on FDI inflows. East and Southern African regions obtain higher levels of FDI.
Darley (2012)	Increasing Sub-Saharan Africa's share of Foreign Direct Investment: Public Policy Challenges, Strategies and Implications.	Key indicators of development, government variables, information infrastructure and business environment.	Discussion of FDI.	Countries in Sub-Saharan Africa can increase FDI by encouraging investments in areas that facilitate export production, looking outside the traditional flows of FDI into Africa, establishing monitored export processing zones, expanding regional trading arrangements, working to change the negative perceptions of the region and reducing corruption.

Author(s)	Title	Variables	Methodology	Results
Ezeoha and Cattaneo (2012)	FDI flows to sub saharan Africa: The impact of finance, institutions and natural resource endowment.	Ratio of FDI inflows to total population, ratio of broad money supply to GDP, inflation, real exchange rate, natural resources, market size, infrastructure, trade openness, corruption and agglomeration.	Generalised least squares.	Financial development, market size, infrastructure and urban agglomeration are important in influencing FDI flows to SSA. Corruption has a positive effect on FDI to the region. Financial development, infrastructure, and openness play a bigger role in attracting FDI to non-resource endowed countries than in resource endowed countries.
Gebrewold (2012)	Determinants of foreign direct investment inflows to Africa.	Foreign direct investment inflows as a function of GDP per capita, GDP growth rate, exports, trade openness, human capital, labour force growth rate, number of telephone lines per 1,000 people, exchange rates, inflation and the share of oil and minerals in total exports.	Fixed effects model.	Export is a strong determinant of FDI in all countries together and in lower middle and upper middle income groups. Market size, labour force growth rate and inflation are significant variables in all the countries together and the lower middle income group. Trade openness affects FDI in the low income and lower middle income countries. Level of infrastructure has a negative and significant relationship with FDI inflows in the upper middle income countries. Natural resource availability is not significant in influencing FDI flows.

Author(s)	Title	Variables	Methodology	Results
Mijiyawa (2012)	What Drives Foreign Direct Investments in Africa? An Empirical Investigation with Panel Data.	Foreign direct investment inflows as a percentage of GDP, five year lagged FDI inflows as a percentage of GDP, trade openness, infrastructure development, macro-economic stability, political stability, return to investment and size of host country domestic market.	System Generalised Method of Moments technique.	Larger countries in Africa attract more FDI. Regardless of size, African countries that are open to trade, politically stable and offer high returns to investment attract FDI. The FDI flows into Africa are persistent. Countries that attract FDI in the current time period are likely to attract more FDI flows in the future.
Agbloyor et al. (2013)	Exploring the causality links between financial markets and foreign direct investment in Africa.	Foreign direct investment inflows, market capitalisation divided by GDP, market capitalisation, stock market turnover ratios. Control variables: number of telephone lines per 1,000 of the population, ores and metal ores as a % of merchandise exports, fuel exports as a % of merchandise exports, one lag of FDI, number of listed firms and lag of the stock market indicators.	Two-Stage Least Squares panel instrumental variables technique.	A more advanced banking system can lead to more FDI inflows. Higher FDI inflows can lead to the development of the domestic banking system. Countries with more developed stock markets are likely to obtain more FDI inflows. FDI inflows can also lead to development of domestic stock markets.

Appendix Three – International Country Risk Guide Methodology

To follow is information on the International Country Risk Guide Methodology. More details of this methodology can be accessed from https://www.prsgroup.com/

1. **The Economic Risk Rating**

   The overall aim of the Economic Risk Rating is to provide a means of assessing a country's current economic strengths and weaknesses. In general terms where its strengths outweigh its weaknesses it will present a low economic risk and where its weaknesses outweigh its strengths it will present a high economic risk.

   These strengths and weaknesses are assessed by assigning risk points to a pre-set group of factors, termed economic risk components. The minimum number of points that can be assigned to each component is zero, while the maximum number of points depends on the fixed weight that component is given in the overall economic risk assessment. In every case the lower the risk point total, the higher the risk, and the higher the risk point total, the lower the risk.

   To ensure comparability between countries the components are based on accepted ratios between measured data within the national economic/financial structure. It is the ratios that are compared, not the data themselves. The points assigned to each component (ratio) are taken from a fixed scale.

   Assessing Economic Risk

   As noted above, points are awarded to each risk component on a scale from zero up to a pre-set maximum. In general terms if the points awarded are less than 50% of the total, that component can be considered as very high risk. If the points are in the 50-60% range it is high risk, in the 60%-70% range moderate risk, in the 70-80% range low risk, and in the 80-100% range very low risk. However, this is only a general guideline as a better rating in other components can compensate for a poor risk rating in one component. Overall, an economic risk rating of 0.0% to 24.5% indicates a Very High Risk; 25.0% to 29.9% High Risk; 30.0% to 34.9% Moderate Risk; 35.0% to 39.9% Low Risk; and 40.0% or more Very Low Risk. Once again, however, a poor economic risk rating can be compensated for by a better political and/or financial risk rating.

The Economic Risk Components

GDP per Head

The estimated GDP per head for a given year, converted into US dollars at the average exchange rate for that year, is expressed as a percentage of the average of the estimated total GDP of all the countries covered by ICRG. The risk points are then assigned according to the following scale:

GDP Per Head	
% of average	**Points**
250.0 plus	5.0
200.0 to 249.9	4.5
150.0 to 199.9	4.0
100.0 to 149.9	3.5
75.0 to 99.9	3.0
50.0 to 74.9	2.5
40.0 to 49.9	2.0
30.0 to 39.9	1.5
20.0 to 29.9	1.0
10.0 to 19.9	0.5
Up to 9.9	0.0

Real GDP Growth

The annual change in the estimated GDP, at constant 1990 prices, of a given country is expressed as a percentage increase or decrease. The risk points are then assigned according to the following scale:

Real GDP Growth

Change (%)	Points
6.0 plus	10.0
5.0 to 5.9	9.5
4.0 to 4.9	9.0
3.0 to 3.9	8.5
2.5 to 2.9	8.0
2.0 to 2.4	7.5
1.5 to 1.9	7.0
1.0 to 1.4	6.5
0.5 to 0.9	6.0
0.0 to 0.4	5.5
-0.1 to -0.4	5.0
-0.5 to -0.9	4.5
-1.0 to -1.4	4.0
-1.5 to -1.9	3.5
-2.0 to -2.4	3.0
-2.5 to -2.9	2.5
-3.0 to -3.4	2.0
-3.5 to -3.9	1.5
-4.0 to -4.9	1.0
-5.0 to -5.9	0.5
-6.0 below	0.0

Annual Inflation Rate

The estimated annual inflation rate (the unweighted average of the Consumer Price Index) is calculated as a percentage change. The risk points are then assigned according to the following scale:

Annual Inflation Rate	
Change (%)	**Points**
< 2.0	10.0
2.0 to 2.9	9.5
3.0 to 3.9	9.0
4.0 to 5.9	8.5
6.0 to 7.9	8.0
8.0 to 9.9	7.5
10.0 to 11.9	7.0
12.0 to 13.9	6.5
14.0 to 15.9	6.0
16.0 to 18.9	5.5
19.0 to 21.9	5.0
22.0 to 24.9	4.5
25.0 to 30.9	4.0
31.0 to 40.9	3.5
41.0 to 50.9	3.0
51.0 to 65.9	2.5
66.0 to 80.9	2.0
81.0 to 95.9	1.5
96.0 to 110.9	1.0
111.0 to 129.9	0.5
130.0 plus	0.0

Budget Balance as a Percentage of GDP

The estimated central government budget balance (including grants) for a given year in the national currency is expressed as a percentage of the estimated GDP for that year in the national currency. The risk points are then assigned according to the following scale:

Budget Balance	
% GDP	**Points**
4.0 plus	10.0
3.0 to 3.9	9.5
2.0 to 2.9	9.0
1.0 to 1.9	8.5
0.0 to 0.9	8.0
-0.1 to -0.9	7.5
-1.0 to -1.9	7.0
-2.0 to -2.9	6.5
-3.0 to -3.9	6.0
-4.0 to -4.9	5.5
-5.0 to -5.9	5.0
-6.0 to -6.9	4.5
-7.0 to -7.9	4.0
-8.0 to -8.9	3.5
-9.0 to -9.9	3.0
-10.0 to -11.9	2.5
-12.0 to -14.9	2.0
-15.0 to -19.9	1.5
-20.0 to -24.9	1.0
-25.0 to -29.9	0.5
-30.0 below	0.0

Current Account as a Percentage of GDP

The estimated balance on the current account of the balance of payments for a given year, converted into US dollars at the average exchange rate for that year, is expressed as a percentage of the estimated GDP of the country concerned, converted into US dollars at the average rate of exchange for the period covered. The risk points are then assigned according to the following scale:

Current Account % GDP

% GDP	Points
10.0 plus	15.0
8.0 to 9.9	14.5
6.0 to 7.9	14.0
4.0 to 5.9	13.5
2.0 to 3.9	13.0
1.0 to 1.9	12.5
0.0 to 0.9	12.0
-0.1 to -0.9	11.5
-1.0 to -1.9	11.0
-2.0 to -3.9	10.5
-4.0 to -5.9	10.0
-6.0 to -7.9	9.5
-8.0 to -9.9	9.0
-10.0 to -11.9	8.5
-12.0 to -13.9	8.0
-14.0 to -15.9	7.5
-16.0 to -16.9	7.0
-17.0 to -17.9	6.5
-18.0 to -18.9	6.0
-19.0 to -19.9	5.5
-20.0 to -20.9	5.0
-21.0 to -21.9	4.5
-22.0 to -22.9	4.0
-23.0 to -23.9	3.5
-24.0 to -24.9	3.0
-25.0 to -26.9	2.5
-27.0 to -29.9	2.0
-30.0 to -32.4	1.5
-32.5 to -34.9	1.0
-35.0 to -39.9	0.5
-40.0 below	0.0

2. The Financial Risk Rating

The overall aim of the Financial Risk Rating is to provide a means of assessing a country's ability to pay its way. In essence, this requires a system of measuring a country's ability to finance its official, commercial, and trade debt obligations. This is done by assigning risk points to a pre-set group of factors, termed financial risk components. The minimum number of points that can be assigned to each component is zero, while the maximum number of points depends on the fixed weight that component is given in the overall financial risk assessment. In every case the lower the risk point total, the higher the risk, and the higher the risk point total the lower the risk.

To ensure comparability between countries the components are based on accepted ratios between measured data within the national economic/financial structure. It is the ratios that are compared, not the data themselves. The risk points assigned to each component (ratio) are taken from a fixed scale.

Assessing Financial Risk

As noted above, points are awarded to each risk component on a scale from zero up to a pre-set maximum. In general terms if the points awarded are less than 50% of the total, that component can be considered as very high risk. If the points are in the 50-60% range it is high risk, in the 60%-70% range moderate risk, in the 70-80% range low risk and in the 80-100% range very low risk. However, this is only a general guideline as a better rating in other components can compensate for a poor risk rating in one component.

Overall, a financial risk rating of 0.0% to 24.5% indicated a Very High Risk; 25.0% to 29.9% High Risk; 30.0% to 34.9% Moderate Risk; 35.0% to 39.9% Low Risk; and 40.0% or more Very Low Risk. Once again, however, a poor financial risk rating can be compensated for by a better political and/or economic risk rating.

The Financial Risk Components

Foreign Debt as a Percentage of GDP

The estimated gross foreign debt in a given year, converted into US dollars at the average exchange rate for that year, is expressed as a percentage of the gross domestic product converted into US dollars at the average exchange rate for that year. The risk points are then assigned according to the following scale:

Foreign Debt % GDP	
Ratio (%)	**Points**
0.0 to 4.9	10.0
5.0 to 9.9	9.5
10.0 to 14.9	9.0
15.0 to 19.9	8.5
20 to 24.9	8.0
25.0 to 29.9	7.5
30.0 to 34.9	7.0
35.0 to 39.9	6.5
40.0 to 44.9	6.0
45.0 to 49.9	5.5
50.0 to 59.9	5.0
60.0 to 69.9	4.5
70.0 to 79.9	4.0
80.0 to 89.9	3.5
90.0 to 99.9	3.0
100.0 to 109.9	2.5
110.0 to 119.9	2.0
120.0 to 129.9	1.5
130.0 to 149.9	1.0
150.0 to 199.9	0.5
200.0 plus	0.0

Foreign Debt Service as a Percentage of Exports of Goods and Services

The estimated foreign debt service, for a given year, converted into US dollars at the average exchange rate for that year, is expressed as a percentage of the sum of the estimated total exports of goods and services for that year, converted into US dollars at the average exchange rate for that year. The risk points are then assigned according to the following scale:

Debt Service % XGS	
Ratio (%)	**Points**
0.0 to 4.9	10.0
5.0 to 8.9	9.5
9.0 to 12.9	9.0
13.0 to 16.9	8.5
17.0 to 20.9	8.0
21.0 to 24.9	7.5
25.0 to 28.9	7.0
29.0 to 32.9	6.5
33.0 to 36.9	6.0
37.0 to 40.9	5.5
41.0 to 44.9	5.0
45.0 to 48.9	4.5
49.0 to 52.9	4.0
53.0 to 56.9	3.5
57.0 to 60.9	3.0
61.0 to 65.9	2.5
66.0 to 70.9	2.0
71.0 to 75.9	1.5
76.0 to 79.9	1.0
80.0 to 84.9	0.5
85.0 plus	0.0

Current Account as a Percentage of Exports of Goods and Services

The balance of the current account of the balance of payments for a given year, converted into US dollars at the average exchange rate for that year, is expressed as a percentage of the sum of the estimated total exports of goods and services for that year, converted into US dollars at the average exchange rate for that year. The risk points are then assigned according to the following scale:

Current Account as % XGS	
Ratio (%)	**Points**
25.0 plus	15.0
20.0 to 24.9	14.5
15.0 to 19.9	14.0
10.0 to 14.9	13.5
5.0 to 9.9	13.0
0.0 to 4.9	12.5
-0.1 to -4.9	12.0
-5.0 to -9.9	11.5
-10.0 to -14.9	11.0
-15.0 to -19.9	10.5
-20.0 to -24.9	10.0
-25.0 to -29.9	9.5
-30.0 to -34.9	9.0
-35.0 to -39.9	8.5
-40.0 to -44.9	8.0
-45.0 to - 49.9	7.5
-50.0 to -54.9	7.0
-55.0 to -59.9	6.5
-60.0 to -64.9	6.0
-65.0 to -69.9	5.5
-70.0 to -74.9	5.0
-75.0 to -79.9	4.5
-80.0 to -84.9	4.0
-85.0 to -89.9	3.5
-90.0 to -94.9	3.0
-95.0 to -99.9	2.5
-100.0 to -104.9	2.0
-105.0 to -109.9	1.5
-110.0 to -114.9	1.0
-115.0 to -119.9	0.5
-120.0 below	0.0

Net International Liquidity as Months of Import Cover

The total estimated official reserves for a given year, converted into US dollars at the average exchange rate for that year, including official holdings of gold, converted into US dollars at the free market price for the period, but excluding the use of IMF credits and the foreign liabilities of the monetary authorities, is divided by the average monthly merchandise import cost, converted into US dollars at the average exchange rate for the period. This provides a comparative liquidity risk ratio that indicates how many months of imports can be financed with reserves. The risk points are then assigned according to the following scale:

Net Liquidity in Months	
Months	**Points**
15 plus	5.0
12.0 to 14.9	4.5
9.0 to 11.9	4.0
6.0 to 8.9	3.5
5.0 to 5.9	3.0
4.0 to 4.9	2.5
3.0 to 3.9	2.0
2.0 to 2.9	1.5
1.0 to 1.9	1.0
0.6 to 0.9	0.5
0.5 or less	0.0

Exchange Rate Stability

The appreciation or depreciation of a currency against the US dollar (against the euro in the case of the USA) over a calendar year or the most recent 12-month period is calculated as a percentage change. The risk points are then assigned according to the following scale:

Exchange Rate Stability

Appreciation Change, plus	Depreciation Change, minus	Points
0.0 to 9.9	-0.1 to -4.9	10.0
10.0 to 14.9	-5.0 to -7.4	9.5
15.0 to 19.9	-7.5 to -9.9	9.0
20.0 to 22.4	-10.0 to -12.4	8.5
22.5 to 24.9	-12.5 to -14.9	8.0
25.0 to 27.4	-15.0 to -17.4	7.5
27.5 to 29.9	-17.5 to -19.9	7.0
30.0 to 34.9	-20.0 to -22.4	6.5
35.0 to 39.9	-22.5 to -24.9	6.0
40.0 to 49.9	-25.0 to -29.9	5.5
50 plus	-30.0 to -34.9	5.0
	-35.0 to -39.9	4.5
	-40.0 to -44.9	4.0
	-45.0 to -49.9	3.5
	-50.0 to -54.9	3.0
	-55.0 to -59.9	2.5
	-60.0 to -69.9	2.0
	-70.0 to -79.9	1.5
	-80.0 to -89.9	1.0
	-90.0 to -99.9	0.5
	-100 below	0.0

3. The Political Risk Rating

The aim of the political risk rating is to provide a means of assessing the political stability of the countries covered by ICRG on a comparable basis. This is done by assigning risk points to a pre-set group of factors, termed political risk components. The minimum number of points that can be assigned to each component is zero, while the maximum number of points depends on the fixed weight that component is given in the overall political risk assessment. In every case the lower the risk point total, the higher the risk, and the higher the risk point total the lower the risk. To ensure consistency, both between countries and over time, points are assigned by ICRG editors on the basis of a series of pre-set questions for each risk component.

The Political Risk Components

The following risk components, weights, and sequence are used to produce the political risk rating:

POLITICAL RISK COMPONENTS		
Sequence	Component	Points (max.)
A	Government Stability	12
B	Socioeconomic Conditions	12
C	Investment Profile	12
D	Internal Conflict	12
E	External Conflict	12
F	Corruption	6
G	Military in Politics	6
H	Religious Tensions	6
I	Law and Order	6
J	Ethnic Tensions	6
K	Democratic Accountability	6
L	Bureaucracy Quality	4
Total		100

Government Stability

This is an assessment both of the government's ability to carry out its declared program(s), and its ability to stay in office. The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of 0 points. A score of 4 points equates to Very Low Risk and a score of 0 points to Very High Risk. The subcomponents are:

- Government Unity
- Legislative Strength
- Popular Support

Socioeconomic Conditions

This is an assessment of the socioeconomic pressures at work in society that could constrain government action or fuel social dissatisfaction. The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of 0 points. A score of 4 points equates to Very Low Risk and a score of 0 points to Very High Risk. The subcomponents are:

- Unemployment
- Consumer Confidence
- Poverty

Investment Profile

This is an assessment of factors affecting the risk to investment that are not covered by other political, economic and financial risk components. The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of 0 points. A score of 4 points equates to Very Low Risk and a score of 0 points to Very High Risk. The subcomponents are:

- Contract Viability/Expropriation
- Profits Repatriation
- Payment Delays

Internal Conflict

This is an assessment of political violence in the country and its actual or potential impact on governance. The highest rating is given to those countries where there is

no armed or civil opposition to the government and the government does not indulge in arbitrary violence, direct or indirect, against its own people. The lowest rating is given to a country embroiled in an on-going civil war. The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of 0 points. A score of 4 points equates to Very Low Risk and a score of 0 points to Very High Risk. The subcomponents are:

- Civil War/Coup Threat
- Terrorism/Political Violence
- Civil Disorder

External Conflict

The external conflict measure is an assessment both of the risk to the incumbent government from foreign action, ranging from non-violent external pressure (diplomatic pressures, withholding of aid, trade restrictions, territorial disputes, sanctions, etc.) to violent external pressure (cross-border conflicts to all-out war). External conflicts can adversely affect foreign business in many ways, ranging from restrictions on operations to trade and investment sanctions, to distortions in the allocation of economic resources, to violent change in the structure of society. The risk rating assigned is the sum of three subcomponents, each with a maximum score of four points and a minimum score of 0 points. A score of 4 points equates to Very Low Risk and a score of 0 points to Very High Risk. The subcomponents are:

- War
- Cross-Border Conflict
- Foreign Pressures

Corruption

This is an assessment of corruption within the political system. Such corruption is a threat to foreign investment for several reasons: it distorts the economic and financial environment; it reduces the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability; and, last but not least, introduces an inherent instability into the political process. The most common form of corruption met directly by business is financial corruption in the form of demands for special payments and bribes connected with import and export

licenses, exchange controls, tax assessments, police protection, or loans. Such corruption can make it difficult to conduct business effectively, and in some cases may force the withdrawal or withholding of an investment.

Although our measure takes such corruption into account, it is more concerned with actual or potential corruption in the form of excessive patronage, nepotism, job reservations, 'favour-for-favours', secret party funding, and suspiciously close ties between politics and business. In our view these insidious sorts of corruption are potentially of much greater risk to foreign business in that they can lead to popular discontent, unrealistic and inefficient controls on the state economy, and encourage the development of the black market.

The greatest risk in such corruption is that at some time it will become so overweening, or some major scandal will be suddenly revealed, as to provoke a popular backlash, resulting in a fall or overthrow of the government, a major reorganizing or restructuring of the country's political institutions, or, at worst, a breakdown in law and order, rendering the country ungovernable.

Military in Politics

The military is not elected by anyone. Therefore, its involvement in politics, even at a peripheral level, is a diminution of democratic accountability. However, it also has other significant implications.

The military might, for example, become involved in government because of an actual or created internal or external threat. Such a situation would imply the distortion of government policy in order to meet this threat, for example by increasing the defence budget at the expense of other budget allocations. In some countries, the threat of military take-over can force an elected government to change policy or cause its replacement by another government more amenable to the military's wishes. A military takeover or threat of a takeover may also represent a high risk if it is an indication that the government is unable to function effectively and that the country therefore has an uneasy environment for foreign businesses.

A full-scale military regime poses the greatest risk. In the short term a military regime may provide a new stability and thus reduce business risks. However, in the longer term the risk will almost certainly rise, partly because the system of governance will be become corrupt and partly because the continuation of such a government is likely to create an armed opposition. In some cases, military participation in government may be a symptom rather than a cause of underlying difficulties. Overall, lower risk ratings indicate a greater degree of military participation in politics and a higher level of political risk.

Religious Tensions

Religious tensions may stem from the domination of society and/or governance by a single religious group that seeks to replace civil law by religious law and to exclude other religions from the political and/or social process; the desire of a single religious group to dominate governance; the suppression of religious freedom; the desire of a religious group to express its own identity, separate from the country as a whole.

The risk involved in these situations range from inexperienced people imposing inappropriate policies through civil dissent to civil war.

Law and Order

Law and Order are assessed separately, with each sub-component comprising zero to three points. The Law sub-component is an assessment of the strength and impartiality of the legal system, while the Order sub-component is an assessment of popular observance of the law. Thus, a country can enjoy a high rating – 3 – in terms of its judicial system, but a low rating – 1 – if it suffers from a very high crime rate of if the law is routinely ignored without effective sanction (for example, widespread illegal strikes).

Ethnic Tensions

This component is an assessment of the degree of tension within a country attributable to racial, nationality, or language divisions. Lower ratings are given to countries where racial and nationality tensions are high because opposing groups are intolerant and unwilling to compromise. Higher ratings are given to countries where tensions are minimal, even though such differences may still exist.

Democratic Accountability

This is a measure of how responsive government is to its people, on the basis that the less responsive it is, the more likely it is that the government will fall, peacefully in a democratic society, but possibly violently in a non-democratic one.

The points in this component are awarded on the basis of the type of governance enjoyed by the country in question. For this purpose, we have defined the following types of governance:

Alternating Democracy

The essential features of an alternating democracy are:

- A government/executive that has not served more than two successive terms,
- Free and fair elections for the legislature and executive as determined by constitution or statute,
- The active presence of more than one political party and a viable opposition,
- Evidence of checks and balances among the three elements of government: executive, legislative and judicial,
- Evidence of an independent judiciary,
- Evidence of the protection of personal liberties through constitutional or other legal guarantees.

Dominated Democracy

The essential features of a dominated democracy are:

- A government/executive that has served more than two successive terms,
- Free and fair elections for the legislature and executive as determined by constitution or statute,
- The active presence of more than one political party,
- Evidence of checks and balances between the executive, legislature, and judiciary,
- Evidence of an independent judiciary,
- Evidence of the protection of personal liberties.

De Facto One-Party State

The essential features of a de facto one-party state are:

- A government/executive that has served more than two successive terms, or where the political/electoral system is designed or distorted to ensure the domination of governance by a particular government/executive,
- Holding of regular elections as determined by constitution or statute,
- Evidence of restrictions on the activity of non-government political parties (disproportionate media access between the governing and non-governing parties, harassment of the leaders and/or supporters of non-government political parties, the creation of impediments and obstacles affecting only the non-government political parties, electoral fraud, etc.).

De Jure One-Party State

The identifying feature of a one-party state is:

- A constitutional requirement that there be only one governing party,
- Lack of any legally recognized political opposition.

Autarchy

The identifying feature of an autarchy is:

Leadership of the state by a group or single person, without being subject to any franchise, either through military might or inherited right. In an autarchy, the leadership might indulge in some quasi-democratic processes. In its most developed form this allows competing political parties and regular elections, through popular franchise, to an assembly with restricted legislative powers (approaching the category of a de jure or de facto one-party state). However, the defining feature is whether the leadership, i.e. the head of government, is subject to election in which political opponents are allowed to stand. In general, the highest number of risk points (lowest risk) is assigned to Alternating Democracies, while the lowest number of risk points (highest risk) is assigned to Autarchies.

Bureaucracy Quality

The institutional strength and quality of the bureaucracy is another shock absorber that tends to minimize revisions of policy when governments change. Therefore, high

points are given to countries where the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services. In these low-risk countries, the bureaucracy tends to be somewhat autonomous from political pressure and to have an established mechanism for recruitment and training. Countries that lack the cushioning effect of a strong bureaucracy receive low points because a change in government tends to be traumatic in terms of policy formulation and day-to-day administrative functions.

Assessing Political Risk

In general terms if the points awarded are less than 50% of the total, that component can be considered as very high risk. If the points are in the 50-60% range it is high risk, in the 60%-70% range moderate risk, in the 70-80% range low risk and in the 80-100% range very low risk. However, this is only a general guideline as a better rating in other components can compensate for a poor risk rating in one component. Overall, a political risk rating of 0.0% to 49.9% indicates a Very High Risk; 50.0% to 59.9% High Risk; 60.0% to 69.9% Moderate Risk; 70.0% to 79.9% Low Risk; and 80.0% or more Very Low Risk. Once again, however, a poor political risk rating can be compensated for by a better financial and/or economic risk rating.

The Composite Risk Rating

The method of calculating the Composite Political, Financial, and Economic Risk Rating remains unchanged. The political risk rating contributes 50% of the composite rating, while the financial and economic risk ratings each contribute 25%. The following formula is used to calculate the aggregate political, financial and economic risk:

CPFER (country X) = 0.5 (PR + FR + ER)

where:

CPFER = Composite political, financial and economic risk ratings

PR = Total political risk indicators

FR = Total financial risk indicators

ER = Total economic risk indicators

The highest overall rating (theoretically 100) indicates the lowest risk, and the lowest rating (theoretically zero) indicates the highest risk. As a general guide to grouping

countries on the basis of comparable risk, the individual risk of individual countries can be estimated using the following fairly broad categories of Composite Risk.

Very High Risk	00.0 to 49.9 points
High Risk	50.0 to 59.9 points
Moderate Risk	60.0 to 69.9 points
Low Risk	70.0 to 79.9 points
Very Low Risk	80.0 to 100 points

Appendix Four – UNCTAD free-market Commodity Price Index

Table 4.1: UNCTAD free-market Commodity Price Index weight allocation.

Commodity	Weight (%)	Commodity	Weight (%)
All Food		**Agricultural Raw Materials**	
Food and tropical beverages		Linseed oil	0.01
Food		Tobacco	2.72
Wheat [a]	4.04	Cotton	
Maize	4.28	-Extra long	0.17
Rice	9.96	-Long	0.22
Sugar [a]	8.43	-Medium/long	1.88
Bovine meat	3.73	-Short	0.42
Bananas [a]	5.59	Wool	
Pepper	1.56	-Fine	0.08
Soybean meal	9.18	-Coarse	0.11
Fish meal	2.29	Jute	0.06
Tropical beverages		Sisal	
Coffee		-3L	0.01
-Colombian mild Arabicas	0.61	-UG	0.02
-Brazilian and other Arabicas	0.85	Hides and skins	0.84
-Other mild Arabicas	1.21	Tropical logs	4.25
-Robustas	0.74	Rubber	2.73
Cocoa beans	1.03	**Total**	**13.52**
Tea	1.12	**Minerals, ores and metals**	
Vegetable oilseeds and oils		Phosphate rock	0.66
Soybeans	1.93	Manganese ore	0.3
Soybean oil	1.16	Iron ore	3.4
Sunflower oil	0.42	Aluminium	5.96
Groundnut oil	0.09	Copper	9.68
Copra	0.04	Nickel	1.67
Coconut oil	0.41	Lead	0.52
Palm kernel oil	0.34	Zinc	1.8
Palm oil	2.58	Tin	0.9
Total	**61.59**	Tungsten ore	0
		Total	**24.89**
		Price Index - all groups	**100**

[a] The value of exports from developing countries in 1999-2001 under special arrangement is excluded. Source: UNCTAD Statistics 2013.

UNCTAD monthly indices of free-market commodity prices are based-weighted indices (2000=100). The weights used in the construction of the indices represent the relative values of exports from developing countries for the period 1999-2001.

Appendix Five – MSCI Global Investable Indices Methodology

To follow is an excerpt from the MSCI Global Investable Indices Methodology August 2013 report. Full details on the construction of the MSCI Global Investable Indices can be obtained from http://www.msci.com/

Introduction to the MSCI Global Investable Market Indices

For over 40 years, MSCI has constructed the most widely used international equity indices for institutional investors. The MSCI global equity indices have maintained their leading position because they have evolved over time to continue to appropriately reflect the international investable opportunity set of equities while addressing the changing and expanding investment interests of cross-border investors. MSCI's objective is to construct and maintain its global equity indices in such a way that they may contribute to the international investment process by serving as:

- Relevant and accurate performance benchmarks.
- The basis for asset allocation and portfolio construction across geographic markets and size-segments
- Style segments and sectors.
- Effective research tools.
- The basis for investment vehicles.

Developments in international equity markets and investment management processes have led many investors to desire very broad coverage and size-segmentation of the international equity markets. To address these desires and continue to meet our index construction and maintenance objective, after a thorough consultation with members of the international investment community, MSCI enhanced its Standard Index methodology, by moving from a sampled multi-cap approach to an approach targeting exhaustive coverage with non-overlapping size and style segments. The MSCI Standard and MSCI Small Cap Indices, along with the other MSCI equity indices based on them, transitioned to the Global Investable Market Indices methodology described in this methodology book. The transition was completed at the end of May 2008.

The Enhanced MSCI Standard Indices are composed of the MSCI Large Cap and Mid Cap Indices. The MSCI Global Small Cap Index transitioned to the MSCI Small Cap Index resulting from the Global Investable Market Indices methodology, and contains no overlap with constituents of the transitioned MSCI Standard Indices. In addition, under the MSCI Global Investable Market Indices methodology, there are new Small Cap Indices covering Emerging Markets countries. There are also new MSCI Value and Growth Indices constructed from the Small Cap Indices for both Emerging and Developed Markets. Together, the relevant MSCI Large Cap, Mid Cap and Small Cap Indices make up the MSCI Investable Market Index for each country, composite, sector, and style index that MSCI offers. Based on transparent and objective rules, the Global Investable Market Indices are intended to provide:

- Exhaustive coverage of the investable opportunity set with non-overlapping size and style segmentation.

- A strong emphasis on investability and replicability of the indices through the use of size and liquidity screens.

- Size segmentation designed to achieve an effective balance between the objectives of global size

- Integrity and country diversification.

- An innovative maintenance methodology that provides a superior balance between index stability and reflecting changes in the opportunity set in a timely way.

- A complete and consistent index family, with Standard, Large Cap, Mid Cap, Small Cap, and Investable Market Indices.

In addition to the innovations listed above, the Global Investable Market Indices methodology retains many of the features of the original methodology, such as:

- The use of a building block approach to permit the creation and calculation of meaningful composites.

- The creation of sector and industry indices using the Global Industry Classification Standard.

- The creation of Value and Growth Indices using the current MSCI Global Value and Growth Methodology.

- Minimum free float requirements for eligibility and free float-adjusted capitalization weighting to appropriately reflect the size of each investment opportunity and facilitate the replicability of the Indices.
- Timely and consistent treatment of corporate events and synchronized rebalancings globally.

In November 2010 MSCI also introduced a Micro-Cap Size-Segment for developed markets as well as the MSCI World All Cap Index consisting of the Large, Mid, Small and Micro-Cap Size-Segments in order to further broaden the coverage of the international equity markets.

Appendix Six – Panel unit root test results (for Chapter Four)

Unit root tests are used to find out if a series of variables is stationary or non-stationary. In order to compare the results under different unit root tests, the Levin, Li and Chu test (2002) and Fisher-ADF test is used. These tests are more appropriate for unbalanced data. Some of the variables are stationary (no presence of a unit root) at the level series. The stationary variables are the economic risk rating, political risk rating, World Stock Market Index, and openness to trade. The non-stationary variables are FDI, financial risk rating, Commodity Price Index, and gross fixed capital formation. After taking the first difference, majority of the variables are stationary whether or not a time trend is included. The unit root tests have been conducted on raw level data. Table 6.1 below shows the unit root test results from the Levin, Li and Chu test

Table 6.1: LLC panel unit root test results

	fdi	econrisk	finrisk	polrisk
individual intercept	1.829	-3.723	-0.045	-6.816
	(0.966)	**(0.000)**	(0.482)	**(0.000)**
intercept and trend	0.321	0.288	0.359	-5.163
	(0.626)	(0.613)	(0.640)	**(0.000)**

	commindex	worldindex	capformation	open
individual intercept	15.158	-4.980	-0.691	-1.745
	(1.000)	**(0.000)**	(0.245)	**(0.041)**
intercept and trend	11.289	-5.647	-0.126	-2.923
	(1.000)	**(0.000)**	(0.450)	**(0.002)**

	Δfdi	Δeconrisk	Δfinrisk	Δpolrisk
individual intercept	-12.329	-10.870	-13.902	-16.728
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**
intercept and trend	-14.710	-9.236	-11.930	-14.201
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**

	Δcommindex	Δworldindex	Δcapformation	Δopen
individual intercept	9.241	-16.375	-12.212	-11.923
	(1.000)	**(0.000)**	**(0.000)**	**(0.000)**
intercept and trend	17.788	-13.123	-9.506	-7.981
	(1.000)	**(0.000)**	**(0.000)**	**(0.000)**

Note: **H_0: non-stationary process (presence of a unit root)**

p-values are in parenthesis. The significant p-values at the 1% and 5% significance levels are in bold therefore indicating a stationary process.

Table 6.2 below shows the unit root test results from the Fisher-ADF test

Table 6.2: Fisher-ADF panel unit root test results

	fdi	econrisk	finrisk	polrisk
individual intercept	63.834	109.155	47.038	153.095
	(0.685)	**(0.002)**	(0.984)	**(0.000)**
intercept and trend	96.714	94.915	74.483	93.387
	(0.019)	**(0.025)**	(0.335)	**(0.032)**

	commindex	worldindex	capformation	open
individual intercept	0.757	55.384	93.905	94.036
	(1.000)	(0.899)	**(0.030)**	**(0.029)**
intercept and trend	0.867	177.982	78.081	120.141
	(1.000)	**(0.000)**	(0.238)	**(0.000)**

	Δfdi	Δeconrisk	Δfinrisk	Δpolrisk
individual intercept	665.770	318.509	328.606	347.522
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**
intercept and trend	599.452	252.636	254.057	272.955
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**

	Δcommindex	Δworldindex	Δcapformation	Δopen
individual intercept	102.883	341.630	360.752	349.395
	(0.006)	**(0.000)**	**(0.000)**	**(0.000)**
intercept and trend	50.542	234.589	283.751	262.421
	(0.962)	**(0.000)**	**(0.000)**	**(0.000)**

Note: **H_0: non-stationary process (presence of a unit root)**

p-values are in parenthesis. The significant p-values at the 1% and 5% significance levels are in bold therefore indicating a stationary process.

Appendix Seven – Unlagged fixed effects model (1984-2010) – for Chapter Five

The Table below shows the results from the unlagged regression model estimated using fixed effects. The data are from1984 to 2010 and have an annual frequency.

Table 7.1: Results from the unlagged fixed effects model (1984-2010)

Variable	Coefficient	Std. Error	t-statistic	p-value
lneconrisk	-0.915	0.372	-2.459	0.014**
lnfinrisk	-0.205	0.253	-0.813	0.417
lnpolrisk	-0.667	0.680	-0.981	0.327
lncommindex	0.997	0.270	3.698	0.000***
lnworldindex	0.750	0.141	5.339	0.000***
lncapformation	0.363	0.174	2.091	0.037**
lnopen	1.468	0.316	4.644	0.000***
sm	0.494	0.258	1.917	0.056*
c	7.562	2.742	2.757	0.006***
Adjusted R-Squared	0.700			
Durbin Watson	1.152			
S.E. of regression	1.220			
F-Statistic (p-value)	0.000			

Significant p-values at *10%, **5% and ***1%.

Appendix Eight – Unlagged random effects model (three-year period averaged data) –for Chapter Five

The Table below shows the results from the unlagged regression model estimated using random effects using data that has an annual frequency. The data are collected from 1984 to 2010 averaged over three-year periods.

Table 8.1: Results from the unlagged random effects model (averaged data)

Variable	Coefficient	Std. Error	t-statistic	p-value
lneconrisk	-0.759	0.353	-2.151	0.032**
lnfinrisk	-0.220	0.229	-0.961	0.338
lnpolrisk	-0.177	0.672	-0.263	0.793
lncommindex	0.951	0.281	3.379	0.001***
lnworldindex	0.932	0.129	7.243	0.000***
lncapformation	0.439	0.174	2.523	0.012**
lnopen	1.304	0.330	3.945	0.000***
sm	0.575	0.235	2.448	0.015**
c	4.745	2.708	1.752	0.081*
Adjusted R-Squared	0.606			
Durbin Watson	1.279			
S.E. of regression	0.943			
F-Statistic (p-value)	0.000			

Significant p-values at *10%, **5% and ***1%.

Appendix Nine – Vector Autoregression (VAR) stability and estimation results (for Chapter Five)

1. VAR Stability results

When estimating a VAR, it is essential to find out if the VAR is stable. If the VAR is not stable, certain results such as the impulse response standard errors will not be valid. The results below show that the VAR model is stable at a lag length of one year.

Table 9.1: VAR Stability at a lag length of one year

Root	Modulus
0.988895 - 0.007499i	0.989
0.988895 + 0.007499i	0.989
0.803505	0.804
0.749427	0.749

No root lies outside the unit circle.
VAR satisfies the stability condition

2. VAR estimation results

Table 9.2 below shows the results from the VAR estimation. The variables used in the VAR have been transformed into natural logarithms.

Table 9.2: Vector Autoregression estimates

	lnfdi	lnfinrisk	lncommindex	lncapformation
lnfdi(-1)	0.766	-0.008	0.005	-0.004
	(-0.023)	(-0.003)	(-0.002)	(-0.005)
	[33.019]	[-2.210]	[2.009]	[-0.781]
lnfinrisk(-1)	-0.428	0.980	-0.029	-0.047
	(-0.105)	(-0.016)	(-0.011)	(-0.022)
	[-4.071]	[62.254]	[-2.569]	[-2.108]
lncommindex(-1)	0.204	0.013	0.977	0.037
	(-0.186)	(-0.028)	(-0.020)	(-0.039)
	[1.101]	[0.455]	[49.311]	[0.952]
lncapformation(-1)	0.044	-0.012	0.005	0.809
	(-0.099)	(-0.015)	(-0.011)	(-0.021)
	[0.439]	[-0.829]	[0.432]	[38.484]
c	4.864	0.146	0.152	0.618
	(-1.180)	(-0.177)	(-0.126)	(-0.249)
	[4.123]	[0.825]	[1.210]	[2.479]
R-squared	0.717	0.895	0.826	0.705
Adjusted R-squared	0.715	0.895	0.825	0.704
Sum squared residuals	892.360	19.990	10.164	39.841
Standard Error equation	1.157	0.173	0.123	0.244
F-statistic	422.214	1426.426	790.762	399.146
Log likelihood	-1,048.820	227.523	454.788	-4.205
Akaike AIC	3.136	-0.662	-1.339	0.027
Schwarz SC	3.170	-0.629	-1.305	0.061
Mean dependent	18.313	3.586	4.883	2.849
Standard Deviation dependent	2.167	0.534	0.295	0.449

Note: Standard errors in ( ) and t-statistics in [ ]

Appendix Ten – Johansen Cointegration Test Results (for Chapter Five)

Table 10.1: Johansen Cointegration Test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of Cointegrating Equations	Eigenvalue	Trace Statistic	0.05 Critical Value	p-value**
None *	0.115	145.529	47.856	0.000
At most 1 *	0.081	71.665	29.797	0.000
At most 2 *	0.028	20.804	15.495	0.007
At most 3	0.006	3.431	3.841	0.064

Trace test indicates 3 cointegrating equations 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 Cointegrating Equations	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	p-value**
None *	0.115	73.864	27.584	0.000
At most 1 *	0.081	50.861	21.132	0.000
At most 2 *	0.028	17.373	14.265	0.016
At most 3	0.006	3.431	3.841	0.064

Max-eigenvalue test indicates 3 cointegrating equations at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

lnfdi	lnfinrisk	lncommindex	lncapformation
0.544	0.977	-0.563	0.460
0.102	-0.226	0.342	-2.300
-0.019	-2.208	-2.426	0.0138
0.041	0.629	-3.605	-0.126

Unrestricted Adjustment Coefficients (alpha):

d(lnfdi)	-0.348	-0.053	0.012	0.035
d(lnfinrisk)	-0.019	0.008	0.012	-0.011
d(lncommindex)	0.011	0.002	0.017	0.005
d(lncapformation)	-0.010	0.067	-0.002	0.003

1 Cointegrating Equation(s):		Log likelihood	-284.790

Normalized cointegrating coefficients (standard error in parentheses)

lnfdi	lnfinrisk	lncommindex	lncapformation
1.000	1.797	-1.034	0.846
	(-0.475)	(-0.905)	(-0.490)

Adjustment coefficients (standard error in parentheses)

d(lnfdi)	-0.189
	(-0.024)
d(lnfinrisk)	-0.010
	(-0.004)
d(lncommindex)	0.006
	(-0.003)
d(lncapformation)	-0.005
	(-0.005)

2 Cointegrating Equation(s):		Log likelihood	-259.3598

Normalized cointegrating coefficients (standard error in parentheses)

lnfdi	lnfinrisk	lncommindex	lncapformation
1.000	0.000	0.929	-9.625
		(-2.537)	(-1.430)
0.000	1.000	-1.093	5.828
		(-1.403)	(-0.791)

Adjustment coefficients (standard error in parentheses)

d(lnfdi)	-0.195	-0.328
	(-0.025)	(-0.045)
d(lnfinrisk)	-0.010	-0.020
	(-0.004)	(-0.007)
d(lncommindex)	0.006	0.010
	(-0.003)	(-0.005)
d(lncapformation)	0.001	-0.025
	(-0.005)	(-0.010)

3 Cointegrating Equation(s):		Log likelihood	-250.673

Normalized cointegrating coefficients (standard error in parentheses)

lnfdi	lnfinrisk	lncommindex	lncapformation
1.000	0.000	0.000	-7.178
			(-1.121)
0.000	1.000	0.000	2.949
			(-0.417)
0.000	0.000	1.000	-2.634
			(-0.372)

Adjustment coefficients (standard error in parentheses)

d(lnfdi)	-0.195	-0.355	0.148
	(-0.025)	(-0.108)	(-0.112)
d(lnfinrisk)	-0.010	-0.047	-0.016
	(-0.004)	(-0.017)	(-0.018)
d(lncommindex)	0.006	-0.028	-0.047
	(-0.003)	(-0.012)	(-0.012)
d(lncapformation)	0.002	-0.020	0.034
	(-0.005)	(-0.023)	(-0.024)

Appendix Eleven – Vector Error Correction Model (for Chapter Five)

A VECM has been used to discover the long-run equilibrium of the relationship between FDI and the non-stationary explanatory variables. A VECM is a restricted model based on a VAR and is used with non-stationary variables that are cointegrated.

Table 11.1 below shows the results from the VECM estimation.

Table 11.1: Vector Error Correction Estimates

Cointegrating Equation	Cointegrating Equation 1	Cointegrating Equation 2	Cointegrating Equation 3
lnfdi(-1)	1.000	0.000	0.000
lnfinrisk(-1)	0.000	1.000	0.000
lncommindex(-1)	0.000	0.000	1.000
lncapformation(-1)	-7.178 (-1.122) [-6.395]	2.949 (-0.418) [7.057]	-2.634 (-0.373) [-7.061]
c	2.143	-11.992	2.636

Error Correction:	d(lnfdi)	d(lnfinrisk)	d(lncommindex)	d(lncapform)
Cointegrating Equation1	-0.195	-0.010	0.006	0.002
	(-0.025)	(-0.004)	(-0.003)	(-0.005)
	[-7.895]	[-2.497]	[2.072]	[0.291]
Cointegrating Equation2	-0.355	-0.047	-0.028	-0.020
	(-0.108)	(-0.017)	(-0.012)	(-0.023)
	[-3.286]	[-2.719]	[-2.292]	[-0.851]
Cointegrating Equation3	0.148	-0.016	-0.047	0.034
	(-0.112)	(-0.018)	(-0.012)	(-0.024)
	[1.321]	[-0.880]	[-3.759]	[1.439]
d(lnfdi(-1))	-0.197	0.006	-0.002	0.005
	(-0.037)	(-0.006)	(-0.004)	(-0.008)
	[-5.314]	[1.093]	[-0.488]	[0.590]
d(lnfinrisk(-1))	0.088	0.146	0.010	-0.069
	(-0.297)	(-0.047)	(-0.033)	(-0.064)
	[0.294]	[3.103]	[0.300]	[-1.084]
d(lncommindex(-1))	0.227	-0.067	0.201	0.045
	(-0.372)	(-0.059)	(-0.041)	(-0.079)
	[0.610]	[-1.145]	[4.863]	[0.572]
d(lncapformation(-1))	0.305	0.036	0.028	-0.175
	(-0.174)	(-0.028)	(-0.019)	(-0.037)
	[1.750]	[1.294]	[1.457]	[-4.688]
c	0.204	-0.034	0.034	0.014
	(-0.048)	(-0.008)	(-0.005	(-0.010
	[4.265]	[-4.476]	[6.449]	[1.350]
R-squared	0.175	0.034	0.066	0.144
Adjusted R-squared	0.165	0.023	0.055	0.134
Sum squared residuals	717.611	18.021	8.869	32.718
Standard Error equation	1.096	0.174	0.122	0.234
F-statistic	18.084	2.998	5.997	14.338
Log likelihood	-910.094	204.428	418.904	24.028
Akaike AIC	3.035	-0.649	-1.358	-0.053
Schwarz SC	3.093	-0.591	-1.300	0.005
Mean dependent	0.176	-0.041	0.041	0.016
Standard Deviation dependent	1.200	0.176	0.125	0.252

Note: Standard errors in ( ) & t-statistics in [ ]

Appendix Twelve – Graphs for variables used in this research (for Chapter Six)

Figure 12.1 - Mean value of net FDI inflows to 35[90] African countries from 1984 to 2010 in US$
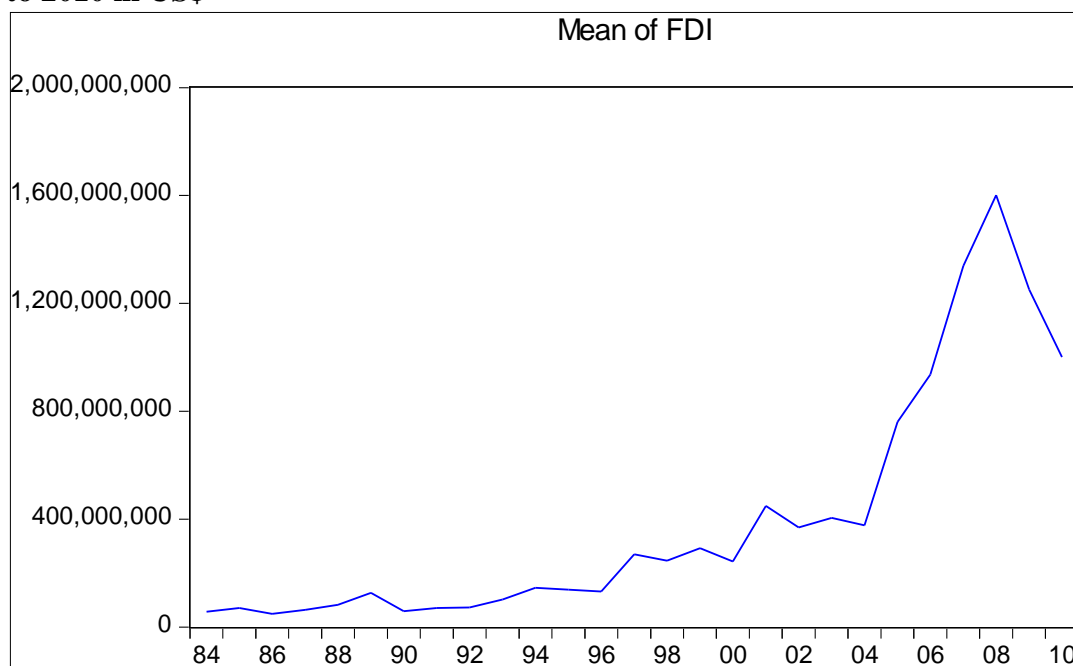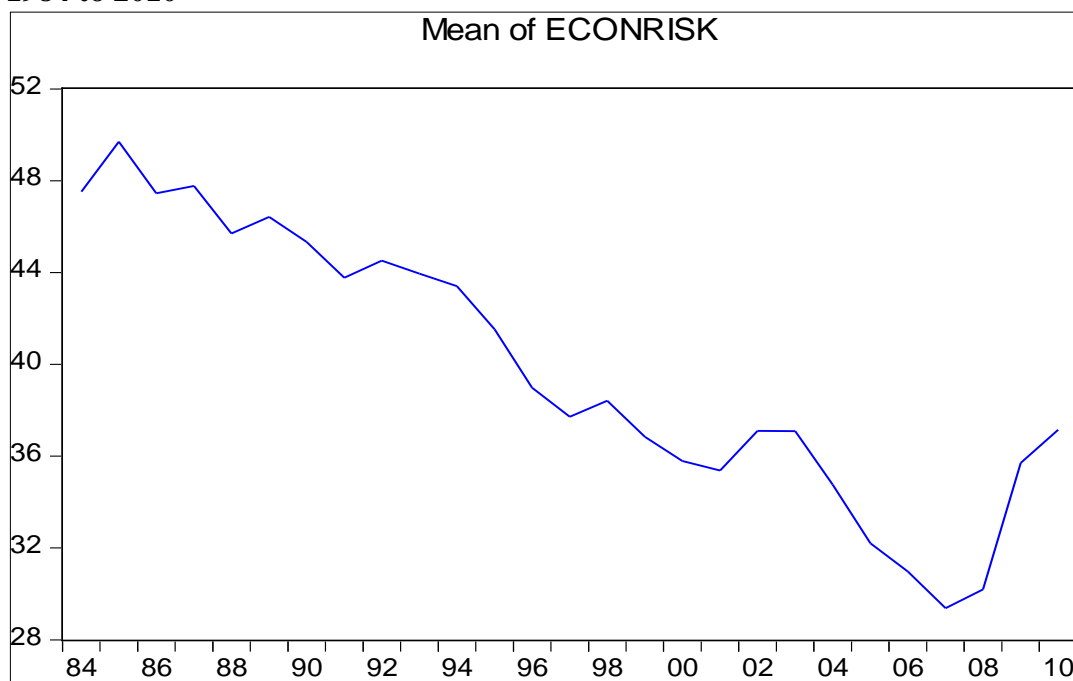

Mean of FDI

Figure 12.2 - Mean value of economic risk ratings for 35 African countries from 1984 to 2010

Mean of ECONRISK

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[90] African countries included in this research: Algeria, Angola, Botswana, Burkina Faso, Cameroon, Côte d'Ivoire, Democratic Republic of the Congo, Egypt, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Libya, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Republic of the Congo, Senegal, Sierra Leone, South Africa, Sudan, United Republic of Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe.

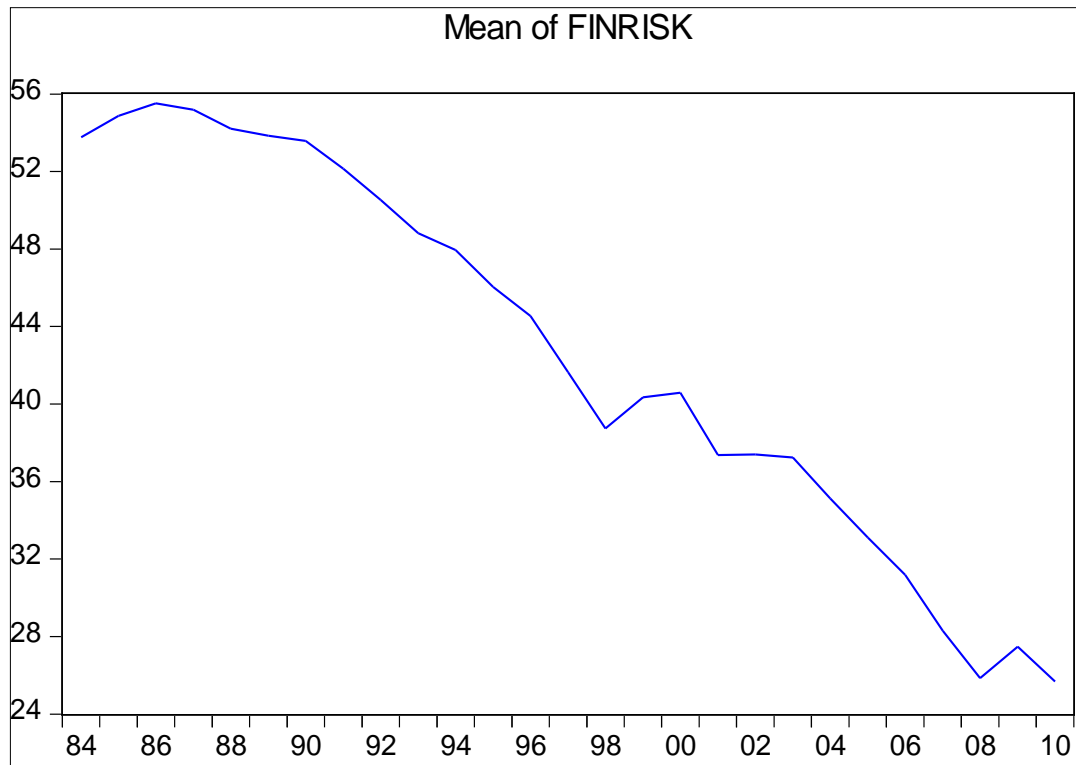**Figure 12.3 - Mean value of financial risk ratings for 35 African countries from 1984 to 2010**

Mean of FINRISK

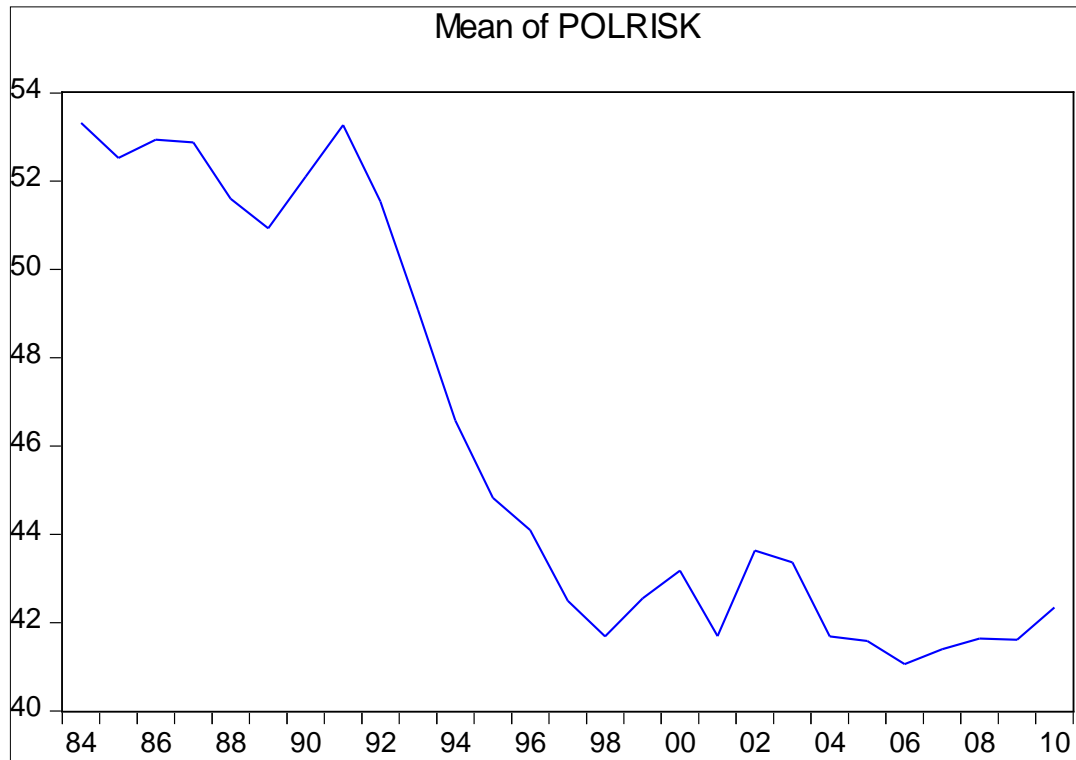**Figure 12.4 - Mean value of political risk ratings for 35 African countries from 1984 to 2010**

Mean of POLRISK

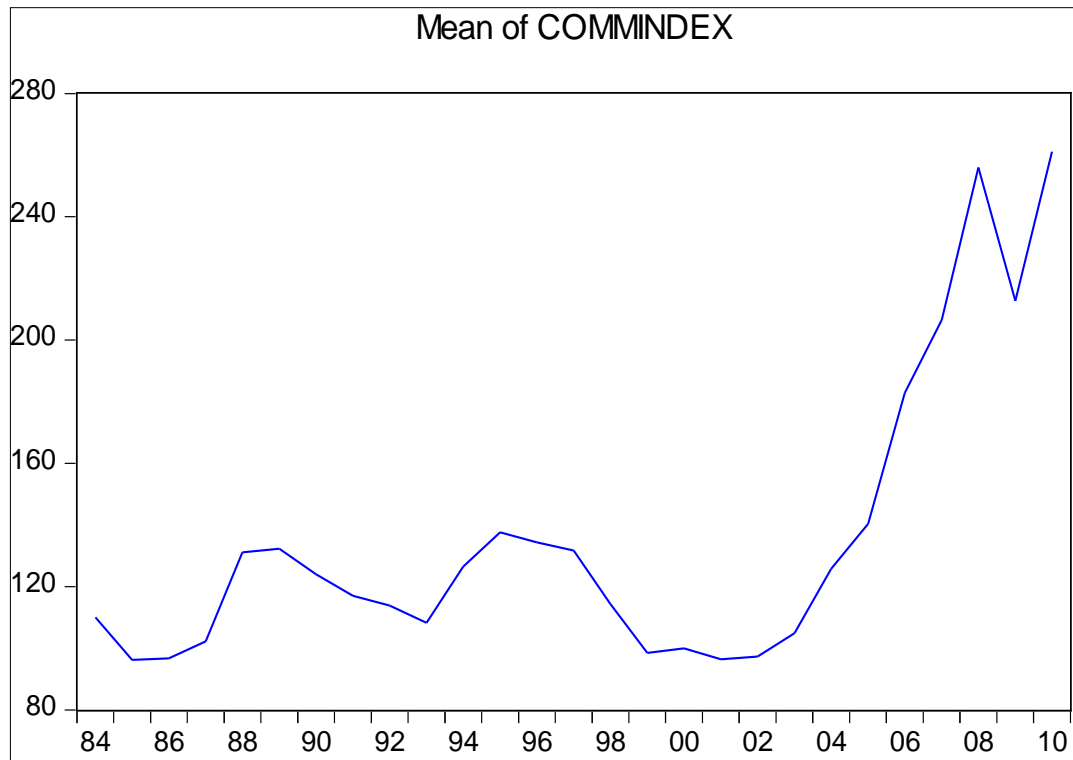**Figure 12.5 - Mean value of the UNCTAD free-market Commodity Price Index from 1984 to 2010**

Mean of COMMINDEX

Figure 12.6 - Mean value of the MSCI World Index from 1984 to 2010

Mean of WORLDINDEX

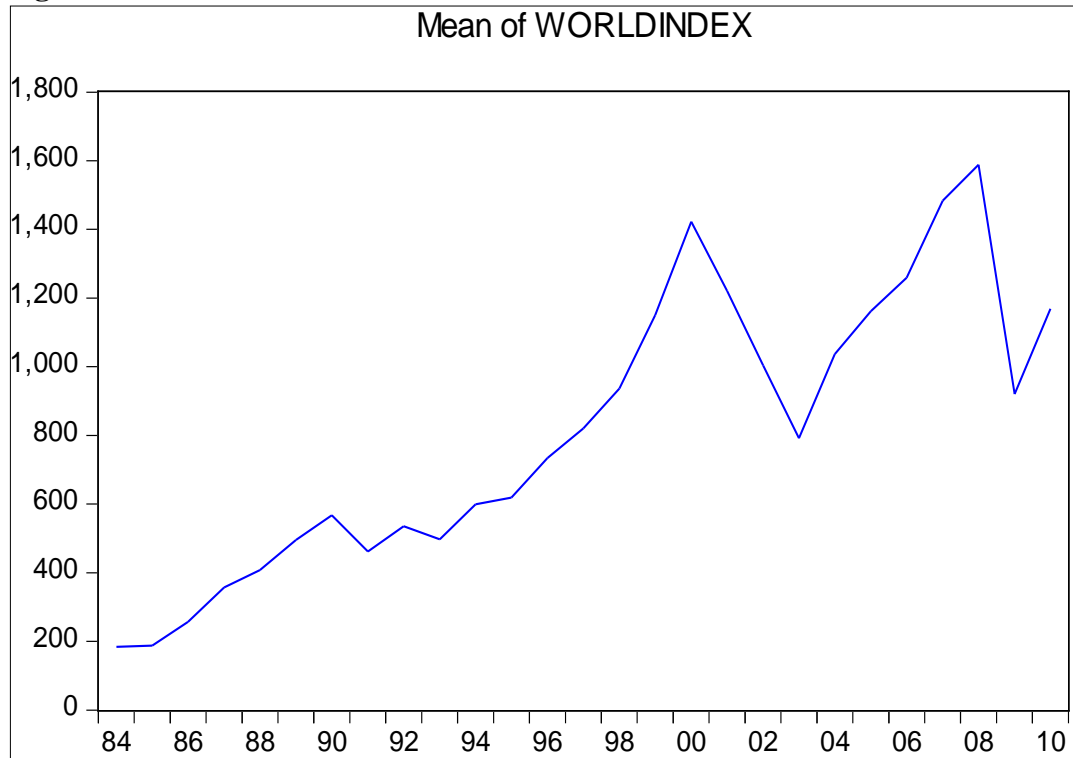**Figure 12.7 - Mean value of gross fixed capital formation for 35 African countries from 1984 to 2010 in US$**

Mean of CAPFORMATION

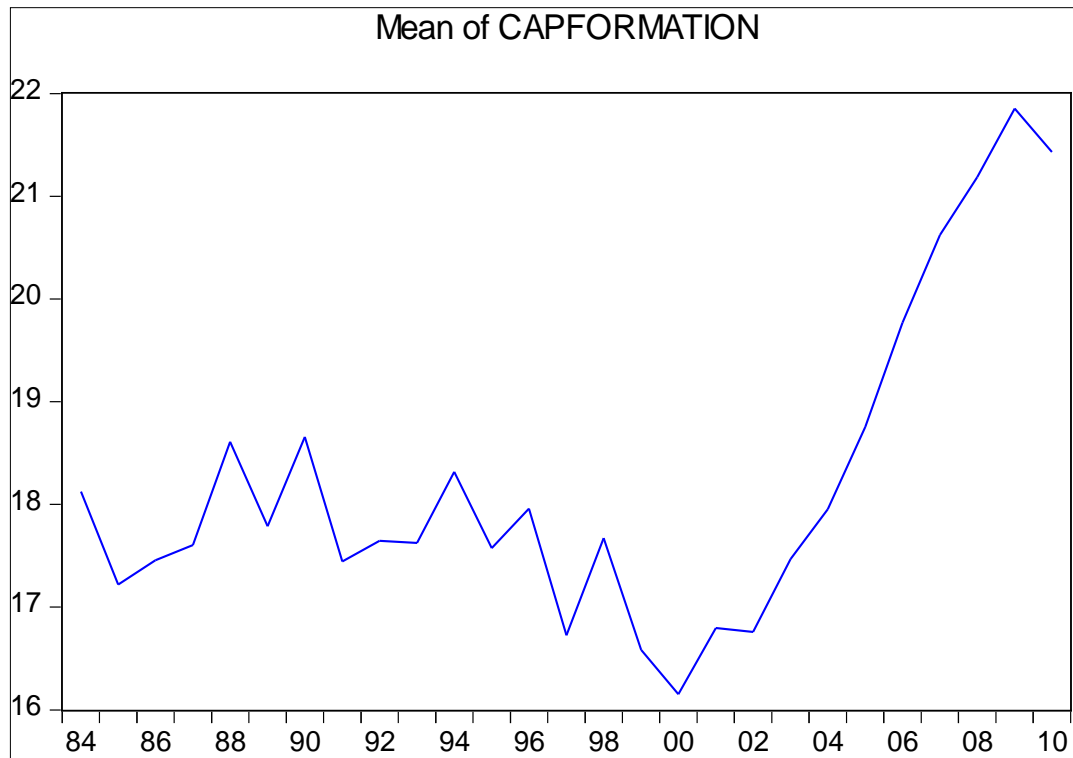**Figure 12.8 - Mean value of openness to trade for 35 African countries from 1984 to 2010 in US$**

Mean of OPEN