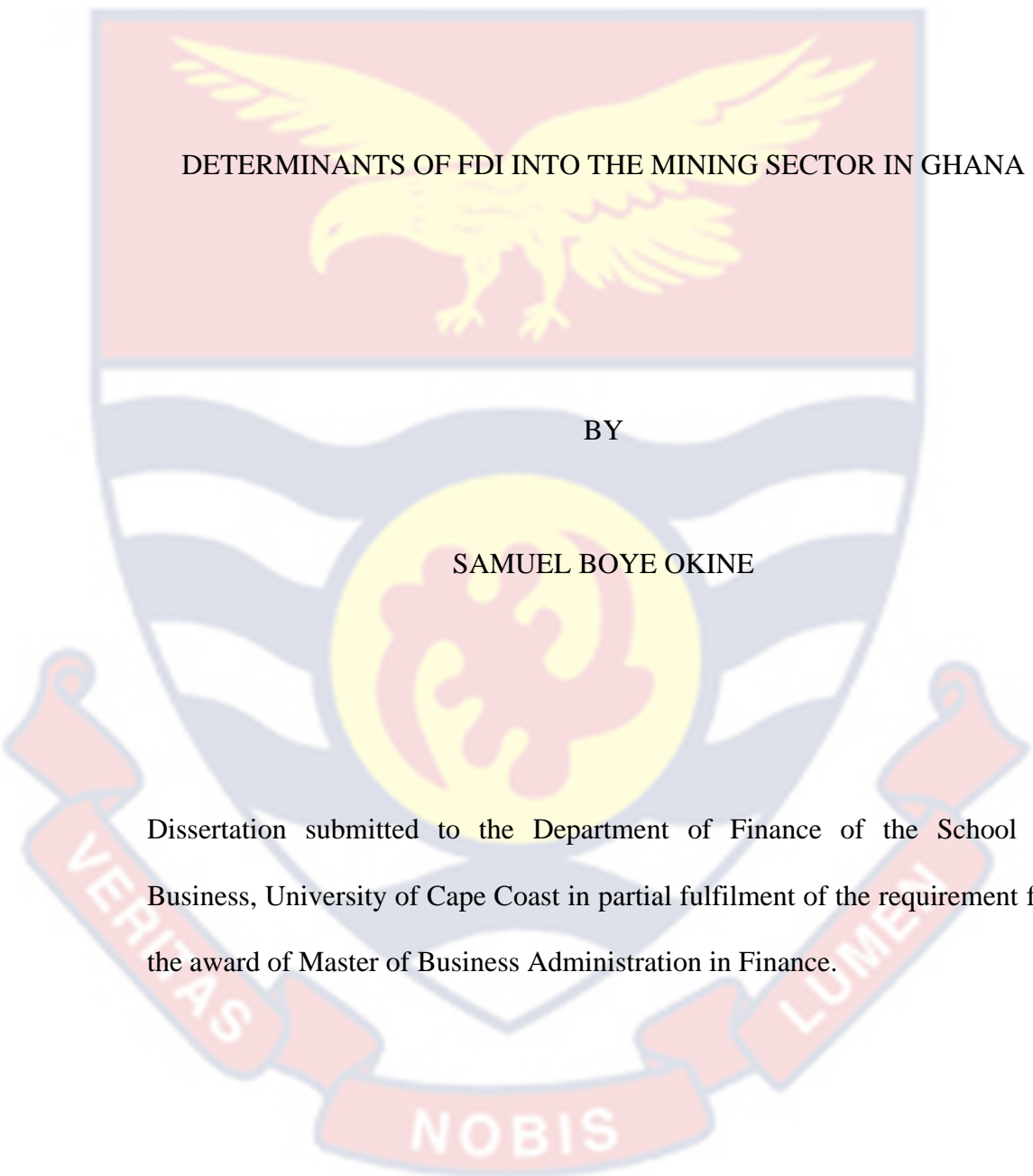UNIVERSITY OF CAPE COAST

DETERMINANTS OF FDI INTO THE MINING SECTOR IN GHANA

BY

SAMUEL BOYE OKINE

Dissertation submitted to the Department of Finance of the School of Business, University of Cape Coast in partial fulfilment of the requirement for the award of Master of Business Administration in Finance.

NOVEMBER, 2014

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original work. No part of it has been presented for another degree in this University or elsewhere.
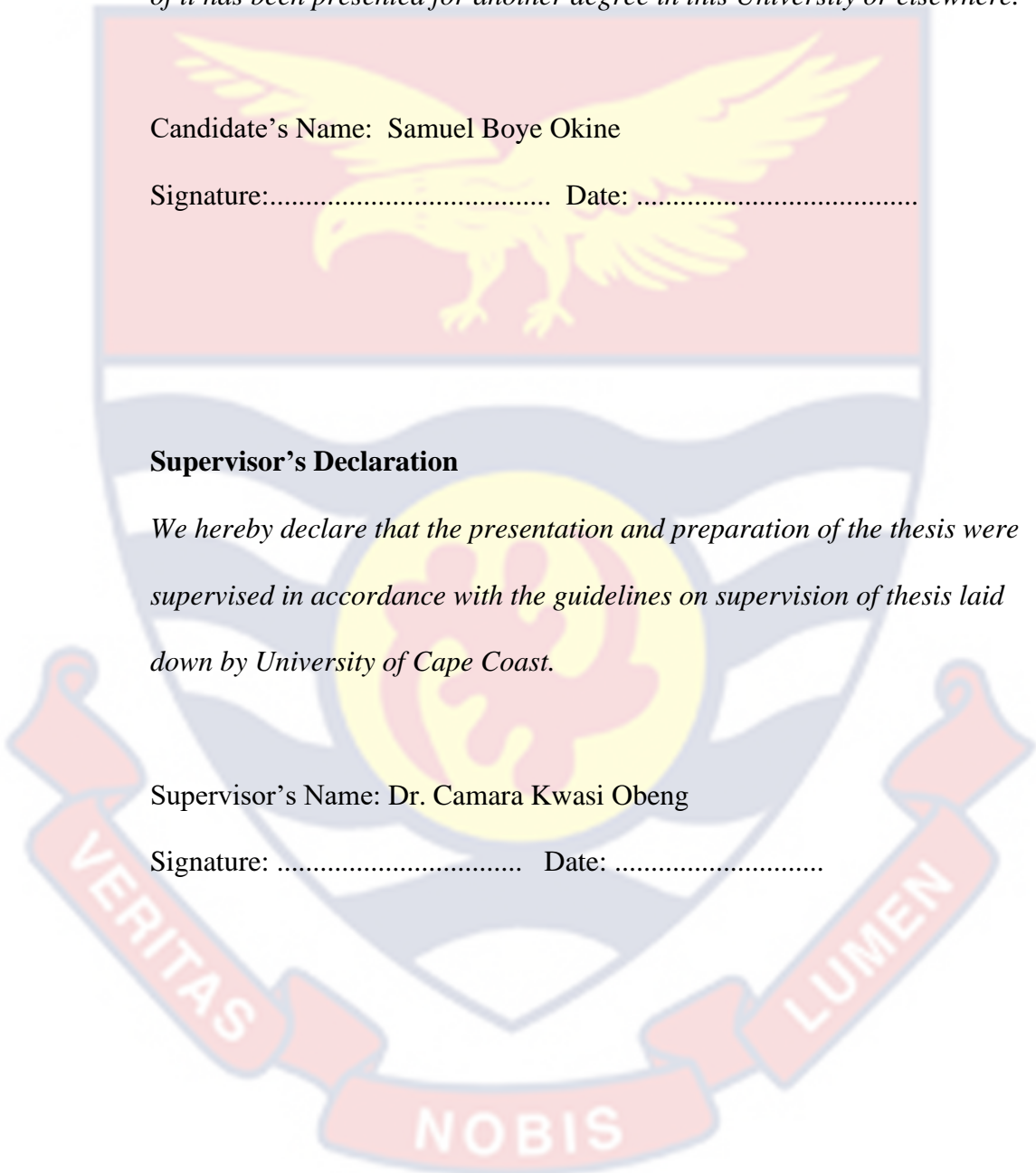
Candidate's Name: Samuel Boye Okine

Signature:...................................... Date: ....

Supervisor's Declaration

We hereby declare that the presentation and preparation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by University of Cape Coast.

Supervisor's Name: Dr. Camara Kwasi Obeng

Signature: .... Date: ....
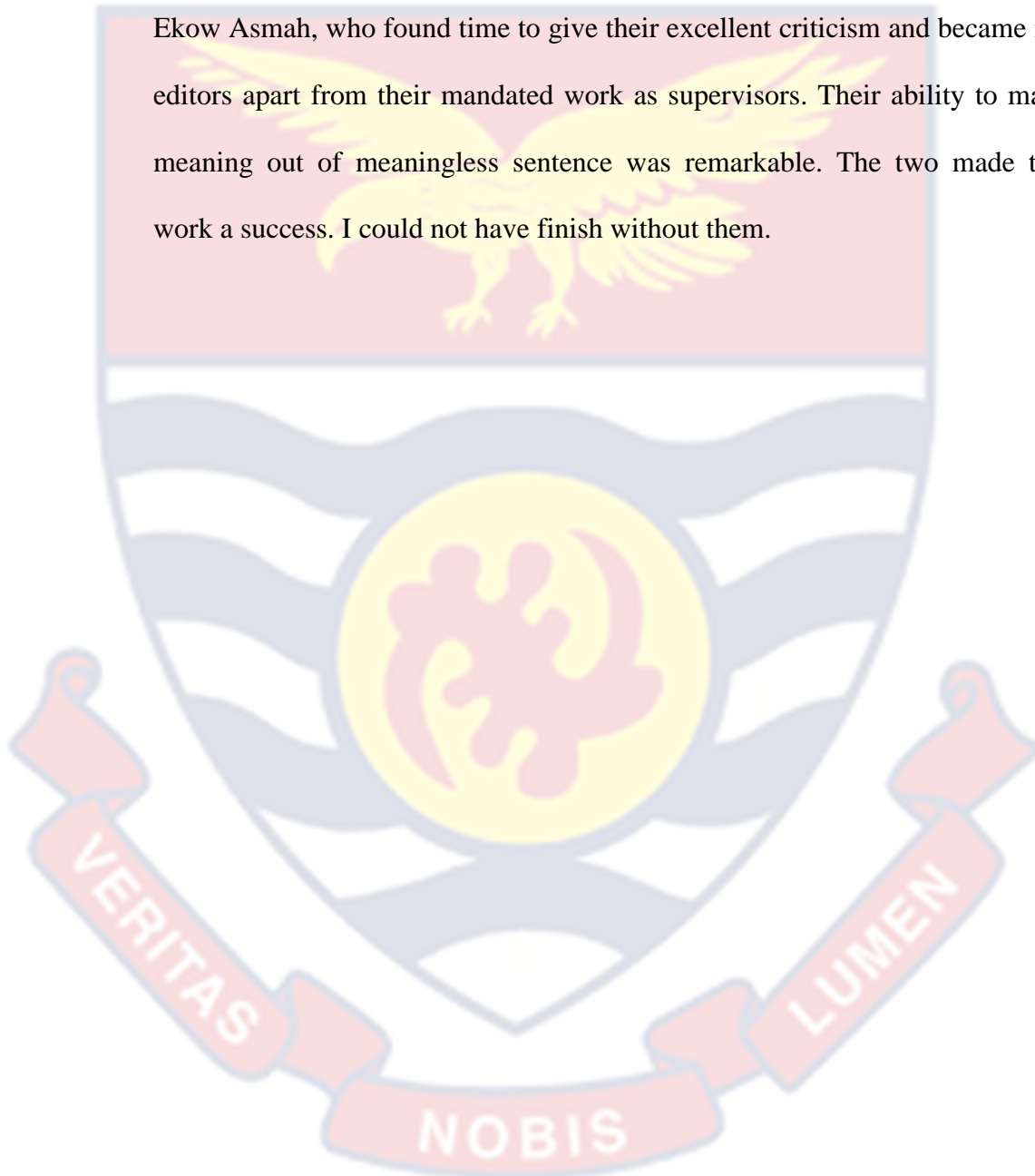
ABSTRACT

The study set out to examine factors that influence foreign direct investment inflows to the mining sector of Ghana. The study divided the broad objective into two. These were to examine the long run factors that affect foreign direct investment inflow and to investigate into the short-run factor that impact on foreign direct investment into the mining sector of Ghana. The study used quarterly time series data that spanned the period 1986 to 2012. Using Autoregressive Distributed Lag model (ARDL) or Bounds test approach to cointegration, long-run cointegration relationship was established between foreign direct investment to the mining sector and corporate tax, real effective exchange rate, consumer price index, real GDP per capita, Political instability, trade openness and infrastructure development.

The study found that increase in consumer price index, political instability, depreciation of the real effective exchange rate results in a decline in the inflow of foreign direct investment both in the short-run and the long run. On the other hand, real GDP per capita and trade openness and infrastructure development had a positive effect. The causal relationship however, revealed that there is with the exception of political instability, there exist causal relationship between foreign direct investment and the other variables used in the study.

The study recommend that, the government may consider providing enabling environment and policies that would foster GDP growth in order to increase inflows of foreign direct investment. Also, the central bank should target the depreciation of exchange rate and halt the increase in inflation by implementing right policies in order to increase the fortune of the economy in attracting FDI. Again, corporate tax should be reduced further to make Ghana's mining sector a desire destination among resource rich countries in the sub-region.

ACKNOWLEDGEMENTS

DEDICATION

This work is dedicated to my wife, Mrs. Okine

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

AFDBI	African Development Bank Indicators
ARDL	Autoregressive Distributed Lag
BOG	Bank of Ghana
CAB	Current Account Balance
CEPA	Center for Policy Analysis
CPI	Consumer Price Index
FB	Fiscal Balance
IMF	International Monetary Fund
INF	Inflation
OECD	Organisation for Economic Co-operation and Development
SBC	Schwarz Bayesian Criterion
UNCTAD	United Nations Conference on Trade and Development
WDI	World Development Indicators

CHAPTER ONE

INTRODUCTION

Background to the study

The importance of Foreign Direct Investment (hereafter called FDI) to every economy is well documented in the literature. There is a long-standing impression among policymakers that foreign direct investment is more conducive to long-run growth and development than other forms of capital inflows (Walsh & Yu, 2010). Therefore FDI provide a source for capital investment and bridge the gap that exist between saving and investment required to spur growth in developing and middle income countries. This foreign investment comes in to also fill the gap of inadequate capital for expansion and economic growth. Therefore, FDI augment the capital needed for development (Tsikata, Asante & Gyasi, 2000).

Foreign direct investment can be understood as a package of resources that complements other financial flows and makes a distinctive contribution to the development process. As Helleiner (1988, p.123) rightly asserts, "among the most consistent instruments suggested for achieving the twin objectives of more stable development finance and structural adjustment in production is quite a traditional one: direct foreign investment". FDI projects typically involve a transfer of technology and managerial skills from the source country to the recipient country. They can also provide greater access to world markets for recipient country exports. Because of their ties to parent corporations in the home country and affiliated corporations in other markets, FDI projects in developing countries can facilitate market penetration and market expansion in countries where they have corporate connections. In addition to these benefits

1

these are the employment and income-generating effects of the investment and the immediate or long-term balance of payments implications.

Again, FDIs has been argued to lead to technological transfers and externalities that benefit the host nation. Arguments for this hypothesis have been diverse, but most often based on the idea that FDI brings with it foreign technology and management skills, which can then be adapted by the host country in other contexts. This impression is strengthened by the fact that rapidly growing economies tend to absorb more FDI, though with FDI both contributing directly to growth and with foreign companies naturally eager to invest in rapidly growing economies.

From the model of Liu (2008), FDIs leads to firms accumulation or allow firms to build on the public information about new and better production methods availed by FDI. Thus, FDI increases the marginal profitability of investing in firm specific capital by local firms. In the process there is greater potential created for productivity improvement in domestic plants when firms allocate more managerial time to the production of this form of capital. Similar views have been expressed by Walz (1997) and Findly (1978). Apart from the above mentioned advantage, FDI also provide greater access to world markets, employment and income-generating effects of the investment as well as the immediate or long-term balance of payments implications (Casson, 1990).

The global benefits from FDI, however, suggest a contrasting and discouraging trend, with a marked decline in the growth rate of the contribution of FDI to value added, from a pre-global financial crisis average of 305% between 2005 and 2007 to a mere 5.5% in 2012. Similarly, FDI

2

employment contribution growth declined from 141% to 5.7% (UNCTAD, 2013).

Nevertheless, in an attempt to cash on the benefit that result from FDI inflows and as an avenue to obtain cheap capital for investment, the FDI inflows to developing countries has increased dramatically over the years. The perceived importance of FDI has seen most countries offering tax holidays, tariff reductions or exemptions, and subsidies incentives to attract and retain foreign investments. This has led to the increase in the global stock of inward FDI by more than ten-fold between 1990 and 2012, from US$2078 billion to US$22 813 billion dollars (UNCTAD, 2013). Developing countries share of the FDI flows was 52 per cent of global FDI inflows in 2012 against 42 per cent for the developed countries (UNCTAD, 2013). This most probably reflects the extent to which the developing world is becoming a more attractive destination for FDI in terms of policies, improved market conditions and improvements in social and absorptive capital.

There are, of course, socio-economic costs which FDI projects impose and which must therefore, be weighed against the benefits. For instance, FDI can have adverse effects in a highly protected market, since its operations may lead to high-cost production. Admittedly, the same problem would arise in the case of domestic investors protected by high tariff barriers. There is therefore the need for governments to adopt policies that not only are conducive to the inflow of FDI but also minimizes its negative effects in order to enhance its role in the development process (Tsikata, Asante & Gyasi, 2000)

The existing literature has been able to identify a lot of factors that affect FDI inflow. These studies include but not exhausted to Aseidu (2002;

3

2004; 2006), Dunning (2000), Adenutsi (2007), Kandiero and Wadhawan (2003) and others. These studies have identified variables such as openness, macroeconomic stability, institutional and political risk factors to attract FDI. The main challenge with these studies has to do with their consideration of FDI in it block form without giving cognizance to the fact that FDI may flow to a particular region base on the specific characteristics. Secondly, FDI flows to various regions may be influence by the availability of natural resource, market seeking or internationalization (Dunning, 2000).

From Dunning eclectic framework and Aseidu (2006), foreign investors are argued to deliberately choose a particular sector for investment. Even if FDI flows into a country are high, some sectors would experience high inflow of FDIs than others. To be more specific, FDI has been argued to flow to areas where resources are available (Aseidu, 2006). The eclectic theory suggests also that FDI flows to areas where there are institutional advantage and ownership advantage.

Due to the positive effect of FDI on the economy, a lot of academic research has sought to find out factors that would make a particular country an attractive destination for FDI inflows. The quest to find answers to this question over the past decades has culminated into a large body of empirical literature that seeks to identify the determinants of FDI inflows into Africa (Seim, 2009). The variables that have been identified to influence FDI inflows comprise of macroeconomic factors (market size, openness, human capital, labour costs, cost of investment, trade deficit, exchange rate, total tax rate, inflation, budget deficit, domestic investment, external debt, government consumption expenditure, and energy use), business environment and

4

institutional variables (Anyanwu & Erhijakpor, 2010). Apart from market size however, there is still no strong consensus as to what variables are more robust determinants of FDI inflows. Although results vary in empirical studies, openness is one of the determinants identified as being more likely to be robust when compared to other potential determinants of FDI (Seim, 2009).

Dunning (2000) and Aseidu (2006) has outline some reasons why FDI would move into a particular country. Based on this, FDI could be classified into market seeking FDIs or resource seeking FDIs. However, as Asiedu (2006) noted, most FDI that flows into Africa, including Ghana is argued to fall into the category of resource seeking FDIs. Thus, the FDIs that come into Ghana are purposely come to the resource rich sectors of the economy. Tsikata et al (2000) also points out that most of the FDI that flew into the country between 1983 and 1998 went to the mining sector of Ghana where there was readily available natural resource for exploration.

Statement of Problem

The historical trends in FDI flows shown in Table 1 indicate the following three phases since 1983: 1983-8 was a period of sluggish inflows, averaging $4 million per annum, the highest and lowest inflows during the period being $5.6 million in 1985 and $2 million in 1984 respectively. The period 1989-92 recorded moderate inflows, averaging $18 million per annum, the highest and lowest being $22.5 million in 1992 and $14.8 million in 1990 respectively. 1993-1996 it was a period of significant, but oscillatory, inflows which peaked in 1994 at $233 million, fell by more than 50% ($107) million in 1995, and rose again to $120 million in 1996. The period average was

5

slightly above $146 million. There were indications (Ghana Investment Promotion Centre and the Minerals Commission, March, 1998) that the upward trend might continue.

Total FDI inflow increased from $205.24M in 1989 to $762.26M in 2009. Estimation of the average annual growth rate of FDI into the mineral sector of the country between 1989 and 2009 is as high as 27.80% (Eshun & Jellicoe, 2012). It should be noted that about 95% of all FDI in the mining sector goes into the gold mining sub-sector (Broch & Owusu, 2011cited in Eshum & Jellicoe, 2012).

FDI to the mining sector continues to increase compared with the other sectors. These FDIs according to Eshun and Jellicoe (2012) are able to bridge the fining gap of small scale miner, capacity building and other technological transfer ability to improve the mining sector of Ghana. The work of Eshun and Jellicoe (2012) and Tsikata et al (2000) seems to be the only document that attempt to analyse the effect of FDI into the mining sector. However, Eshun and Jellicoe do not sought to find the factors that would influence the FDI inflows into the mining sector. Tsikata et al (2000) even though attempted, used qualitative analysis to examine sector specific FDI inflow.

The mining sector provides source of employment, serve as a great contributor to government revenue. However, the growth of FDI to the mining sector has been slow and inconsistent (Tsikata et al, 2000). This therefore calls for an investigation into the drivers of FDI to the mining sector. Secondly, there is little empirical studies that examine the factors that affect the FDI flow to the mining industry. Therefore, this study examines the factors that affect FDI flow to the mining sectors.

6

Objectives of the study

The general objective of the study was to examine the factors that affect FDI flow to the mining sector in Ghana.

Specifically, the study sought to investigate

1. Short-run factors that affect FDI flows into the mining sector in Ghana

2. Long-run factors that affect FDI inflows to the mining sectors of Ghana.

3. Give policy recommendation to inform policy on attracting FDI in the mining sector of Ghana

Research questions

1. What are the short-run factors that influence the flow of FDI into the mining sector in Ghana?

2. What are the factors that affect FDI inflows to the mining sector of Ghana in the long-run?

Significance of the Study

The study would inform government and the Ghana chamber of Mines as well as the Minerals Commission as to the factors that would affect the flow of FDI into the mining sector of the country. This would go a long way to help in attracting foreign direct investment to foster economic growth and development through the mining sector of Ghana.

Again, the study would inform policy by the Government on which variables to target or shock in order to stimulate the mining sector growth through investment. This study would therefore contribute to literature. The first is to provide empirical literature on the mining industry which is hard to

7

come by. The second is to examine the factors that affect the flow of FDI to a country specific data. This would help provide empirical literature on the mining sector FDI in sub-Saharan Africa

Organisation of the study

The study is organised into five main chapters with each chapter further divided into sections and sub-sections. The first chapter which is the introductory chapter presents a background to the study, problem statement, objectives of the study, hypotheses, justification and scope of the study as well as organisation of the study. Chapter two reviews both the theoretical and empirical literature. Chapter three focuses on the specification of the empirical model and estimation technique employed in conducting the study. The results of the data collected for the study will be analysed and discussed in the fourth chapter. The final chapter presents the summary of findings, conclusion, policy implications and recommendations of the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

The chapter gives the literature review of the study. The study presents literature on mining, mining sector and FDI flows in Ghana. Also, the study presents the theoretical literature and as a last section of the chapter give empirical literature review on factors that affect FDI flow.

Mining

Mining is the extraction of valuable materials or other geological materials from the earth from an ore body, lode, vein, seam or reef, which forms the mineralised package of interest to the miner. Ores recovered by mining include metals coal and oil shale, gemstones, limestone, and dimension stone, rock salt and potash, gravel and clay. Mining is required to obtain any material that cannot be grown through agriculture processes, or created artificially in a laboratory or factory. Mining in a wider sense includes extraction of any non-renewable resource such as petroleum, natural gas or even water (Nastase, 2008). Mining is an important economic activity which has the potential of contributing to the development of areas endowed with the resources.

Mining activities form an integral part in the economic development of any country endowed with mineral resources. This is due to the revenue generated from it, the employment opportunities it creates for the citizens, the foreign exchange. Communities where these minerals are found benefit from

the investment opportunities, royalties paid to them and other supplementary benefits.

There is growing evidence that the sector forms a large source of government revenues in most mining countries and continues to be the highest contributor in terms of FDI of most developing countries (Ross, 1999). Over the past decade more than 100 countries have introduced new regulatory regimes resulting in the growth of the mining industry. Over 75 mineral producing countries in the developing world have liberalised their investment regimes since 1989 and investment flows overseas have increased, stimulated by the privatisation of formerly state owned mining enterprises (Warhurst & Bridge, 1997). FDI was also expected to lead the way to external markets, serve as the means of technology transfer and the key to employment generation and income distribution in general. In effect, it is perceived as a critical vehicle for economic growth and development.

This movement has allowed trans-national mining companies to explore in areas which for years have been inaccessible. As worldwide demand for mineral products continues to increase and operating costs rise and reserves dwindle in the west, there is expected to be more exploration across the globe especially in developing economies where there are mineral deposits and there have been reforms to encourage foreign investment.

Foreign direct investment and Ghana's mining industry

Ghana has a variety of mineral resources and mining dates back well into the pre-colonial times. The mining sector is an important segment of the Ghanaian economy and has played a significant role in the country's socioeconomic development since the colonial period. Historically, the mining

sector's contribution to gross foreign exchange, particularly gold, has only been paralleled by the cocoa sector. Gold is by far the most important mineral exploited in Ghana. Ghana, the 10th leading producer of gold in the world has a long history of mining before the colonial masters. Tracing back to the pre-colonial era, people used to mine for minerals specifically gold along the coastal areas and this even led to the naming of Ghana then Gold Coast. The historical importance of mining in the economic development of Ghana is considerable and well documented, with the country's colonial name Gold Coast, reflecting the importance of the mining sector. Gold is a very precious mineral that everyone who finds it sees it as a blessing. Revenue generated from gold will increase disposable income (household's income), tax revenue, GDP per capital, create more employment, open the doors for more investment, and help finance agricultural and economic activities like trading.

Investment in minerals and mining is regulated by the Minerals and Mining Law, 1986 (PNDCL 153) as amended by the Minerals and Mining Amendment Act, 1994 (Act 475). Essentially, the law regulates investment in mining with the exception of investment in small-scale mining, which is reserved for Ghanaians. The regulation of artisanal gold mining is set forth in the Small-Scale Gold Mining Law, 1989 (PNDCL 218). Also, the law specifies different types of mining rights, issues relating to incentives and guarantees, and land ownership. The Precious Minerals Marketing Corporation Law, 1989 (PNDCL 219), set up the Precious Minerals Marketing Corporation (PMMC) to promote the development of small-scale gold and diamond mining in Ghana and to purchase the output of such mining, either

directly or through licensed buyers. The Minerals Commission is the government agency that implements the Minerals and Mining law.

The Petroleum Exploration and Production Law 1984 (PNDCL 84), known as the Petroleum Law sets out the policy framework and describes the role of the Ministry of Mines and Energy, which regulates the exploration and production of oil and gas in Ghana. The law deals extensively with petroleum contracts, the rights, duties, and responsibilities of contractors and compensation payable to those affected by activities in the petroleum sector. The Ghana National Petroleum Corporation (GNPC) is the government institution that administers this law.

The country is significantly endowed with varied other mineral resources including manganese, diamond and bauxite that are currently under commercial exploitation. Silver is produced as a by-product from gold mines while aluminium is produced from imported alumna. Ghana also has considerable inventories of iron, limestone, salt, and various other industrial minerals. There is also growing potential for commercial gas and oil exploitation, with announcements of significant discoveries of off-shore oil in June 2007.

Foreign multinational companies coming from diverse national origins including Australian, Canadian, South African, UK and US own the mines and control an average of about 70% shares in these mines with the Ghana government holding 10% free share in each mine with an option to acquire additional 20%. In addition, some of the mining companies in the country have their investments promoted and guaranteed and protected by the World Bank. For examples, the IFC has been among the funding source for large-

12

scale mining industries like Ashanti Goldfields Company expansion, Bogosso Gold Limited (BGL) and Ghana Australian Gold Ltd. (GAG) (Kumer, 2006).

The mining sector companies together offer about 20,000 direct jobs. Mining support industries and institutions such as assay laboratories, contract miners, explosive companies, restaurants, transport companies, security services, catering services have also sprang up and have also contributed some level of employment to Ghanaians. However, in spite of these positive indicators, the role of the mining industry in the economic development of Ghana is a suspect. The sector is yet to make a strong impact on the country's development process (Eshun & Jellicoe, 2011). The role of the mining industry in the economic development of Ghana has consistently come under attack by a cross section of Ghanaians, including incessant pressure from Non-Governmental Organizations (NGO's) and civil society groups on the need for mining companies to adopt an effective corporate social responsibility (CSR) policies and commit more resources to the development of communities in which they operate and to the sustainable development of the country as a whole. The sector contribution to the country's GDP is a meagre average of 1.5% since 1993 (Sowa, 2002).

It is significant to note that, several factors have worked in favour of the mining sector, which principally explains the reason why the sector took a strong lead as far as its ability to attract private foreign capital is concerned. The introduction of the new mining technologies and improved price on the international commodity markets coupled with increased profitability has played a crucial role in motivating investors to pump more resources in the sector. Again, the constrains on the sector differ quite considerably from those

13

in the non-mining sectors (Davis, 1998) while some of the provisions in the Mining Code under the administration of the Minerals Commission differ from those under the GIPC Code (Tsuma, 2010). The fact that activities in the sector are so capital intensive that any given expansion program has to be met with huge monetary outlay compared with the non-mining sector.

The recent merger between the Ashanti and Anglo gold of South Africa has resulted in an injection of about 75 trillion cedis to market capitalisation of the Ghana Stock Exchange (Abdulai, 2005). In terms of the sectoral distribution, it accounts for 82% of the market capitalisation. Given the structure of the Ghanaian economy and the fact that the mining sector is not capable of creating the necessary linkages that could fuel the growth process of the economy, it is generally acknowledged that much of the inflows have to be directed into the manufacturing and agricultural sector if the economy is to gain the full benefit of FDI and achieve a reduction in poverty levels (Abdulai, 2005).

Theories of foreign direct investment

The phenomenon of globalisation has attracted a vast literature. Globalisation remains a highly contested subject. Globalisation is a slippery term that lends itself to abuse. Pundits argue about its consequences in part because they make up its meaning to suit their needs. Countries and regions have become linked by complex flows of trade and investment. As a result, globalisation has become part of the reality of the daily life of people in a way unimaginable even two decades ago. In general, globalisation refers to a process—an evolution of closer economic integration by way of increased trade, foreign investment, and immigration (Weinstein, 2005). Most

economists agree that trade promotes growth in exporting and importing countries, but they are not as sure about capital flows—which do good and bad.

If there is any individual factor which commands principal responsibility for the astonishingly rapid globalisation of the world economy, that factor is surely international investment in its various forms thus, another major aspect of the globalisation process has been the explosion of international investment. Economists refer to one category of this investment as "foreign direct investment" (Dunn Jr & Mutti 2000). This label applies when multinational corporations control how assets are used. Generally it is motivated by long run considerations, because such investments cannot be easily reversed in the short run.

An even larger share of international investment is accounted for by purchases and sales of stocks and bonds and by deposits and loans from financial institutions when one of the parties to the transaction is a foreigner. Financial liberalisation has allowed the growth of such flows to accelerate, as national capital markets become integrated into a world market where savers have many more options regarding the assets they acquire. A corollary result of such liberalisation is that not only do domestic financial institutions face both more competition and more opportunities to expand, but national governments face more constraints over the way they conduct macroeconomic policy. In part, the expansion of capital flows can be attributed to economic events and policy changes.

International capital flows include purchases of foreign bonds, deposits in foreign bank accounts or loans to foreign businesses. Also included in

portfolio capital are purchases of stock in foreign companies, where the purchaser accounts for a small fraction of shares outstanding and has no voice in the management of the company. Not only do foreign portfolio investors have less economic control, they also are likely to have less political influence and to be less culturally intrusive. Thus, the distinguishing feature of FDI, in comparison with other forms of investment, is the element of control over management policy and decisions. The term 'control' implies that some degree of discretionary decision-making by the investor is present in management policies and strategy. Foreign direct investment can also exit through the repatriation of profits or sale of the assets. Yet, foreign direct investment has been shown to be one of the most stable forms of capital inflow to emerging markets (Weinstein, 2005).

Foreign direct investment (FDI) is a key element in international economic integration. Interest in FDI, which has motivated attempts to come up with theories explain its causes and effects, is attributed to the following reasons. The first reason is the rapid growth in FDI and the change in its pattern, particularly since the 1980s. The second reason for interest in FDI is the concern it raises about the causes and consequences of foreign ownership.

The views on this issue are so diverse, falling between the extreme of regarding FDI as symbolising new colonialism or imperialism, and the other extreme of regarding FDI as viewing it as something without which the host country cannot survive. The third is that FDI offers the possibility for channelling resources to developing countries thus; FDI is becoming an important source of funds at a time when access to other means of financing is dwindling. Lastly, FDI is thought to play a potentially vital role in terms of

16

transformation. This is because FDI complements domestic saving and contributes to total investment in the (host) economy (Asiedu, 2010).

Again, FDI brings with it advanced technology, management skills and access to export markets. These positive effects may not rise or they may arise simultaneously with some adverse effects (Moosa, 2002). FDI creates direct, stable and long-lasting links between economies. It encourages the transfer of technology and know-how between countries, and allows the host economy to promote its products more widely in international markets. FDI is also an additional source of funding for investment and, under the right policy environment; it can be an important vehicle for development.

Traditional theories are very useful for explaining basic long-term patterns of FDI. When a firm operates in several countries it is a multinational enterprise or corporation, and the investment made in the foreign country is referred to as foreign direct investment (FDI). Such investments now come from companies headquartered in a variety of developed countries and even some developing countries. Also, they do not flow in one direction only, with a country being only an importer or only an exporter.

Vernon (1966) used the product cycle to explain investment. During the first stage the transnational corporations (TNCs) create new innovative products for local consumption and export the surplus in order to serve also the foreign markets. The export will grow to the extent that necessitates establishment of plants in importing countries to support production. In this way production is subsequently shifted to developing countries when product standardisation and market saturation give rise to price competition and cost

pressures. Investment in developing economies is seen as the best way to reduce cost.

The theoretical works on the determinant of FDI according to Sichei and Kinyondo (2012) started with the work of Hymer (1976). Base on the further development of the work of Hymer, four main paradigms have come up which are: the *neoclassical*, *industrial organisation*, *eclectic*, and *portfolio choice* in an attempt to explain the flow of FDI to host nations (Adenutsi, 2007). The *neoclassical paradigm* on capital flows among is situated on the argument that capital flows among nations is driven by interest rate differentials under per fect competitive conditions. The paradigm posits that under unconstrained capital mobility condition, there mutual benefit in terms of welfare gains for countries involved in either capital export and capital import countries. This benefit however hinges on the peculiar factor endowment, political environment, expected rate of return, information asymmetries, economic policies pertaining to tax and other incentives.

Industrial organisation theory argues that foreign enterprises are oligopolistic in nature. Owning to this, these foreign markets assumed to have barriers to entry. Therefore, specific firm characteristics (product technology, managerial skills and economies of scale) gives   foreign firms advantages over their local counterparts. This theory place emphasis on market and asserts that, certain investments need special characteristics of firms to venture in. However, local enterprises are limited in terms of technology and skills needed in that regard. Hence foreign flow capital investment in such specialised areas (Cantah, Wiafe & Abass, 2013).

18

The *portfolio choice theory* takes into account the element of uncertainty in connection with capital flows. This means that, investors are assumed to consider not only rates of return, but also risks associated with selecting a portfolio of foreign investment (Cantah, Wiafe & Abass, 2013). This theory is based on the observation that fluctuations in rates of return on capital within, and more so between countries are not perfectly correlated. Hence risks might be reduced by a diversification of investment portfolios. This implies that the destination of new foreign capital is driven by the composition and location of current investment portfolio held.

Hymer (1976) provided an international dimension to an earlier work on the nature of the firm by Coase (1937). Hymer identified two reasons for firms undertaking FDI; moving above the competition and secondly the need to use the advantages which a firm possess in a particular activity to her advantage. In order to expand beyond the home country, a decision has to be made when faced with three options; produce and export, license production rights to a firm located in the foreign country and set up in a foreign country (that is undertake FDI). Licensing is disadvantageous because;

- It may result in a firm giving away valuable technological expertise to a potential foreign investor.

- Licensing does not give a firm the tight control over manufacturing, marketing, and strategy in a foreign country that may be required to maximise its profitability.

- The fee received for licensing is not commensurate with the loss of control over manufacturing and marketing.

19

- This FDI option is desirable when a firm's product is not a major driver of its competitive advantage rather than management, marketing, and manufacturing capabilities that produce those products. Such capabilities are often not amendable to licensing.

Locating in a foreign country also has some disadvantages such as country risk, adjustment cost among others. It is only when these costs are less than the gains expected to be made that firms undertake FDI. Since these decisions are made by the firm, undertaking FDI is a firm level decision and not a capital market decision.

The classic treatment of a multinational is that it has some intangible asset (such as knowledge of a production process) that it can use to its advantage in a foreign market. It must decide whether to simply *export* there, or to *invest* in that market by building a plant and selling the product, or whether to engage in a *joint venture or other contractual arrangement* with a foreign firm to produce the good. Therefore the decision to engage in FDI by a multinational therefore involves three interrelated aspects – *Ownership* of an asset, *Location* to produce, and whether to keep the asset *Internal* to the firm – and these comprise the so-called "OLI framework" of multinational activity (Branstetter & Feenstra, 2002). OLI Paradigm – commonly known as The Eclectic Theory was evolved by John H. Dunning.

The OLI Paradigm is a mix of three various theories of FDI. According Dunning (2000), 'the OLI paradigm proclaims that the scope and pattern of foreign-owned production i.e. production financed by FDI is determined by (i) the interaction between the competitive advantages of investing, or potentially investing corporations and that of the nation states in which they might engage

20

in value adding activities and (ii) the ways in which such corporations organise their resources and capabilities across national boundaries in the light of these two sets of advantages. The paradigm offers an analytical framework for incorporating a number of context specific and operationally testable theories each of which seeks to explain a particular component of the internationalization process, or a particular kind of FDI.

Ownership advantages (O) is concerned with the competitive advantages of enterprises. The *ownership advantages* are specific to the firms, and are advantages to overcome the extra costs of operating in a different or less familiar environment. It involves the ability to harness efficiently, coordinate and leverage knowledge-related resources and capabilities from different locations in the world and to do so in an innovating way (Dunning, 2000).

The ability to motivate and upgrade the intellectual and creative qualities of the work force, including managers, in a cost-effective way; ability to reconcile, and gain advantage by integrating corporate economic and socially acceptable objectives in a way which benefits all the stakeholders in the enterprise; ability to anticipate change, and deal with economic volatility; ability to be flexible in switching resources and capabilities to different uses and/or locations; and to speedily embrace appropriate new technologies, managerial strategies and organizational procedures; ability to work efficiently and harmoniously, with other enterprises, e.g. competitors suppliers and customers, to innovate enterprises more productively or speedily, and/or to more effectively utilise existing production and marketing opportunities.' The multinational enterprise must have some separate advantages with its

21

competitors, if it wants to be profitable abroad (Asiedu, 2006). Advantages must be particular to the firm and readily transferable between countries and within the firm. These advantages are called ownership or core competencies or firm specific advantages (FSAs)**.**

The Location (L) advantages are also concerned with the competitive advantages of countries or regions. The *locational advantages* are specific to the locations or countries where FDI occur. It entails the ability of locations (regions, countries or sub-regions) to offer the immobile assets necessary for the mobile assets of domestic and foreign firms to be used most efficiently – both to add value to those assets; and to create (through innovation or tapping into indigenous capabilities) (Dunning, 2000). The firm must use some foreign factors in connection with its native Firm Specific Advantages (FSAs) in order to earn full rents on these FSAs. Therefore the locational advantages of different countries are a key in determining which will become host countries for the multinational enterprises. Clearly the relative attractiveness of various locations can change over time so that a host country can to some extent engineer its competitive advantage as a location for foreign direct investment. The locational advantages can be economic, political or social country-specific factors that attract FDI to a country (Cantah et al, 2013). Such advantages include availability and quality of skilled labour force, targeted resource capability, regional markets, quality of cross-border communications, hard and 'soft' infrastructure, some non-tariff barriers and organisational capabilities, innovatory systems and entrepreneurial ethos. Presence of agglomerative economies: the role of sub-regions as part of macro regional or global

22

networks as well as market facilitating policies of governments; partnerships for growth (Dunning, 2000).

The Internalisation (*I*) advantages of enterprises is the extent to which enterprises find it profitable to (a) by-pass cross-border markets and/or (b) engage in voice strategies to increase efficiency or reduce transaction costs of markets via various alliances (Dunning, 2000). The multinational enterprise has several choices of entry mode, ranking from the market (arm's length transactions) to the hierarchy (wholly owned subsidiary). Internalisation takes the form of the need for holistic managerial and or strategic approach towards multiple sourcing, production and human resource management; closer integration of innovation and production processes along value chains; increasing economics of scope, involving products requiring similar inputs and/or having similar distribution or marketing needs; increasing importance of tacit knowledge, learning and accumulated experience, team work idiosyncratic decision taking, and face to face communication in case of technology intensive products subject to rapid and/or obsolescence and/or demand volatility (Dunning, 2000). Towards a more alliance, Dunning points out the need for rising cost of innovatory activities; speedier rate of obsolescence, the need to encourage local entrepreneurship and to accept different cultural needs and reactions to globalisation-especially in service sectors. Closer integration of innovation and production; processes along value chains and an increasing 'voice' strategies towards market (failure of exit strategies). The internalisation advantages can explain vertical FDI, where a production process or function is located abroad by MNEs to serve its production system, instead of subcontracting to independent suppliers.

23

Empirical Literature

A number of domestic factors are important in attracting FDI to an economy. Open economies with skilled workforces and good growth prospects tend to attract larger amounts of foreign direct investment than closed, highly regulated economies. Asiedu (2006) asserts that, the relative influence of natural resources and market size *vis-à-vis* government policy, host country's institutions and good infrastructure, an educated labour force, macroeconomic stability, openness to FDI, an efficient legal system, less corruption and political stability also promote FDI.

The results have several policy implications. First, it suggests that FDI in SSA is not solely driven by some exogenous factors, and that small countries and/or countries that lack natural resources can obtain FDI by improving their institutions and policy environment. Second, multilateral organisations such as the IMF and the World Bank can play an important role in facilitating FDI by promoting good institutions in countries in SSA. Regional blocs in SSA were important in enhancing FDI flows to the region. This was possible via expanding the size of the market, promotion of political stability by restricting membership to countries with democratic political systems, as well as providing incentives for member countries to implement good policies through the threat of sanctions or the loss of access to the bloc for errant countries.

Calvo and Reinhart (1996) pointed out improvement in external creditor relations, adoption of sound fiscal and monetary policies and neighbourhood externalities as important. Others included macroeconomic performance, the investment environment, infrastructure and resources, and

24

the quality of institutions. Openness to FDI, good infrastructure and institutional quality were important in explaining the performance of SSA FDIs in the world stage (Asiedu, 2004).

Chuhan, et al (1998) identified domestic economic reforms in the 1990s as important in attracting FDI to developing countries in 1990s. Specifically, economic reforms such as privatisation of public enterprise, liberalisation of currency and capital accounts, coupled with a stable macroeconomic environment have improved credit worthiness and expanded investment opportunities. Basu and Srinivasan (2002) adduced political and macroeconomic stability, well-designed structural reforms, and natural resources as contributors to the increase in FDI in these countries. GDP growth rate and trade openness can be used to fuel the interest of foreign investors (Morisset, 2000).

These were evidenced in Mozambique where wonderful results were achieved through opening the economy through trade liberalisation reform; launching an attractive privatisation programme; modernising mining and investment codes; adopting international agreements related to FDI; developing a few priority projects that have multiplier effects on other investment projects and mounting an image building effort with the participation of high profile political figures. Asiedu (2002) identified return on investment, infrastructure development and openness to trade as relevant in influencing FDI to Africa.

Specifically, higher marginal product of capital and better infrastructure did not drive FDI to Sub- Saharan Africa (SSA) and, although openness to trade had a positive impact on FDI to SSA, the impact was lower

than non SSA countries. Bende-Nabende (2002) in a study using data on nineteen SSA countries over the 1970-2000 showed that the most dominant long run determinants of FDI in SSA were market growth, a less restrictive export orientation strategy, the FDI policy liberalisation, real effective exchange rates, market size, and openness of the economy. However, trade restriction and poor policy discourage FDI to Africa (Asiedu, 2002). Additionally, African countries tended to be less open than other emerging markets and were perceived as very risky and characterised by poor policy environment relative to other developing countries.

Theoretical framework

The study adopts the dunning eclectic as the theoretical framework for modelling FDI inflows. This argues that FDI flows into a particular country due to certain peculiar advantages of the FDI destination. The Figure 1 shows the linkages between FDI pull factors and FDI inflows.
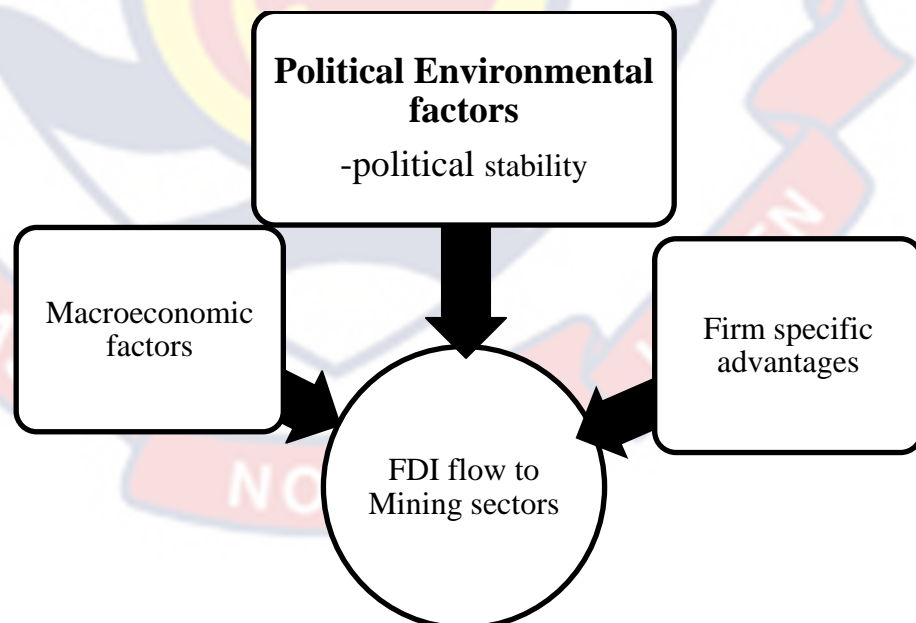
Figure 1: Factors that influence FDI into mining sectors

Source: Author's construct base of Dunning (2000)

From figure 1, the relationship between FDI and other macro-economics factors. These factors include inflation, the real exchange rate and growth of the economy and others. These factors contribute to the general business environment suitable for the operation of the foreign firms in the country. As noted by Obsfeild (1986) the general political environment also affects the risk level to the firms in the economy which would affect the inflows of foreign investors into the economy. Availability of natural resource has been one of the factors that has been argued to affect the flow of FDI into the country (Aseidu, 2002). This is theoretically linked to the environmental advantages that a country offers and makes it competitive for foreign investment into the country (Dunning, 1999; 2000)

Dunning (2000) argues that some firms posses special technologies in the which gives them upper hand in some cases for specific investment. It is obvious that the mining sector require special technology and investment. These factors would inflows the kind of Investors that comes into the mining industry. Base on the theoretical framework posed, the next section constructs an empirical model to explain the factors that affect FDI into the mining sector. However it must be noted that the firm's specific characteristics are not controlled for in the empirical model since the study uses the total FDI flow to the mining sector but not the specific level of investment from foreign investors in the various mining firms.

27

CHAPTER THREE

METHODOLOGY

Introduction

This chapter presents the methodology of the study. The chapter starts with the research design. Then data source are discussed. The empirical modelling is then presented. The justification, definition of variables and the a'priori expected signs and the estimation techniques are presented.

Research Design

The study follows the positivist paradigm. Positivist concerns itself with what is and not what ought to be (Freidman, 1966). Positive analysis allow for objective analysis of phenomenon by applying quantitative analysis. Therefore, the study employs a quantitative study design. This allows for the rigorous quantitative analysis. Since this study sought to establish cause-effect relationship, the study mimics experimental design. In so doing, the study used econometric technique in the process. The study then follows the quantitative approach to address the objective of the study.

Empirical Model

Following the Dunning eclectic theory, there are institutional, environmental factors and ownership advantages that drive the flow of FDI. However, this study considers the institutional advantage and environmental factors. Under the environmental factor this study concentrate on two categories which comprise of the macroeconomic environment and institutional environment. These means variables like resource availability,

economic stability and political stability could influence the flow of FDI to the mining sector. This empirical model

$$LFDIMIN = \beta_0 + \beta_1 IR_t + \beta_2 LRER_t + \beta_3 LGDP_t + \beta_4 LCPI_t + \beta_5 Tax_t + \beta_6 Inf_t + \beta_7 RGXP_t + \beta_8 PS_t + \varepsilon_t$$

(1)

Where LFDI is the log of FDI in mining, PS is the political instability, LRER is the log of real effective exchange rate, LCPI is the log of consumer price index, Tax is the tax rate, Inf is infrastructure level, LGDP is the log of real gross domestic product (GDP) as a proxy for market size, Tax is corporate tax, LCPI is the log of consumer price index, LRER is the log of real effective exchange rate, IR is the interest rate and RGXP is the ratio of gold export to total export to measure openness in the mining sector. ε_t is an error term and β_i is the parameters to be estimated. It must be noted that $i = 0,1...........8$ and t is time

Definition and Justification of variable

Foreign direct investment

There are a number of definitions for foreign direct investment. Foreign direct investment is the process whereby residents of one country (the source country) acquire ownership of assets for the purpose of controlling the production, distribution and other activities of a firm in another country (the host country) (Acheampong & Wiafe, 2013). The International Monetary Fund's *Balance of Payments Manual* defines FDI as 'an investment that is made to acquire a lasting interest in an enterprise operating in an economy other than that of the investor, the investor's purpose being to have an effective voice in the management of the enterprise'.

29

The United Nations 1999 *World Investment Report* (UNCTAD, 1999) defines FDI as 'an investment involving a long-term relationship and reflecting a lasting interest and control of a resident entity in one economy (foreign direct investor or parent enterprise) in an enterprise resident in an economy other than that of the foreign investor (FDI enterprise, affiliate enterprise or foreign affiliate)'. The term 'long-term' is used in the last definition in order to distinguish FDI from portfolio investment, the latter characterised by being short-term in nature and involving a high turnover of securities. Foreign direct investments differ substantially from indirect investments such as portfolio flows, wherein overseas institutions invest in equities listed on a nation's stock exchange.

The common feature of these definitions lies in terms 'control' and 'controlling interest', which represents the most important feature that distinguishes FDI from portfolio investment, since a portfolio investor does not seek control or lasting interest. Most commonly a minimum of 10 per cent shareholding is regarded as allowing the foreign firm to exert a significant influence (potentially or actually exercised) over key policies of the underlying project (Moosa, 2002). In this light, FDI is define as acquiring sufficient assets in a foreign firm to exercise some managerial control, though acquiring 10% or more of the assets of a foreign enterprise is the definition commonly used in practice (Feenstra, 2002). When foreigners do exercise management control the category "foreign direct investment" applies. Sometimes, another qualification is used to pinpoint FDI, which involves transferring capital from a source country to a host country. For this purpose, investment activities abroad are considered to be FDI when there is a control

through substantial equity shareholding; and there is a shift of part of the company's assets, production or sales to the host country. However, this may not be the case as a project may be financed totally by borrowing in the host country (Moosa, 2002).

Real GDP

Almost all studies on FDI have established a positive relationship between GDP and FDI (Ramirez 2006; Chakrabarti 2003; Zhang 2001). This relationship is not unexpected. Aside from having large domestic markets, high-growth economies usually implement stable and credible macroeconomic policies that attract foreign investors.

Inflation rate

Another determinant of FDI is the rate of inflation. Inflation raises the user cost of capital, and consequently affects the profitability of FDI in an unfavourable way (de Mello 1997: 6). A high rate of inflation is the result of irresponsible monetary and fiscal policies, such as excessive budget deficits, ill managed exchange rate regime and too much money supply. It might also reflect poor economic environments in the country—environments that discourage the flow of FDI (Calvo, Leiderman, and Reinhart 1996: 127).

Real interest rates

Real interest rates can also be seen as a major determinant of FDI inflow to sub-Saharan Africa. High interest rates may proxy for some forms of risk in an economy, and have the effect of enhancing the flow of FDI to the region. Furthermore, high interest rates generate a wider spread between the domestic rate of interest and the world interest rate. A low real interest rate, particularly

31

in the context of political risk and instability, has the effect of reducing the flow of FDI (Obsfeld 1986).

Political instability

Survey of investors has indicated that political and macroeconomic stability plays a significant concern of potential foreign investors. However, empirical results are mixed. While Wheeler and Mody (1992) find that political risk and administrative efficiency are insignificant in determining the location of US productive firms, Wei (2000) and Aseidu (2011) have found evidence which are direct opposite to Wheeler and Mody (1992). Again, in several experience on the African continent, areas where FDI flows are resource seeking and experience in some part of Africa with high political unrest have seen FDI flows than periods of stability and democracy. Therefore, there is the need to examine the effect of political stability on FDI to the mining sectors. It is expected that political instability have a negative effect on FDI to the mining sector

Infrastructure

Theoretical literature indicates that the key locational determinants are the classical sources of comparative advantage of the host country highlighted under the Ricardian or Heckscher-Ohlin-Vanek theoretical framework. The key issue here is that foreign firms choose their investment location that minimizes the production costs (Markusen, Melvin & Kaempfer, 1995). One of such factors that has been argued to reduce the cost of production is good infrastructure (Sachie & Kinyondo, 2006). Well established and quality infrastructure is an important determinant of FDI inflows. Thus we expect a

32

positive relationship between FDI and infrastructure (Aseidu, 2002). The common proxies for infrastructure are proxied by electricity, transportation and telecommunication. This study adopts the use of telecommunication and hence infrastructure is the telephone per 1000 persons. This is expected to have a positive relationship with FDI inflows to the mining sector.

Corporate tax (Tax)

In recent academic literature on FDI, many have turned to focus on the role of tax rates, tax competition on the flow of FDI. The argument is that countries with higher taxes experience less FDI inflows. Azemer, Desbordes and Wooten (2012) argued that competition for FDI is driving down the tax rate for many countries. This is very necessary for policy makers. Therefore, the study uses tax rates for Ghana to examine the effect of tax rate on FDI to the mining sector. It must be stated that, the study is not looking at competition among countries but wish to state the association between FDI and the corporate tax rates.

Mining sector openness

Openness has been attributed to FDI flow to the various sub-Saharan African countries including Ghana by various studies (Aseidu 2002, 2006, 2011; Ayenwu, 2011, Adenutsi, 2007). However, this study only employs the macro-level openness which measures the general openness in the economy. However, it is argued that FDI would flow to an area which has access to internationalisation and market. Therefore, it is more likely for FDI to lock up in sectors that enjoy more openness. Therefore, the study uses Gold export as

33

a percentage to the total export as a measure of openness. It is expected that the higher the openness to the mining sector, the higher the FDI to the sector.

Data and Data source

The data on FDI from the mining sector was obtained from the GIPC. The other explanatory variable is obtained from the WDI and IFS. The study uses quarterly data from 1986 to 2012. Even though. The annual data was interpolated to obtain quarterly data for the estimation.

Estimation techniques

To test the effect of institutional factors and macroeconomic variable on Foreign Direct Investment (FDI), the study applied Granger causality test within the framework of cointegration Autoregressive Distributed Lag models to examine the Long and Short-run effect on the flow of FDI to the mining sectors of Ghana. The empirical procedure involves the following steps. Firstly, the study investigated the time series properties of our data by using the Augmented Dickey–Fuller (ADF) and the Phillip-Perron (PP) tests. The unit roots test was used to check the stationarity position of the data. In the second step, it tested for cointegration using Autoregressive distributed lag Approch. In the third step, the study employed Granger-causality to test for causality. The causality test is preceded by cointegration testing since the presence of cointegrated relationships have implications for the way in which causality testing is carried out. Finally, examine the long and short run dynamics.

Unit roots tests

It is very important to test for the time series properties of variables when dealing with time series data. Time series are argued to be are rarely stationary at their level forms. Regression with non-stationary time series often give results which are spurious. Moreover, Stock and Watson (1988) have also shown that the usual test statistics (t, F, DW, and R^2) will not possess standard distributions if some of the variables in the model have unit roots. A time series is stationary if its mean, variance and autocovariances are independent of time.

The study employed a variety of unit roots tests. This was done to ensure reliable results of the test for stationarity due to the inherent individual weaknesses of the various techniques. The study used both the PP and the ADF tests. These tests are similar except that they differ with respect to the way they correct for autocorrelation in the residuals. The PP nonparametric test generalises the ADF procedure, allowing for less restrictive assumptions for the time series in question. The null hypothesis to be tested is that the variable under investigation has a unit roots against the stationarity alternative. In each case, the lag-length is chosen using the Akaike Information Criteria (AIC) and Swartz Information Criterion (SIC) for both the ADF and PP test. The sensitivity of ADF tests to lag selection renders the PP test an important additional tool for making inferences about unit roots. The basic formulation of the ADF is specified as follows:

$$X_t = \mu + \alpha X_{t-1} + \gamma t + \varepsilon_t \tag{2}$$

Subtracting X_{t-1} from both sides gives:

$$\Delta X_t = \mu + (1-\alpha)X_{t-1} + \gamma t + \varepsilon_t \tag{3}$$

35

The t-test on the estimated coefficient of X_{t-1} provides the DF test for the presence of a unit-root. The Augmented DF (ADF) test is a modification of the DF test and involves augmenting the above equation by lagged values of the dependent variables. It is made to ensure that the error process in the estimating equation is residually uncorrelated, and also captures the possibility that X_t is characterised by a higher order autoregressive process. Although the DF methodology is often used for unit roots tests, it suffers from a restrictive assumption that the error processes are $i.i.d$. Therefore, allowing $(1-\alpha)$ to be represented by ρ and by controlling for serial correlation by adding lagged first differenced to equation (4) gives the ADF test of the form:

$$\Delta X_t = \mu + \rho X_{t-1} + \gamma t + \sum_{i=1}^{p} \phi_i \Delta X_{t-1} + \varepsilon_t \qquad (4)$$

Where X_t denotes the series at time t, Δ is the first difference operator, μ, γ, ϕ are the parameters to be estimated and ε is the stochastic random disturbance term.

The ADF and the PP test the null hypothesis that a series contains unit roots (non-stationary) against the alternative hypothesis of no unit roots (stationary). That is:

$H_0 : \rho = 0$ (X_t is non-stationary)

$H_1 : \rho < 0$ (X_t is stationary)

If the tau value or t-statistic is more negative than the critical values, the null hypothesis is rejected and the conclusion is that the series is stationary. Conversely, if the tau statistic is less negative than the critical values, the null hypothesis is accepted and the conclusion is that the series is non-stationary.

36

Tests for cointegration

In the face of non-stationary series with a unit roots, first differencing appears to provide the appropriate solution to the problems. However, first differencing has eliminated all the long-run information which economists are invariably interested in. Later, Granger (1986) identified a link between non-stationary processes and preserved the concept of a long-run equilibrium. Two or more variables are said to be cointegrated (there is a long-run equilibrium relationship), if they share common trend. Cointegration exists when a linear combination of two or more non-stationary variables is stationary (Pesaran & Shin, 1996).

Once pre-testing has demonstrated that the variables are integrated of the same order, OLS is used to estimate the parameters of a cointegrating relationship. It has been shown that the application of OLS to I (1) series yields super-consistent estimates. That is estimates converge on to their true values at a faster rate than the case if I (0) or stationary variables are used in estimation. The earlier test by Engel-Granger (EG) residual based test for conintegration is prejudiced towards finding a stationary error process. The test is also sensitive to how the equation is presented (i.e. whether x is regressed on y or vice versa). Finally, if there are more than two variables, the EG procedure will not allow discrimination between different cointegrating vectors (Shareef & Tran, 2007).

Given these limitations of the EG procedure, methods have been developed for testing cointegration. One of the most popular is the Johansen's procedure. They include the Fully Modified Ordinary Least Squares (FMOLS) procedures of Phillips & Hansen (1990), the Johansen (1988, 1991) or the

Johansen & Juselius (1990, 1994) and the Autoregressive Distributed Lag (ARDL) approach by Pesaran, Shin & Smith (2001) to determine the long-run relationship in bivariate and multivariate frameworks.

This study employs the ARDL approach to cointegration which is also called the Bounds testing to cointegration. The use of the bounds technique is based on three reasons. Pesaran *et al*. (2001) advocated the use of the ARDL model for the estimation of level relationships because the model suggests that once the order of the ARDL has been recognised, the relationship can be estimated by OLS. Again, this approach to cointegration allows a mixture of I(1) and I(0) variables as regressors, therefore, the order of integration of variables under consideration should not necessarily be the same. Thus, the ARDL technique has the advantage of not requiring a specific identification of the order of the underlying data. Third, this technique is suitable for small or finite sample size (Pesaran *et al*., 2001). For the last justification, the many empirical works have used small samples by using small sample. From the experience from empirical literature 20 observations could be used in models involved in ARDL (Mah, 2000).

ARDL Bound testing to cointegration

The ARDL bounds testing to cointegration approach is based on the maximum likelihood estimation technique. This is test by running an OLS regression by maximizing the system with its instrument in order. This has been shown to be consistent and the ARDL could be consistent if the lagged values are assumed not to be correlated with the error term

Following Pesaran *et al*. (2001), we assemble the vector autoregression (VAR) of order *p,* denoted VAR (*p*), for the following growth function:

$$Z_t = \mu + \sum_{i=1}^{p} \beta_i z_{t-i} + \varepsilon_t \qquad (5)$$

Where z_t is the vector of both x_t and y_t , where y_t is the dependent variable and defined as Foreign Direct Investment to into mining (FDI), x_t is the vector matrix which represents a set of explanatory variables i.e., trade openness (TOP), financial development (M2) and *t* is a time or trend variable. According to Pesaran *et al*. (2001), to obtain a consistent cointegration results, y_t must be I(1) variable, but the regressor x_t can be either I(0) or I(1). We further developed a vector error correction model (VECM) as follows:

$$\Delta z_t = \mu + \alpha t + \lambda z_{t-1} + \sum_{i=1}^{p-i} \gamma_t \Delta y_{t-i} + \sum_{i=1}^{p-1} \gamma_t \Delta x_{t-i} + \varepsilon_t \qquad (6)$$

where Δ is the first-difference operator. The long-run multiplier matrix λ as:

$$\lambda = \begin{bmatrix} \lambda_{YY} \, \lambda_{YX} \\ \lambda_{XY} \, \lambda_{XX} \end{bmatrix}$$

The diagonal elements of the matrix are unrestricted, so the selected series can be either I(0) or I(1). If $\lambda_{YY} = 0$, then *Y* is I(1). In contrast, if $\lambda_{YY} < 0$, then *Y* is I(0).

The VECM procedures described above are imperative in the testing of at most one cointegrating vector between dependent variable y_t and a set of regressors x_t . To derive model, we followed the postulations made by Pesaran *et al*. (2001) in Case III, that is, unrestricted intercepts and no trends. After imposing the restrictions $\lambda_{YY} = 0, \mu \neq 0$ and $\alpha = 0$, the GIIE hypothesis

function can be stated as the following unrestricted error correction model (UECM):

$$\Delta LFDI_t = \beta_0 + \beta_1 LFDI_{t-1} + \beta_2 IR_{t-1} + \beta_3 LRER_{t-1} + \beta_4 LGDP_{t-1} +$$

$$\beta_5 LCPI_{t-1} + \beta_6 Tax_{t-1} + \beta_7 Inf_{t-1} + \beta_8 RGXP_{t-1} + \beta_9 PS_{t-1} +$$

$$\sum_{i=1}^{p} \alpha_1 \Delta LFDI_{t-i} + \sum_{i=1}^{q} \alpha_2 \Delta IR_{t-i} + \sum_{i=1}^{q} \alpha_3 \Delta LRER_{t-i} + \sum_{i=1}^{q} \alpha_4 \Delta LGDP_{t-i} \quad (6)$$

$$+ \sum_{i=1}^{q} \alpha_5 \Delta LCPI_{t-i} + \sum_{i=1}^{q} \alpha_5 \Delta Tax_{t-i} + \sum_{i=1}^{q} \alpha_6 \Delta Inf_{t-i} +$$

$$\sum_{i=0}^{r} \alpha_8 \Delta RGXP_{t-i} + \sum_{i=0}^{r} \alpha_9 \Delta PS_{t-i} + \nu_t.$$

Equation (6) also can be viewed as an ARDL of order (p, *q, r, x, y, w, u, z , m, n*). Equation (6) indicates that economic growth tends to be influenced and explained by its past values. The structural lags are established by using minimum Akaike's information criteria (AIC). From the estimation of UECMs, the long-run elasticities are the coefficient of one lagged explanatory variable (multiplied by a negative sign) divided by the coefficient of one lagged dependent variable (Bardsen, 1989). The short-run effects are captured by the coefficients of the first-differenced variables in equation (6).

After regression of Equation (6), the Wald test (*F*-statistic) was computed to differentiate the long-run relationship between the concerned variables. The Wald test can be carry out by imposing restrictions on the estimated long-run coefficients of economic growth, inequality, investment and public expenditure. The null and alternative hypotheses are as follows:

$H_0 : \beta_i = 0$ (no long-run relationship)

Against the alternative hypothesis

$H_0 : \beta_i \neq 0$ (a long-run relationship exists)

The computed F-statistic value will be evaluated with the critical values tabulated in Table CI (iii) of Pesaran *et al.* (2001) and Narayan (2004). According to these authors, the lower bound critical values assumed that the explanatory variables x_t are integrated of order zero, or I(0), while the upper bound critical values assumed that x_t are integrated of order one, or I(1). Therefore, if the computed F-statistic is smaller than the lower bound value, then the null hypothesis is not rejected and we conclude that there is no long-run relationship between poverty and its determinants. Conversely, if the computed F-statistic is greater than the upper bound value, then agriculture expenditure and its determinants share a long-run level relationship. On the other hand, if the computed F-statistic falls between the lower and upper bound values, then the results are inconclusive.

The co-integration test is based on the F-statistics or Wald statistics. The F-test has a nonstandard distribution. Pesaran and Pesaran (1997) and Narayan, (2004) have given two sets of critical values for the cointegration test. This study uses the critical values calculated by Narayan (2004). The reason for the using Narayan's calculated critical values is that Critical values reported by Pesaran and Pesaran (1997) and Pesaran *et al.* (2001) are generated for sample sizes of 500 and 1000 observations and 20,000 and 40,000 replications, respectively. Due to the small sample size, it would make reasonable sense to use Narayan's critical values which was generated base on small sample size between 29 and 80. The lower critical bound assumes that all the variables are I(0), meaning that there is no co-integration among the variables, while the upper bound assumes that all the variables are I(1). If the computed F-statistic is greater than the upper critical bound, then the null

hypothesis will be rejected suggesting that there exists a co-integrating relationship among the variables. If the F-statistic falls below the lower critical bounds value, it implies that there is no co-integration relationship. However, if the F-statistic lies within the lower and upper bounds, then the test is inconclusive. In such cases, unit root test is conducted to ascertain the order of integration of the variables. When it is found that all the variables are I(1), the decision is taken on the basis of the upper critical value. On the other hand, if all the variables are I(0), then the decision is based on the lower critical bound value.

Following, Shrestha and Chowdhury,(2007) and Jalil, Ma and Naveed, (2008), it is argued that The ARDL technique estimates $(P +1)^K$ number of regressions in order to obtain the optimal lags for each variable. P is the maximum number of lags to be used and k is the number of variables in the equation (see Shrestha & Chowdhury, 2007). A model is selected based on the Schwartz-Bayesian Criterion (SBC) or Akaike Information Criterion (AIC). The SBC uses the smallest possible lag length and is therefore described as the parsimonious model. The AIC chooses the maximum relevant lag length (Jalil et al., 2008).

If long-run relationship is established from the bounds testing, then the long-run and the short-run dynamics would be estimated using the equations 7 and 8. Where equation 7 is the long run equation and 8 is the short run equation.

$$LFDI_t = \beta_0 + \beta_1 PS_t + \beta_2 IR_t + \beta_3 LRER_t + \beta_4 LGDP_t +$$
$$\beta_5 LCPI_t + \beta_6 Tax_t + \beta_7 Inf_t + \beta_8 RGXP_t + \mu_t.$$

$$(7)$$

$$\Delta LFDI_t = \alpha_0 + \sum_{i=1}^{p} \alpha_1 \Delta PS + \sum_{i=0}^{q} \alpha_2 \Delta IR_{t-i} + \sum_{i=0}^{q} \alpha_3 \Delta LRER_{t-i} +$$

$$\sum_{i=0}^{q} \alpha_4 \Delta LGDP_{t-i} + \sum_{i=0}^{q} \alpha_5 \Delta LCPI_{t-i} + \sum_{i=0}^{q} \alpha_5 \Delta Tax_{t-i} + \sum_{i=0}^{q} \alpha_6 \Delta Inf_{t-i} + \qquad (8)$$

$$\sum_{i=0}^{r} \alpha_8 \Delta RGXP_{t-i} + \sum_{i=0}^{r} \alpha_9 \Delta LFDI_{t-i} + v_{t-i}.$$

Granger causality test

Many studies have examined the causal relationship between FDI and other factors that lead it inflow to a particular destination. The mostly use test for causality is Engle and Granger (1987). According to Engel and Granger (1987) cointegrated variables must have an error correction representation. One of the implications of Granger representation theorem is that when non-stationary series are cointegrated, then one of the series must granger-cause the other (Gujarati, 1995). Therefore, to examine the direction of such causality in the presence of cointegrating vectors, the Granger causality test was conducted based on the following:

$$Y_t = \delta_0 + \sum_{i=1}^{p} \beta_{1i} Y_{t-i} + \sum_{i=0}^{p} \phi_{1i} X_{t-i} + \omega_{1i} ECT_{t-1} + v_t \qquad (31) \quad (9)$$

$$X_t = \delta_0 + \sum_{i=1}^{p} \beta_{2i} X_{t-i} + \sum_{i=0}^{p} \phi_{2i} Y_{t-i} + \omega_{2i} ECT_{t-1} + u_t \qquad (3\; (10)$$

Where Y and X are our non-stationary dependent and independent variables, ECT is the error correction term, ω_{1i} and ω_{2i} are the speed of adjustments. p is the optimal lag order while the subscripts t and t-i denote the current and lagged values. If the series are not cointegrated, the error correction terms will not appear in equations 9 and 10. To find out whether the independent variable

43

(X) granger-causes the dependent variable (Y) in equation 9, we examine the joint significance of the lagged dynamic terms by testing the null hypothesis:

$H_0 : \phi_{1i} = 0$, implying that the independent variable (X) does not granger-cause the dependent variable (Y), against the alterative hypothesis that

$H_1 : \phi_{1i} \neq 0$, implying that the independent variable (X) granger-cause the dependent variable (Y).

Similarly, to find out whether the independent variable (Y) granger-cause the dependent variable (X) in equation 10, we examine the significance of the lagged dynamic term by testing the null hypothesis

$H_0 : \phi_{2i} = 0$, implying that the independent variable (Y) does not granger-cause the dependent variable (X), against the alterative hypothesis that

$H_1 : \phi_{2i} \neq 0$, implying that the independent variable (Y) granger-cause the dependent variable (X).

Using the standard F-test or Wald statistic, four possibilities exist: First, rejection of the null hypothesis in equation 9 but failing to reject the null in equation 10 at the same time implies unidirectional causality running from X to Y. Second, a rejection of the null hypothesis in equation 9 but at the same time failing to reject the null in equation 10 implies unidirectional causality running from Y to X. Third, simultaneous rejection of the two null hypotheses indicates bi-directional causality. Fourth, simultaneous failure to reject the two null hypotheses indicates independence or no causality between the variables of interest.

Data Analysis

The study employed both descriptive and quantitative analysis. Charts such as graphs and tables were employed to aid in the descriptive analysis. Unit roots tests were carried out on all variables to ascertain their order of integration. Furthermore, the study adopted the maximum likelihood econometric methodology using the ARDL bounds tests to cointegration by Pesaran et al (2001) to obtain both the short and long-run estimates of the variables involved. All estimations were carried out using Econometric views (Eviews) 5.0 package.

Conclusion

This chapter developed and presented the methodological framework suitable for conducting the study. The model was developed from the theoretical argument of Dunning eclectic model and various empirical works. Quarterly time-series data FDI to mining sector, Openness of the mining sector, CPI, GDP, infrastructure, real effective exchange rate, corporate tax rate, political instability and interest rate from 1986 to 2012 was employed for the study.

Stationarity test was conducted using ADF and PP tests. Moreover, Bounds test to cointegration, long-run and ECM were used to examine the long-run and short-run dynamics among the variables. Finally, the chapter formulates a pair-wise Granger-causality technique to determine whether direction of causality among the variables.

45

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter deals with the results and discussion of the results. The chapter would be divided into four sections. The first section presents the descriptive statistics of the data used in the analysis by focusing on the trends and correlation among them. The second section would concentrate on the unit root test using the ADF and the Philip-Perron test. Also the cointegration test and the long run results would be presented in the third section. The fourth section would present the causality test result among the variables on mining sector FDI.

Descriptive statistics of Variables

The summary statistics of the variables used in the regression analysis were first examined. The results are presented in Table 1. The results indicate that indicates that the mean of log of mining FDI is 19.55 with a median of 19.81. The maximum level of the log FDI to mining sector for the estimation period is 21.33 with a minimum of 14.44. The standard deviation suggests that the deviation from the mean by the variables is 1.18. This suggests that the observations for the log of FDI to the mining sector are widely spread. The variable from the skewness suggest that the mining sector FDI inflows is negatively skewed. This is an indicative that FDI to the mining sector have been a little below the mean value for most of the quarters under study

The corporate tax (TAX) for the study period has a maximum value of 55% and a minimum value of 25% for the estimation period. This suggests that

46

the corporate tax rates have seen a drastic reduction in it rates since the 1986 quarter 4 up to date. The mean TAX is 36.6% for the period under study. This figure suggests that on the average corporate tax rates for the period between fourth quarters of 1986 to fourth quarter 2012 was around 36.6%. Comparing these with the data from Michigan Tax base, the countries that have attracted foreign direct investment seems to have a very lower tax average. The spread of the tax is however, very wide with about 10.7 standard deviation from the mean with a skewness of 0.37.

The log of per capita GDP (LGDP) is has a mean of 5.57 percent with a median of 5.55. However, the standard deviation of the 0.16 which implies that, on the average, the observe values of the log of per capital GDP deviates from the mean by 0.16. Thus the changes in the observations are very marginal. Thus for the period of the estimation, the variables LGDP is less spread across the observed period. The skewness suggests that the variables are positively skewed to the right. Thus most of the observation falls above the mean value of 5.57.

The average of log of total mining export is 19.74 with a median value of 19.46. The lowest values of the LRGXP are 17.89 while the maximum value is 22.75. The skewness suggests that most of the values are above the mean for the estimation period. The Jarque-Berra test for normality suggests that the variable is not normally distributed.

Table 1: Descriptive statistics of variables

	LFDIMIN	LGDP	LREER	LRGXP	INF	IR	PS	TAX	CPI
Mean	19.5516	5.568194	4.714493	19.74131	23.7500	25.414	-0.07685	36.7583	24.11280
Median	19.81415	5.551018	4.635162	19.46416	22.5000	25.400	0.00000	35.00000	22.02592
Maximum	21.33089	5.996452	5.453610	22.74917	59.0000	45.000	0.10000	55.00000	60.55632
Minimum	14.44078	5.323010	4.434382	17.89689	9.00000	12.000	-0.40000	25.00000	8.753283
Std. Dev.	1.175526	0.162635	0.229304	1.128906	10.9169	9.6033	0.12501	10.71670	12.01821
Skewness	-1.795860	0.663079	0.874811	0.595480	1.04610	0.5325	-1.51137	0.461927	0.961121
Jarque-Bera	124.9704	8.341665	13.96809	6.388996	22.9905	6.3663	47.8814	9.989841	17.79096
Probability	0.000000	0.015439	0.000927	0.040987	0.00001	0.0414	0.00000	0.006772	0.000137
Observation	108	108	108	108	108	108	108	108	108

Source: Estimated from WDI (2013) and World Heritage foundation using E-Views 7.0

Similarly, from the results above, the log of real effective exchange rate (LREER) is had a maximum value of 5.453610 with a minimum value of 4.434382. The deviation from the mean on the average is 0.22standard deviations. This suggests that the LREER is clustered around the mean. The data suggest a positively skewed data. This may in conformity with the excessive depreciation that Ghana has experienced. The exchange rate data has majority of it been above the mean.

For the polity index however, it ranges from -0.4 to 0.1 with the average of 0.07. Thus from the data, Ghana has not felt badly in terms of the polity indicators which are used to capture the level of democracy and violence. The interest rate data is also suggestive of a high interest rate regime for Ghana. The mean value for interest rate (IR) is 25% and a maximum value of 45% for the estimation period. The normality test for the variable indicates that it is not normally distributed. This was also confirmed by the skewness test which showed a positive skewed data for the real interest rate (IR)

Correlation between Mining sector FDI and the covariates

The simple correlation test was examined to check the relationship between the variables of interest in this study. The Pearson correlation was used. This correlation test deals with the pairwise correlation among variables and it is the simplest form of correlation test. It must be said that, this is just the level of association between the variables and no causal link could be deduced from the simple correlation test. However, this was necessary to inform the method used for the estimation since multicollinearity may be a source for estimation problem.

49

The results presented in Table 2 shows the correlation matrix of the variables involves in the study. However, the interpretation of the correlation coefficient would be focused on the association between LFDIMIN and the other variables. This result could be inferred from the Table 2 first row or first column. The results indicated that, there is a positive association between LGDP and the LFDIMIN, LRGXP and INFR (Infrastructure). That is the positive association may be an indication of the fact that these variables are argued to affect the inflow of FDI positively. For example, Asiedu (2002) has found that the size of the market which is measured by the log of per capita GDP (LGDP) is positively related to FDI inflows to SSA region. Therefore, it is no surprise to find a positive association between these two variables from the correlation test.

Anyanwu (2011) has also argued that a more open economy attract FDI to host countries. Therefore, it would be expected that ta simple correlation test would yield a positive relationship between export and FDI inflow to the mining sector. This is because, the mining sector is an export oriented sector and hence the less export volumes that investors can have, the less level of FDI that would flow into that sector of the economy.

The macroeconomic condition forms part of the environment. Therefore a stable macroeconomic condition is expected to affect the inflow of FDI into every sector of the economy. This is because increase macroeconomic instability leads to higher risk for investors and would deter them into an economy. Therefore, variables like inflation, real effective exchange rates are expected to have negative association with FDI inflow as shown in the correlation matrix.

50

Corporate tax is one of the most issues that have attracted attention in the literature on FDI inflows to an economy. Devereux, Lockwood, and Redoano (2008) argued that countries compete among themselves by cutting down corporate tax to make the country more favourable destination for FDI. Therefore, the negative association between FDI and TAX is expected. Thus the correlation suggests that as corporate tax increases, the FDI to the mining sector also decreases. That is these two variables moves in an opposite direction. To be specific, Tax and FDIMIN are negatively correlated.
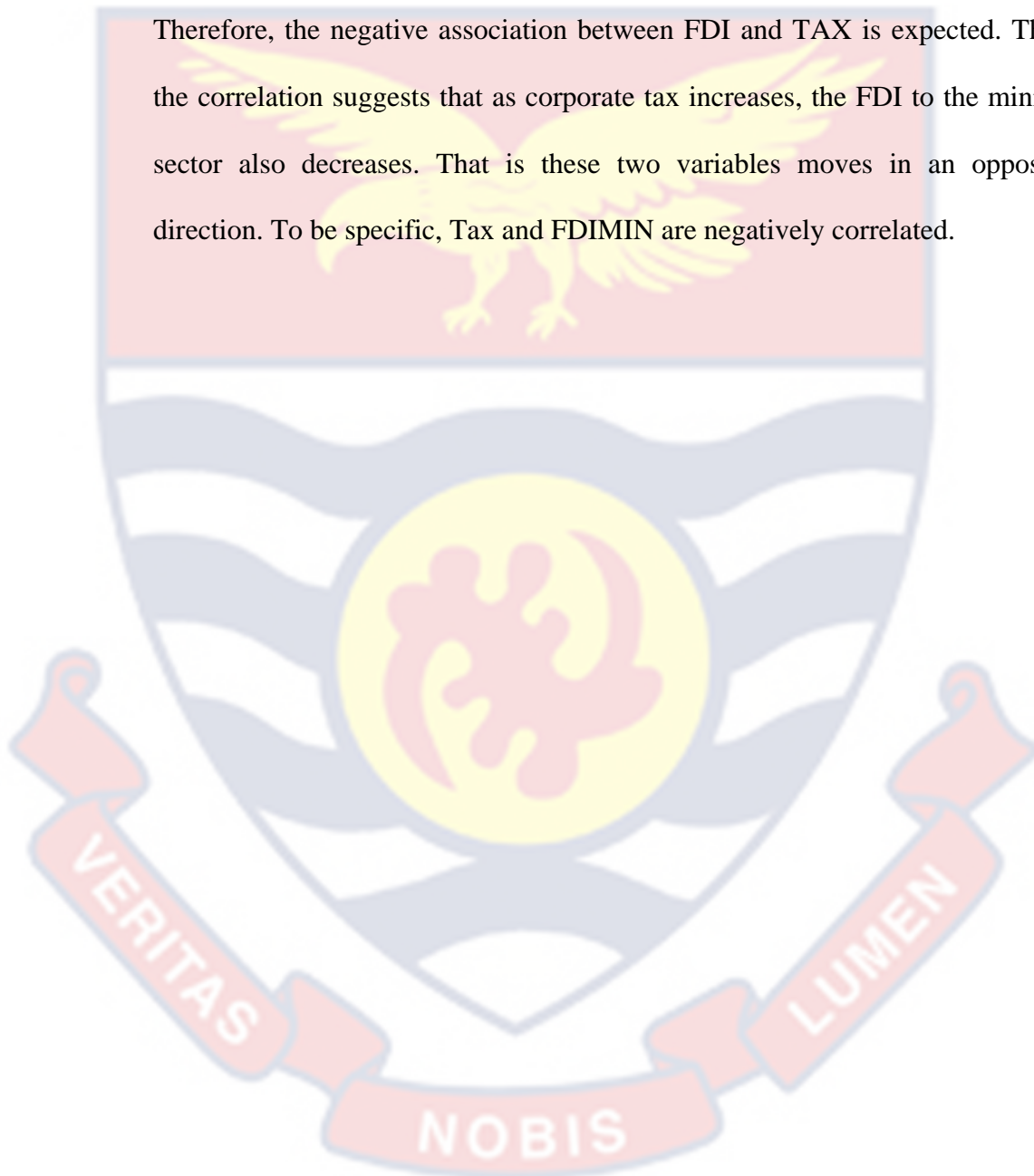
Table 2: Correlation matrix of variables

	LFDIMIN	LGDP	LREER	LRGXP	PS	INFR	IR	CPI	TAX
LFDIMIN	1	0.610	-0.634	0.188	-0.077	0.027	-0.226	-8.456	-0.683
LGDP	0.610	1	-0.709	-0.248	-0.128	-0.429	-0.599	-0.365	-0.876
LREER	-0.634	-0.709	1	0.290	0.049	0.491	0.298	0.433	0.819
LRGXP	0.188	-0.2485	0.290	1	0.197	-0.113	0.021	-0.089	0.363
PS	-0.077	-0.1286	0.049	0.197	1	-0.333	-0.154	-0.333	0.265
INFR	0.027	-0.4299	0.491	-0.113	-0.333	1	0.559	0.966	0.352
IR	-0.226	-0.599	0.298	0.0219	-0.154	0.559	1	0.509	0.416
CPI	-0.000	-0.36556	0.433	-0.089	-0.333	0.966	0.509	1	0.298
TAX	-0.683	-0.876	0.819	0.3639	0.268	0.352	0.416	0.298	1

Source: Author's computation

Unit root test

Unit root test is a prerequisite in any time series analysis. Therefore, to start with rigorous statistical analysis, the study examined the statitionarity status of the variables used for the study. In line with most empirical literature, the study employed the Augmented Dickey Fuller (ADF) test and the Philip-Perron (PP) test for unit root. These two methods were used in an attempt to double check the presence of unit root test among the variables. The results of the unit root test are presented in Tables 3 and 4.

Table 3: ADF test for unit root with (Intercept)

Variable	Tau-statistic	Critical value	Order of Integration I(q)
LFDIMIN	-7.227	-3.493***	I(1)
LGDP	-3.524	-2.582*	I(1)
LRGXP	-9.670	-3.493***	I(1)
LREER	-3.636	-3.493**	I(1)
TAX	-2.166	-1.944**	I(1)
PS	-2.08	-1.944**	I(1)
INFR	-4.347	3.493***	I(1)
IR	-3.419	-2.890**	I (1)
CPI	-3.174	-2.892**	I(1)

Source: Estimated using E-View 7.0 *Note *, **, *** represent 10%, 5% and 1% significant levels respectively*

The unit root test from the ADF suggests that the variables used for the regression analysis are integrated of different orders. Thus some of the variables are stationary at their levels while others are stationary at their first

difference. To be more precise, LFDIMIN was stationary at first difference. The variable became stationary at first difference but non-stationary at levels. The tau statistic compared with the critical values was higher that the critical value hence the null hypothesis of the presence of unit root was rejected at 1% significant level. Therefore, it is concluded that LFDIMIN is integrated of order one (I(1)).

Similarly, LGDP and LRGXP were having unit root at their levels. Therefore, the first difference of these variables was taken. The second difference results suggest that, the variables were stationary after first difference. But, LGDP after first difference and was significant at 10% while the LRGXP was significant at 1%. Again, the series for Infrastructure (INFR), CPI and Interest rate (IR) were also stationary at first difference. This means that, INFR, CPI and IR posses unit root at their levels and therefore required differencing to become stationary. From the ADF test, INFR, CPI, IR, LRGXP and LGDP were also integrated of order one.

In the same manner, LREER, TAX and POLIT were stationary at their after firs difference. The tau statistic for each of these variables at their levels was higher than the critical values at 5% significant levels respectively. Therefore, the null hypothesis of the presence of unit root in the series was rejected concluding that the variables were stationary t levels. Therefore, LREER, TAX and POLIT according to the ADF test are integrated of order zero (I (1))

As a confirmatory of the ADF test, the PP test was also conducted. The result is presented in Table 4. The results from the PP test are no different from that of the ADF test with the exception of LREER which the PP test

54

suggest to be stationary at first difference and therefore integrated of order one.

Table 4: Philip-Perron unit root test results

Variable	Tau	Critical value	I(q)
LGDP	-3.897	-3.452***	1
TAX	-4.220	-4.050***	1
PS	-2.905	-1.983**	1
FDIMIN	-7.9407	-4.046***	1
INFR	-3.6487	-3.495**	1
LREER	-3.7015	-3.4950***	1
LRGXP	-9.8428	-4.046***	1
IR	-3.728	-3.4950***	1
CPI	-4.145	-3.950***	1

Source: Generated from WDI using E-Views 7.0 *Note *, **, *** represent 10%, 5% and 1% significant levels respectively*

Result from cointegration test

The study uses the ARDL cointegration test approach. This is because the unit root test suggests that the variables selected for the regression equation consist of variables of different order of cointegration. The cointegration result is presented in Table 6. From the results in Table 6, the variables are cointegrated. Given that the F-statistics value greater than the critical bounds at 1%.

55

Table 5: Cointegration test results

F-statistic	K	Critical value @ 99% CI	
F(LFDIMIN|TAX, INFR, LCPI, LREER,	7	I(0)	I(1)
LRXGP,RI, PS, LGDP) = 7.89		3.23	4.76

Source: Author's computation   *Note: K is the number of exogenous variables*

To be more specific, the F-statistic is greater that the lower critical bound of 3.23 as well as the upper critical bound of 4.76. Based on the result, the study fails to accept the null hypothesis of no cointegration relationship. Since the F-statistic is greater than the upper bound value at 1% critical level, the conclusion of the existence of long run relationship could be made. Therefore, the study concludes that there exist conitegrating relationship between the dependent variable (FDIMIN) and the explanatory variables. Base on this result that there is a long run relationship between FDIMIN and the other exogenous regressors for the model, the study moves on to present the long-run and the short run dynamics of the study. The long-run cointegration established for this study confirms other works which had found the existence of long run relationship to exist among FDI and other variables like exchange rate, economic stability, openness and other variables (Ramirez 2006; Chakrabarti 2003; Zhang 2001)

Long Run Results

The long-run estimates for the variables are presented in Table 7. The results indicates that LGDP is positive related to FDIMIN inflows. Thus the size of the market matters for the FDI inflows to the mining sector of the

economy. This is in line with the general FDI literature. Almost all studies on FDI have found a positive relationship between GDP and FDI (Ramirez 2006; Chakrabarti 2003; Zhang 2001). This relationship is not unexpected. Aside from having large domestic markets, high-growth economies usually implement stable and credible macroeconomic policies that attract foreign investors. Market size is generally measured by the level of GDP, and thought to be an important determinant of location decision effecting FDI inflows.

Table 6: Long-run regression results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP	1.14702	.098867	1.043823	0.2991
LRGXP	0.15508	0.072070	2.151924	0.0338
LRER	-2.42497	0.614597	-3.945625	0.0001
PS	-2.17406	0.665617	-3.266241	0.0015
IR	-0.01132	0.011075	-1.022915	0.3088
INF	0.06256	0.009406	6.651431	0.0000
TAX	-0.04711	0.019231	-2.449998	0.0160
LCPI	-0.56256	0.009406	-3.651431	0.0000
C	22.2272	7.089133	3.135397	0.0023

Source: Author's estimate

The larger market size implies the more economic activities and the more opportunities for economic diversification. In accordance with the theory of economies of scale, the larger economy may provide more opportunities for enterprises and industries to realize and explore economies of scale by carrying out the more specialization of productive factors.

The level of openness is one of the key variables that attract FDI (Seim, 2009). Thus, the more open an economy; the more FDI is likely to flow

57

into such an economy. The result from the long-run relationship in Table 6 suggests that FDI to the mining sector is positively related to level of openness. To be more specific, openness is statistically significant at 5%. This indicates that openness measure by the volume of mining export is important in explaining FDI inflows. The result indicates that a 1% increase in openness would lead to an increase in FDI to the mining sector inflows by 0.15%. However, if the level of openness decreases by 1%, then FDI would reduce by 0.15%. The results confirms the findings of Many research works (including; Asiedu, 2002; Dupasquier and Osakwe, 2006 and Anyanwu, 2011) that found positive effect of openness on export. The result is not surprising since most of the FDI that flows into the mining sector are basically export-oriented FDI. There a more liberalise economy, providing an avenue for export would encourage the inflow of FDI to the mining sector of the Ghanaian economy.

The effect of real exchange rate on the flow of FDI was found to be negative and statistically significant at 1% as shown in Table 6. This means that real effective exchange rate is important. The result indicates that a 1% increase in real effective exchange rate would lead to a decrease in FDI inflows by 2.4%. Thus real currency depreciation reduces the FDI inflows. This result is in line with Li (2012) finding that depreciation of the real value of currency affects the flow of FDI negatively. Possible explanation for this result emanates from Campa (1993) argument that weaker currency slows down FDI inflows. According to Campa is given affirmation by Zhang, Shan, and Wang (2013) that overseas investment decisions by multinational corporations depend on expectations of future earnings. Therefore, the stronger the currency in the host country, the higher the future earnings

58

expectations multinational corporations will hold before they enter the market of the host country, which will attract more FDIs. From this argument, real depreciation is a signal for of low future earning potential hence FDI to the mining sector would reduce.

Corporate tax has been argued in academic literature to lead to low FDI inflows. The result in Table 6 shows that FDI has a negative and statistically significant impact on FDI inflows to the mining sector s in the long run. In similar manner, corporate tax is statistically significant at 1 percent for the mining industry. The results compares favourably with studies like Tsikata et al (2000) that tax has a negative effect of FDI flow to Ghana from the survey analysis. Jun (1994) explains the reason why tax has a negative influence on FDI as tax being a profit reducer. The implication is that high rocketing domestic corporate tax will push FDI projects to area with moderate taxes for foreign investors. Agarwal, (1980) argued that the impact of tax on FDI is very limted in its effect. The results from the study suggest a similar pattern. Even thought the effect of tax on FDI is significant, the coeffcient seems to be very small which suggest a minimal impact of corpoarate tax on FDI to the mining sectors of the economy. The insignificance of the corporate tax rate in the mining sector could be attributed to the fact that there are tax incentive and other factors like the promotion of non-traditional exports for the mining sector. It must be said that, mining investment in Ghana are more export oriented. It follows that the effect of tax on the mining sector is intitutively right. Since export orientation of firm may have a great inpact on FDI flow (Tsikata *et al*., 2000). In the general literature, the findings for the service and the manufacturing sectors are not different

from the general analysis of the effect of tax on FDI inflow (Benassy-Quere et al., 2005; Azemar & Delios, 2008).

FDI location is influence by the available public infrastructure development. This implies that the role of telephone must be positively related to FDI in the country. The effect of telephone For the various sectors, the coeffiecint in the models were statistically significant at less than 1 percent. This positive impact of infrastructure development has been confirmed by studies like Aseidu (2002), Azemar and Delios (2005).

It is clear that investor would look at a fairly stable economy to place their investment in. Therefore, as part of the variables, the study looked at how violence and political instability affect FDI into the mining sector. The result indicates that FDI into the mining sector has a negative relationship with political instability and violence. This is supports earlier studies that argued that political stability matters. The negative effect has been shown in a study by Asiedu (2006) and Brada, Kutan and Yigit (2006). This is indicative that political risk is plays a vital role in attracting FDI to the mining sector of the Ghanaian economy. Thus a highly political instable country would not be able to repel FDI into the mining sector.

The error correction for the adjustment to short run was calculated from the long run estimate is given as in the equation below as: ECT= LFDIMIN - 1.147*LGDP - 0.155*LRGXP + 2.423*LREER+ 2.174*PS + 0.011*IR-0.0625INFR + 0.041*TAX - 22.22*C

60

Short-run dynamics

The short-run relationship between the explanatory variables and the dependent variables were explored to see the factor that are important determinants in the short-run for the flow of foreign direct investment to the mining sector of Ghana. The results of the short-run dynamics are presented in Table 8.   The ARDL model selected base on the Schwarz Bayesian Criterion (SBC) is (2, 0, 2, 0, 1, 1, 0, 1). From the results presented in Table 8, the FDIMIN has a positive influence on itself. Thus the FDIMIN inflow into an economy leads to a further inflow of FDI. This is seen by the fact that previous FDI inflows to the Mining sector leads to subsequent inflows in the FDI to the mining sector. The lag of FDI into the mining sector is significant at 5%. This shows an increase in the past value of FDI inflows by 1% would result in an increase in FDI to the mining sector by 0.30%.

This is in line with the argument that, FDI to usually come with other complementary service. This is more so in the case of mining sector in Ghana. FDI in mineral exploratory is followed by services that would complement the efforts and service to these mining sector industries. Also, the role of FDI success in a particular location has the potential of drawing other FDIs to follow suit (Dunning, 2000).

61

Table 7: Short run dynamics using ARDL (2 0 2 0 0 1 0 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECT(-1)	-0.27311	0.038546	-7.085352	0.0436
DLFDIMIN(-1)	0.30452	0.140750	2.163571	0.0358
DLGDP	0.22443	0.108196	2.074370	0.0438
DLRGXP(-1)	0.24792	0.390812	3.879406	0.0003
DLRER	0.34845	0.128193	2.718186	0.0089
DIR	-0.08956	0.034177	-2.620663	0.0115
DPS(-1)	-0.34845	0.128193	2.718186	0.0089
DINFR	0.07601	0.034664	2.192933	0.0335
DTAX(-1)	-.6329669	.3111306	-2.029217	0.0484
DCPI(-1)	-0.50239	0.113204	-4.416805	0.0001
C	-7.775531	4182621	-1.859009	0.0696

R-squared	0.889649	Mean dependent var		18796054
Adjusted R-sq	0.759680	S.D. dependent var		84104322
S.E. of regression	41230005	Akaike inf criterion		38.20968
Sum squared res	7.65E+16	Schwarz criterion		39.62520
Log likelihood	-1837.379	F-statistic		6.845083
Durbin-Watson	2.148425	Prob(F-statistic)		0.000000

Source: Author's estimation

The effect of exchange on FDI inflows was positive and significant in the short run. The positive effect of real effective exchange rate in the short-run may be attributed to Chakrabarti and Scholnick (2002) explanation. Chakrabarti and Scholnick argued that due to inelasticity in expectation, investors do not revise their expectations of future exchange rate to the full extent of changes in current exchange rate immediately. Therefore, if foreign investment expects that a decrease in value of foreign currency will be followed by a mean reversion of the exchange rate, this implies that immediately after devaluation the foreign currency would be temporarily

62

'cheap' (temporary change in foreign currency value). As a consequence, ceteris paribus, FDI would flow to the country under these circumstances because the foreign asset currently appears to be cheap relative to its expected future income stream.

Openness is still significant and positively related to the inflow of FDI into the mining sectors of the economy. In the short run, an increase in openness by 1% would lead to an increase in 0.247%. This finding supports the studies on panel level analysis that FDI flow is influence by the level of openness. However, this short-run effect is contrary to the finding of that openness does not influence the flow of FDI (Abdulai, 2013).

Post estimations

The study checked for the robustness of the results that were presented for the study. The Lagrangean Multilier test for serial correlation, heteroskedasticy and the stability of the estimation as well as the Ramsey Reset test for functional form specification test were performed. The result from the post estimation suggests that, the model was robust for interpretation. The serial correlation test suggested that there is no serial correlation. Therefore, the null hypothesis of no serial correlation was not rejected by the study. Similarly, the Ramsay Reset test for model specification was passed. The result for the test is presented in Table 9.
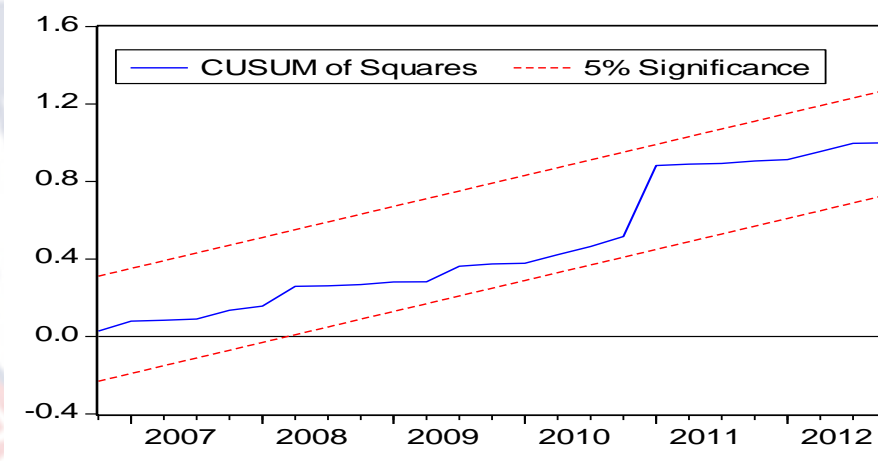
The Cumulative Sum of Recursive Residuals and the Cumulative Sum of Square Residuals were used to test the stability of the models that was specified. The CUSUM in Figure 1 showed that the model is stable over the estimation period. This is because, the CUSUM curve falls within the critical bounds of 5%.

63
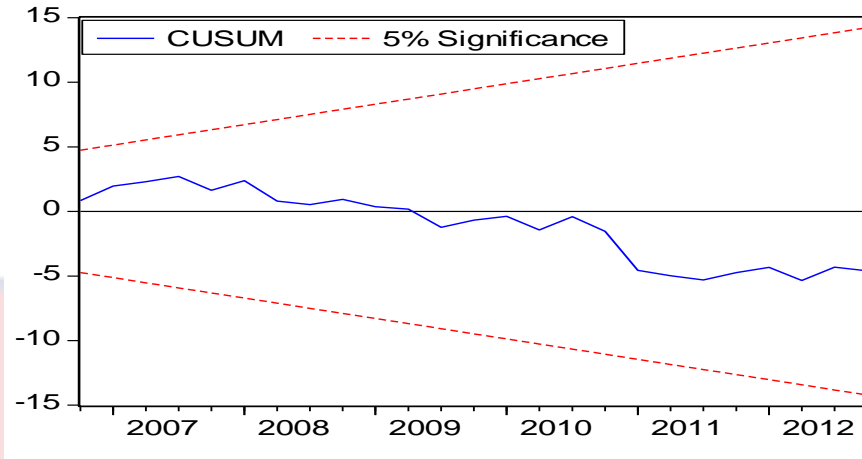
Figure 2: Cumulative Sum of Recursive Residuals (CUSUM)

Source: Generated by author

To be sure of the stability, the CUSUMSQ was also used. The graph of the CUSUMSQ falls within the critical bound of 5%. This implies that the model is stable over the estimation period as shown in Figure 2.

Figure 3: Cumulative Sum of Squares of Recursive Residuals (CUSUMSQ)

Causality test

The causal relationship between the explanatory variables and FDI inflows to mining sector of Ghana was examined. The result of the causality test conducted using the pair-cause granger causality test is presented in Table 9. The result indicates that there is a causal relationship between CPI as a

64

measure of price and FDIMIN. From the causality test, the null hypothesis if CPI does not granger cause FDIMIN was rejected at statistically significant level of 10%.

The result shows a uni-directional causality running from CPI to FDIMIN. Therefore, the implication is that past information about CPI could help improve forecast the flow of FDIMIN. This results reinforces the long-run relationship obtained earlier and confirms the result obtained from the long-run results that CPI affect the inflow of FDI (Aseidu, 2002)

Table 8: Result of causality test

Null Hypothesis	Obs	F-Statistic	Prob.
CPI does not Granger Cause FDIMIN	103	0.93248	0.0748
FDIMIN does not Granger Cause CPI		0.9900	0.4283
GDP does not Granger Cause FDIMIN	103	2.7272	0.0241
FDIMIN does not Granger Cause GDP		1.4061	0.2294
INFR does not Granger Cause FDIMIN	103	0.9493	0.0532
FDIMIN does not Granger Cause INFR		0.4243	0.8307
IR does not Granger Cause FDIMIN	103	1.0043	0.0197
FDIMIN does not Granger Cause IR		0.7322	0.6011
PS does not Granger Cause FDIMIN	103	0.4154	0.1369
FDIMIN does not Granger Cause PS		0.8854	0.4942
RGXP does not Granger Cause FDIMIN	103	4.4260	0.0012
FDIMIN does not Granger Cause RGXP		2.6313	0.0286
TAX does not Granger Cause FDIMIN	103	2.1942	0.0615
FDIMIN does not Granger Cause TAX		1.8142	0.1177
REER does not Granger Cause FDIMIN	103	0.3289	0.0944
FDIMIN does not Granger Cause REER		0.1608	0.1761

Source: Generated from WDI (2012) dataset

The result of the causality suggests that there is a causal relationship between real effective exchange rate and FDIMIN. That is the information inherent in the variable help in the forecast of either of them. The significant

of the F-statistic suggest that there is one-way causality that runs from the real effective exchange rate to FDI inflows to the mining sector. The result is consistent with the study   by Jin and Zang (2013) who found that there causal relationship between exchange rate and FDI inflows.

The effect of tax was also examined on FDI inflows. The study found that there is a causal dependence between Tax and FDI inflows to the mining sector. The result from the F-statistic and the significance level suggest that the null hypothesis of no causal relationship flowing from Tax to FDI was failed to be accepted. Therefore, the study went on to reject the null hypothesis that corporate tax does not granger cause FDIMIN at a significant level of 10%. The simple conclusion that could be drawn from the granger causality test is that, though FDI inflows into the mining sector may be driven by the available of natural resources, corporate tax plays an important role in explaining FDI inflows to the mining sector of the economy. Again, it must be said that, corporate tax takes precedence in the forecast of FDI into the mining sector.

The causality examined for the market size (GDP) suggests that causality runs from GDP to FDIMIN. This results is consistent with Alam & Shah, (2013) explore the determinants of foreign direct investment (FDI) for a panel of ten OECD member countries over the period of 1985-2009. Granger causality tests were used to identify causalities, both in the short- and long-run, between FDI and the variables that emerge as significant determinants of FDI during the study period. Also, the results is similar results has been found for the case for Nigeria that FDI inflows are granger caused by Market size (Abdullaha, 2013).

Openness of the mining sector was found to granger cause FDI to the mining sector. The causality established was significant at 1%. The existence of a reverse causality was also observed in the granger causality analysis. The result suggests that FDI to the mining sector also granger causes openness of the mining sector. Thus there is bi-causal relationship between FDI inflows to the mining sector and openness or liberalisation of the mining sector. The result confirms the study by Hansen and Rand (2006). The implication is that the development of the mining sector can lead to greater openness of the sector to international trade. The main reason is the fact that, mining output in Ghana is basically exported in their raw form. Therefore increase mining activity would increase the volume of mining export thereby increasing the export trade ration which this study uses.

Conclusion

The study aimed at identifying the factors that affect the inflow of FDI to the mining sector of Ghana. The chapter in an attempt of presenting the analyisi of the data presented the unit root test which suggest the absence of unit root in the data for some variable at their levels and other variables became stationary after first difference. The result descriptive and simple correlation test was done. The result found from the analysis are supportive of the theoretical arguments on the determinants of FDI inflows. The causality suggest a causal relationship between CPI, REER, GDP, Openness, TAX and other explanatory variables with the exception of POLIT a measure for political violence.

The model diagnostics presented also suggested a robust and well behave model for the period under investigation. The CUSUM and

67

CUSUMSQ were within bound and the study also passed the serial correlation, normality and the functional form test. Therefore, the study went on to present the final chapter of the study.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter presents summary the study by providing the major methods and major findings of the study. After the summery, the conclusions drawn from the study were presented. The chapter also give the recommendation drawn from the conclusion of the study

Summary

The study aimed at identifying factors that affect the flow of FDI to the mining sector of Ghana. Specifically, the study aimed at identifying the factors that are able to lead to FDI inflows to the mining sector of Ghana in the long run. The study further went on to identify the short run factors. Using quarterly data from 1986 to 2012 obtained from the Ghana investment promotion centre, WDI and IFS. Basically quantitative analysis was used for this study. This allows for the rigorous quantitative analysis of data.

The study went through three different levels of analysis to arrive at the variable that affects FDI inflows to the mining sector in the short and long-run. The first stage of the analysis, the study presented descriptive statistics of the variables used for the empirical model used for the study. This descriptive includes measure of dispersion and the mean, and the maximum and minimum observations were examined. The study further a correlation matrix for the variables used. In explaining the correlation matrix, the study however, focused on the relationship between the dependent variables and the other covariates of the models.

69

After the simple correlation and the measure of dispersion were used, the unit root analysis was done. The study used the PP and the ADF test to examine the stationarity status of all the variables in the model. The variables were found to be a combination of level and first difference variables. This gave us the impetus to use the bounds test to cointegration approach to examine the cointegration relationship of the variable. The study found that there is long run relationship among the variables. The third step was to estimate the long-run and the short run relationship for the models. After that the causality between the variables were examined. However in the causality analysis, the study focused on the causality between the dependent variable and the explaining without focusing on the causal relationship among the explanatory variables. This was done since the study aim at examining the factors those results in an inflow of FDI to the mining sector.

The major findings of the study were that:

1. In the long-run, variables like market size (measured as log of per capita GDP) had a positive effect on FDI inflow to the mining sector. Similarly, mining sector export and infrastructure development affect mining sector FDI inflows positively in the long run.

2. Variables like corporate tax rate, political instability and violence (PS), real effective exchange rate, inflation and interest rate had negative relationship on FDI inflows to the mining sector in Ghana in the long run.

3. In the short run, inflation, political instability and violence had negative impact on FDI inflows to the mining sector while variables

70

openness, market size, real effective exchange rate, infrastructure drive FDI inflows to the mining sector positively.

4. The error correction suggest that the shock to the model takes about 4 quarters to be revert back to the long-run equilibrium.

5. From the causality test, it was found that there is no causal relation between POLIT and FDIMIN. However, causality was found to exist for openness, market size, rear effective exchange rate, infrastructure with FDIMIN

Conclusions

From the major findings from the study, the following conclusions could be drawn from the study.

1. The factors that affect FDI flow to the mining sector favourably identified by the study are market size, infrastructure and openness

2. The factors that impede FDI inflow in the long run includes inflation, rear interest rate and political instability and violence.

3. In the short run, variables like real effective exchange rate, CPI, TAX and Political instability and violence lead to a reduction in FDI inflows to the mining sector. On the contrary, openness and market size lead to increase in FDI inflow

4. There is uni-directional causal relationship between FDI to the mining sector and real effective exchange rate, CPI, GDP and Tax. However, there is not causal relationship between FDI and POLIT.

5. There is bi-causality between openness of the mining sector and FDI to the sector. Impliedly, growth in FDI to the sector leads to a more open

71

mining sector to international trade. At the same time, openness of the mining sector results in FDI inflow to the sector.

Recommendations

From the findings, the studies recommend that

1. Government should ensure stable growth of per capita income growth of the country to attract FDI inflows to the mining sector. The policy implication of this is that government should create an enabling environment or provide incentives for production activities as well as creating employment opportunities to boost market size and attract FDI in the short run.

2. In addition proper monetary policies should be employed to achieve an optimum inflation rate that will attract FDI in the short run while reserves of natural resources should be explored and efficiently utilized to diversify the economy.

3. The Bank of Ghana should manage the exchange rate to halt exchange rate depreciation and ensure that inflation is stable in order to attract foreign direct investment to the mining sector of Ghana.

Recommendations for future research

Due to availability of data, the study used the corporate tax for Ghana as a measure of tax imposed on mining activities in Ghana. However, it would be appropriate to examine the sector specific tax on the mining sector. Therefore, future research should endeavour to find mining specific tax and explore it effect on FDI inflow to the sector.

72

FDI into mining sector comes in varied forms, therefore decomposition may unravel a lot of hidden information that is mask in the overall FDI to the mining sector. Therefore, it is recommended that future study look at the flow of FDI to the mining sub-sectors and what influence them.

REFERENCES

Abdoul'Ganiou, M. (2010) What Drives Foreign Direct Investment in Africa? An Empirical Investigation with Panel Data. *Working Paper no5*. African Centre for Economic Transformation

Abdulai, I. (2005). Sectoral Analysis of Foreign Direct Investment in Ghana. *Working Paper*, WP/BOG-2005/15. Accra: Bank of Ghana.

Abdullahi, A. (2013). Relationship between Foreign Direct Investment and Per Capita GDP in Nigeria-An Empirical Analysis (1980-2009). *Asia Pacific Journal of Economics and Business*, *6*(1), 4-25.

Acheampong, I. K., & Wiafe, E. A. (2013). Foreign direct investment and stock market development: evidence from Ghana. *International Journal of Finance & Policy Analysis*, *5*(1), 3-15

Adenutsi, D. E. (2007). Effects of trade openness and foreign direct investment on industrial performance in Ghana. Available at www.mpra.ub.uni-muenchen.de

Adjei, S., Oladejo, N.K., & Adetunde, I. A. (2012). "The Impact & Effect of Illegal Mining (galamsey) Towards the Socio-economic Development of Mining Communities: A Case Study of Kenyasi in the Brong Ahafo Region", *International Journal of Modern Sciences*, *1*(1) 38-55

Agarwal, J. P. (1980). Determinants of foreign direct investment: A survey. *Weltwirtschaftliches Archiv*, *116*(4), 739-773.

Akabzaa, T., & Darimani, A. (2001). *Impact of Mining Sector Investment in Ghana: A Study of the Tarkwa Mining Region*. Draft Report Prepared for SAPRI.

Alam, A., & Shah, S. Z. A. (2013). Determinants of foreign direct investment in OECD member countries. *Journal of Economic Studies*, *40*(4), 515-527.

Amponsah-Tawiah, K. & Dartey-Baah, K., (2011). The Mining Industry in Ghana: A Blessing or a Curse. *International Journal of Business and Social Science*, 2(12), 143-156

Anyanwu, J. C. (2011). *Determinants of Foreign Direct Investment Inflows to Africa, 1980-2007*. African Development Bank Group. Retrieve on 12th January,   2014   from http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/ WORKING%20136%20Determinants%20Of%20Foreign%20Direct% 20Investment%20Inflows%20To%20Africa%201980- 2007%20AS.pdf.

Anyanwu, J. C., & Erhijakpor, A. E. (2010). Do International Remittances Affect Poverty in Africa?*. *African Development Review*, *22*(1), 51-91.

Aryee, B., & Aboagye, Y. (2008). Mining and Sustainable Development in Ghana.

Asiedu, E. (2002). On the determinants of foreign direct investment to developing countries: is Africa different? *World development*, *30*(1), 107-119.

Asiedu, E. (2004). Policy reform and foreign direct investment in Africa: Absolute progress but relative decline. *Development Policy Review*, *22*(1), 41-48.

Asiedu, E. (2006). Foreign direct investment in Africa: The role of natural resources, market size, government policy, institutions and political instability. *The World Economy*, *29*(1), 63-77.

Asiedu, E., & Lien, D. (2011). Democracy, foreign direct investment and natural resources. *Journal of International Economics*, *84*(1), 99-111.

Awudi, B. K. (2002). The Role of Foreign Direct Investment (FDI) in the Mining Sector of Ghana and the environment**.**

Azémar, C., & Delios, A. (2008). Tax competition and FDI: The special case of developing countries. *Journal of the Japanese and International Economies*,*22*(1), 85-108.

Basu, A., & Srinivasan, K. (2002), Foreign Direct Investment In Africa: Some Case Studies, *IMF Working Paper* 02/61. IMF: Washington, DC

Basu, A., & Srinivasan, K. (2002). *Foreign Direct Investment in Africa--Some Case Studies* (Vol. 2). Washington: International Monetary Fund.

Bénassy-Quéré, A., & Coupet, M. (2005). On the Adequacy of Monetary Arrangements in Sub-Saharan Africa. *The World Economy*, *28*(3), 349-373.

Bende-Nabende, A. (2002). Foreign direct investment determinants in Sub-Sahara Africa: A co-integration analysis. *Economics Bulletin*, *6*(4), 1-19.

Boon, E. K., & Ababio, F., "Corporate Social Responsibility in Ghana: From the Mining Sector"

Brada, J. C., Kutan, A. M., & Yigit, T. M. (2006). The effects of transition and political instability on foreign direct investment inflows. *Economics of Transition*,*14*(4), 649-680.

Brada, J. C., Kutan, A. M., & Yigit, T. M. (2006). The effects of transition and political instability on foreign direct investment inflows. *Economics of Transition*, *14*(4), 649-680.

Branstetter, L. G., & Feenstra, R. C. (2002). Trade and foreign direct investment in China: a political economy approach. *Journal of International Economics*, *58*(2), 335-358.

Calvo, G. A., Leiderman, L., & Reinhart, C. M. (1993). "Inflows of Capital to Developing Countries in the 1990s", *The Journal of Economic Perspectives*, *10* (2), 123-139.

Cantah, W. G., Wiafe, E. A., & Adams, A. (2013). Foreign direct investment and trade policy openness in Sub-Saharan Africa. Available at mpra.ub.uni-muenchen.de

Calvo, Sara, and Carmen M. Reinhart (1996), Capital Flows to Latin America: Is There Evidence of Contagion Effects? In G. Calvo and M. Goldstein, eds. *Private Capital Flows to Emerging Markets After the Mexican Crisis*, Washington: Institute for International Economics.

Campa, J. M. (1993). Entry by foreign firms in the United States under exchange rate uncertainty. *The Review of Economics and Statistics*, 614-622.

Casson, M. (1990). *Multinational corporations* (Vol. 1). London: Edward Elgar Pub.

Chakrabarti, A. (2003). A theory of the spatial distribution of foreign direct investment. *International Review of Economics & Finance*, *12*(2), 149-169.

Chakrabarti, R., & Scholnick, B. (2002). Exchange rate expectations and foreign direct investment flows. *Weltwirtschaftliches Archiv*, *138*(1), 1-21.

Chuhan, P., Claessens, S. & Mamingi, N. (1996). *International Capital Flows: Do Short-Term Investment and Direct Investment Differ*? The World Bank: Washington, DC.

Chuhan, P., Claessens, S., & Mamingi, N. (1998). Equity and bond flows to Latin America and Asia: the role of global and country factors. *Journal of Development Economics*, *55*(2), 439-463.

Coakley G.J. (2003). The Mineral Industries of Ghana. Minerals Yearbook (Vol. IV) United States of the Interior, Geological Survey: United States

Coase, R. H. (1937). The Nature of the Firm. *Economica,* 4 (16), 386–405.

Davis, G. A. (1998). The minerals sector, sectoral analysis, and economic development. *Resources Policy*, *24*(4), 217-228.

De Mello Jr, L. R. (1997). Foreign direct investment in developing countries and growth: A selective survey. *The Journal of Development Studies*, *34*(1), 1-34.

Devereux, M. P., Lockwood, B., & Redoano, M. (2008). Do countries compete over corporate tax rates?. *Journal of Public Economics*, *92*(5), 1210-1235.

Djokoto J. G., & Dzeha, G. C., (2012), "Determinants & Effects of Foreign Direct Investment in Ghana- Review of Literature", Vol 2. No.11

Dunn Jr, R. M., & Mutti, J. H. (2004). *International Economics Sixth edition*. USA: Francis Group

Dunn Jr., R.M., & Mutti, J. H., (2000), *International Economics* (5th ed). London: Routledge

Dunning J. H., (2000), *A Rose by Any Other Name? FDI Theory in Retrospect and Prospect*. Mimeo, University of Reading

Dunning, J. H. (1999). Trade, location of economic activity and the multinational enterprise: a search for an eclectic approach. *The internationalization of the firm*, 61-79.

Dunning, J. H. (2000). The eclectic paradigm as an envelope for economic and business theories of MNE activity. *International business review*, *9*(2), 163-190.

Dupasquier, C., & Osakwe, P. N. (2006). Foreign direct investment in Africa: Performance, challenges, and responsibilities. *Journal of Asian Economics*,*17*(2), 241-260.

Engle, R. F., & Granger, C. W. (1987). Co-integration and error correction: representation, estimation, and testing. *Econometrica*, 251-276.

Eshun, P. A., & Jellicoe, S. A. (2011). The impact of foreign direct investment on the development of the Ghanaian mineral industry. *Asian Journal of Business and Management Sciences*, *1*(1), 148-167.

Feenstra, R.C., (2002)., Advanced International Trade: Theory & Evidence, *NBER,* University of California

Findlay, R. (1978). Relative backwardness, direct foreign investment, and the transfer of technology: a simple dynamic model. *The Quarterly Journal of Economics*, 1-16.

Friedman, R. B. (1966). A new exploration of Mill's essay On Liberty. *Political Studies*, *14*(3), 281-304.

Granger, C. W. (1986). Developments in the study of cointegrated economic variables. *Oxford Bulletin of economics and statistics*, *48*(3), 213-228.

Gujarati, D. N. (1995). *Basic econometrics*. Tata McGraw-Hill Education.

Hansen, H., & Rand, J. (2006). On the causal links between FDI and growth in developing countries. *The World Economy*, *29*(1), 21-41.

Helleiner, G. K (1988)**.** Direct foreign investment and manufacturing for export in developing counties: A review of the issues. In: S. Dell (Ed.), *Policies for development*. London: Macmillan.

Hymer, S. (1976). *The international operations of national firms: A study of direct foreign investment*. Cambridge, MA: MIT press.

Jalil, A., Ma, Y., & Naveed, A. (2008). The finance-fluctuation nexus: Further evidence from Pakistan and China. *International Research Journal of Finance and Economics*, *14*, 212-231.

Jin, W., & Zang, Q. (2013). Impact of change in exchange rate on foreign direct investment: Evidence from China. *Lingnan Journal of Banking, Finance and Economics*, *4*(1), 1-17.

Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of economic dynamics and control*, *12*(2), 231-254.

Johansen, S. (1991). Estimation and hypothesis testing of cointegration vectors in Gaussian vector autoregressive models. *Econometrica,* 1551-1580.

Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration—with applications to the demand for money. *Oxford Bulletin of Economics and statistics*, *52*(2), 169-210.

Johansen, S., & Juselius, K. (1994). Identification of the long-run and the short-run structure an application to the ISLM model. *Journal of Econometrics*, *63*(1), 7-36.

Jones, G., (2005). *Multinationals and Global Capitalism*. Oxford: Oxford University Press

Jun, J. (1994). *How Taxation Affects Foreign Direct Investment: (country-specific Evidence)* (Vol. 1307). Washington: World Bank Publications.

Kandiero, T., & Wadhawan, S. (2003). Institutional quality, openness and investment in Africa. *South African Journal of Economic and Management Sciences, 6*, 345-368.

Kumah, A. (2006). Sustainability and gold mining in the developing world. *Journal of Cleaner Production*, *14*(3), 315-323.

Levi, M. D. (2005). *International Finance* (4th ed). Routledge: New York

Liu, Z. (2008). Foreign direct investment and technology spillovers: Theory and evidence. *Journal of Development Economics*, *85*(1), 176-193.

Mah, J. S. (2000). An empirical examination of the disaggregated import demand of Korea—the case of information technology products. *Journal of Asian Economics*, *11*(2), 237-244.

Mah, J., (2000). An empirical examination of the disaggregated import demand of Korea: The case of information technology product. *Journal of Asian Economics*, *11*, 237-24

Markusen, J. R., Melvin, J. R., Maskus, K. E., & Kaempfer, W. (1995).*International trade: Theory and evidence* University Library of Munich, Germany.

Moosa, I. A. (2002), *Foreign Direct Investment; Theory, Evidence and Practice*. Palgrave, Houndsmills, Basingstoke, Hampshire

Moosa, I. A. (2002). *Foreign direct investment*. London: Palgrave.

Morisset, J. (2000). *Foreign direct investment in Africa: policies also matter*. Washington: World Bank Publications.

Morriset, J., (2000), Foreign Direct Investment in Africa: Policies also Matter, Policy Research Working Paper Series, 2481, The World Bank

Narayan, P. K. (2004). Economic impact of tourism on Fiji's economy: empirical evidence from the computable general equilibrium model. *Tourism Economics*,*10*(4), 419-433.

Nastase, V. (2008, October). Topic-driven multi-document summarization with encyclopedic knowledge and spreading activation. In *Proceedings of the Conference on Empirical Methods in Natural Language Processing* (pp. 763-772). Association for Computational Linguistics.

Nyame, F. K., & Grant, J. A., (2012), From Carats to Karats: Explaining the Shift from Diamond to Gold Mining by Artisanal Miners in Ghana, *Journal of Cleaner Production*, *12*(5), 67-73

Obstfeld, M. (1986, December). Capital mobility in the world economy: Theory and measurement. In *Carnegie-Rochester Conference Series on Public Policy* (Vol. 24, pp. 55-103). North-Holland.

OECD (2002). *The Role of Foreign Direct Investment in the Mining Sector of Ghana and the Environment.* Canada: OECD

Pattichis, C. A. (1999). Price and income elasticities of disaggregated import demands: Results from UECMs and an application. *Applied Economics, 31*, 1061-1071.

Pesaran, M. H., & Pesaran, B. (1997). Microfit 4.0. *Interactive Econometric Analysis.* Cambridge: Camfit Data Limited

Pesaran, M. H., & Shin, Y. (1996). Cointegration and speed of convergence to equilibrium. *Journal of Econometrics*, *71*(1), 117-143.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics*, *16*(3), 289-326.

Phillips, P. C., & Hansen, B. E. (1990). Statistical inference in instrumental variables regression with I (1) processes. *The Review of Economic Studies*,*57*(1), 99-125.

Ramirez, M. D. (2006). Is foreign direct investment beneficial for Mexico? An empirical analysis, 1960–2001. *World Development*, *34*(5), 802-817.

Ross, M. L. (1999). The political economy of the resource curse. *World politics*,*51*(02), 297-322.

Seim, L. T. (2009). FDI and Openness: Differences in Response across Countries. *Chr. Michelsen Institute, Working Paper*.

Shareef, R., & Tran, V. (2007). An aggregate import demand function for Australia: a cointegration approach. *School of Accounting, Finance and Economics & FEMARC Working Paper Series*, *708*.

Shrestha, M. B., & Chowdhury, K. (2007). Testing financial liberalization hypothesis with ARDL modelling approach. *Applied Financial Economics*, *17*(18), 1529-1540.

Sichei, M. M., & Kinyondo, G. (2012). Determinants of Foreign Direct Investment in Africa: A Panel Data Analysis. *Global Journal of Business & Management Research*, *12*(18), 60-75

83

Sowa, N. K. (2002). *An Assessment of Poverty Reducing Policies and Programmes in Ghana*. Accra: Centre for Policy Analysis

Stock, J. H., & Watson, M. W. (1988). Testing for common trends. *Journal of the American statistical Association*, *83*(404), 1097-1107.

The Ghana Chamber of Mines (2005). *The Impact of Mining on Local Economy*. Accra: Chamber mines.

Tsikata, G. K., Asante, Y., & Gyasi, E. M. (2000). *Determinants of foreign direct investment in Ghana*. London: Overseas Development Institute.

Tsuma. W. (2010). *Gold Mining in Ghana: Actors, Alliances and Power* (Vol. 15). LIT Verlag Münster.

UNCTAD (2013). World Investment Report. Geneva: UNTACD

Vernon, R. (1966). International investment and international trade in the product cycle. *Quarterly journal of economics,80* (2), 190-207

Vernon, R. (1966). International Investment and International Trade in the Product Cycle. *Quarterly Journal of Economics*, *80* (2), 190-207.

Walz, U. (1997). Innovation, foreign direct investment and growth. *Economica*, *64*(253), 63-79.

Warhurst, A., & Bridge, G. (1997, February). Economic liberalisation, innovation, and technology transfer: opportunities for cleaner production in the minerals industry. *Natural Resources, 21(*1), 1-12.

Wei, S. J. (2000). *Natural openness and good government* (No. w7765). Cambridge: National bureau of economic research.

Weinstein M. M., (2005). *Globalisation: What's New?* New York: Columbia University Press

Wheeler, D., & Mody, A. (1992). International investment location decisions: The case of US firms. *Journal of international economics*, *33*(1), 57-76.

World Investment Report (1999). *Foreign Direct Investment and the Challenge of Development*. Geneva: UNCTAD

Zhang, J., Shan, J., & Wang, S. (2013). Location strategies of multinational banking under risk and asymmetric information. *Nankai Business Review International*, *4*(2), 130-146.

Zhang, K. H. (2001). Does foreign direct investment promote economic growth? Evidence from East Asia and Latin America. *Contemporary Economic Policy*,*19* (2), 175-185.