# Determinants of Foreign Direct Investment in Ghana: A Sectoral Analysis

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## ABSTRACT

*This study assesses the determinants of foreign direct investment (FDI) at sector level in Ghana taking into consideration the agriculture sector, services sector, and manufacturing sector. Using sector level data spanning 2000-2014, findings from the Ordinary Least Squares (OLS) regression analysis show that market size (measured by GDP) and labour cost have significant impact on the inflows of agriculture sector FDI. The results also confirm trade openness and exchange rate to significantly influence services sector FDI. Unexpectedly, none of the variables are found to have significant effect on manufacturing sector FDI. The study recommends that the government should implement strategies that will enhance the growth of Ghana's GDP, and deregulate the economy to allow more foreign investors into the country.*

**Keywords:** Determinants, Foreign Direct Investment, Ghana, OLS, Sector

## 1. INTRODUCTION

Global economic integration in recent years has been on an increase, which has led to a substantial growth in the flows of foreign direct investment (FDI) and international trade (Ross, 2015). Developing countries have been labelled as destinations of FDI (Zhang & Daly, 2012). As a result, most developing nations have engaged in policies and activities with the aim of attracting more inflows of FDI. These efforts by developing nations have been strongly motivated by international organizations such as the International Monetary Fund (IMF), the United Nations (UN), and the World Bank Group (Blomstrom, 1989). FDI has contributed significantly to the economic growth of both developed and developing economies through technological and labour transfer, capital flow and human resource development which Ghana is a part (OECD, 2002).

Ghana has made considerable efforts in attracting FDI for the past years. For example, Ghana's Economic Recovery Program (ERP) which was introduced in 1983, made FDI attraction a crucial part of its major policy objectives. Also, the establishment of the Ghana Investment Promotion Centre which is responsible for encouraging, promoting, and the facilitation of investments within and into the country is another effort Ghana has made in quest of attracting FDI. Following these efforts in attracting FDI into the Ghanaian economy, Ghana's FDI inflows have increased significantly in recent years. However, these inflows of FDI into the various economic sectors are unequal creating an imbalanced distribution of these investments. According to the UNCTAD (2003),

Ghana's FDI inflows have been biased towards the mining subsector. In recent years however, the inflow of FDI in other sectors has risen significantly in Ghana, with each sector making tremendous contribution to the economic growth of the country (Justice & Gloria, 2012). The increasing inflow of FDI in Ghana has generated much interest in the study of FDI in the country, especially its motivations and determinants.

The studies (for example; Osei, 2014; Owusu-Antwi et al., 2013; Justice & Gloria, 2012; Barthel et al., 2011; Tsikata et al., 2000) carried out on the determinants of FDI in Ghana dwelled on country or national level analysis with limited studies at the individual sector level. Therefore, there are at best too scanty studies with regards to the significant factors which determine FDI inflows across various economic sectors in Ghana. To the best of the researchers' knowledge, there is only one relevant study conducted by Harvey & Abor (2009) in the context of Ghana. However, their study focused only on manufacturing sector using firm-level data and examined microeconomic factors as FDI determinants. This paper contributes to the current research on FDI at sector level in two ways. Firstly, it extends the work of Harvey & Abor (2009) by employing a more recent data and including macroeconomic factors to determine FDI at the manufacturing sector. Secondly, the paper seeks to investigate the significant factors influencing services sector and agricultural sector FDI which have not been studied in Ghana.

The rest of the paper is organized as follows: the next section discusses the existing literature relevant to the study while section 3 discusses the data and empirical strategy. Section 4 discussed the empirical findings and finally, Section 5 concludes the study with some implications for policy.

## 2. LITERATURE REVIEW

### 2.1 Theoretical Literature

At the theoretical front, different theories exist in explaining the decisions and activities of FDI. One of these well-known theories is the Vernon (1966) Product Life-Cycle theory. According to this theory, a firm's product goes through four main stages which include; the introduction stage, growth stage, maturity, and the decline stage, and firms engage in FDI at one of these stages, commonly at the maturity stage. Vernon argues that, as the firm's product reaches the maturity stage, its demand increases significantly. As a result, new firms emerge to produce and compete on similar product by offering different incentives to buyers such as lower prices. Therefore, for the firm to compete successfully with the new entrants or rivals there is the need to engage in FDI through the expansion of its production processes to other markets. The product life-cycle theory according to Kaliappan et al. (2015) explains how FDI is motivated by cost reduction and market seeking.

Another theory largely associated with FDI decisions is the Resource Based View theory. Advocates of this theory explain that, the possession of valuable, rare, non-imitable, and non-substitutable resources enable firms to gain competitive advantage which enhance greater performance (Barney, 1991). Firms in possession of these strategic resources (such as quality brands, modern technology, and managerial

competencies) are motivated to engage in FDI into other markets in order to explore their competitive advantage (Hsu & Pereira, 2008).

Among the theories of FDI, the Dunning Eclectic theory also known as the OLI framework provides the most vivid explanation to why firms and countries engage in foreign direct investment. This theory combines other theories of FDI such as the resource-based view theory and the institutional theory to some extent. The OLI framework explains that, Ownership (O), Locational (L), and Internalization (I) advantages are the key motivations for FDI. As indicated by Dunning (1977), the Ownership advantages represent the competitive strength or advantages possessed by a firm making investment into a new market. Superior brands, competent managerial and technological know-how are some of the resources which indicate a firm's competitive advantage. The Locational (L) advantages outline the factors that make the host nation more attractive for FDI. These factors can be institutional (for example; favourable regulations and regulations) or economic factors (such as market size, inflation, exchange rates, lower labour cost, trade openness etc.). The other component of the OLI framework which is the Internalization (I) advantages explains the ability of firms to operate overseas without partnership through its resourced based advantages. The ownership advantages, the locational advantages and the internalization advantages of the OLI framework has been classified into market seeking, resource seeking and efficiency seeking, serving as the main motivations for FDI from both developing and advanced economies (Dunning, 1993). The Dunning Eclectic theory (OLI framework) has been noted as the classical framework by most studies (Tsikata et al., 2002; Demirhan & Masca, 2008; Zhang, 2011; Osei, 2014) in explaining the determinants of foreign direct investment.

## 2.2 Empirical Literature

Empirically, the literature on the factors determining FDI according to Fedderke & Romm (2006) can be classified as policy factors and non-policy factors. Policy factors are presented to include a country's level of openness to trade, tax policies, labour market regulations, infrastructural development, etc. The non-policy factors on the other hand include the factor endowment of the host country, market size, political climate, transportation cost, and economic conditions. The numerous studies conducted on FDI as outlined below, have combined a number of these factors to explain the determinants of FDI in different countries.

In the context of Ghana, Harvey & Abor (2009) employed a logistic regression model to examine the determinants of FDI in Ghana using the manufacturing sector as a case study. Firm age, capital requirement in a sector, firm size, labour cost, and the level of technology were tested to establish their relationship with FDI inflows in the Ghanaian manufacturing sector. The study identified firm size, technological intensity, capital requirement, and labour cost as the significant motivators of FDI in the manufacturing sector.

Applying the GMM estimation technique, Ramasamy & Yeung (2010) assessed the determinants of FDI in services of OECD countries while taking into consideration the manufacturing sector. They employed panel data spanning 1980-2003. Their findings reported that strategic asset seeking (in terms of openness, risk), market seeking (in

terms of GDP and GDP growth), and efficiency seeking (education, infrastructure, and interest rate) significantly influence FDI in both services and manufacturing sectors.

Zhang (2011) conducted a panel data regression analysis to find out which factors significantly determine the increasing pattern of FDI inflows in China. Zhang considered 14 sectors with sector level data covering the period 1990-2008, and the measurable variables were market size, wage rate, employment by sector, and the degree of state ownership. The findings presented low labour cost and market size as the key FDI determinants at sector level in China.

Anwar et al. (2013) assessed the determinants of FDI inflows in Pakistan's agricultural sector. The empirical findings showed that GDP (market size), trade openness, and government debt are significant factors determining FDI inflows in Pakistan's agricultural sector. They further revealed that inflation and exchange rate are not significant in attracting FDI to the agricultural sector.

Bhasin (2014) in identifying the major determinants of services sector FDI in India, analyzed different variables using ordinary least square regression analysis. The results indicated that India service sector FDI is determined by market size, labour efficiency, and trade openness.

Donwa et al. (2015) analyzed the determinants of FDI in to the oil and gas sector of Nigeria. The study reported that FDI in the oil and gas sector is influenced by domestic market size, trade openness, inflation, exchange rate, and economic policies.

Polat & Payaslıoğlu (2015) examined the determinants of FDI inflows to Turkey using sector level data spanning 2007 to 2012. Evidence from the random and fixed effects analysis showed that turnover indices and investment incentives are positively related to sector level FDI whereas country risk index, prices, and taxes established a negative relationship with FDI.

According to Rashid & Razak (2016), FDI in agriculture sector reacts positively to market size and inflation, and negatively to poverty, exchange rate and infrastructure in selected OIC Countries (Malaysia, Oman and Brunei). The study however confirmed none of the variables as significant to FDI inflows.

Li et al. (2017) empirically analyzed the determinants of FDI localization in China with a focused on pharmaceutical sector. By using discrete choice models, the results showed that locational advantages, preferential policies and sector agglomeration have positive effect on FDI localization of pharmaceutical sector. The results also revealed that strict environmental regulations do not attract investment.

In Nigeria, Arawomo & Apanisile (2018) assessed the key factors driving FDI in the telecommunication sector. Using annual sector level data from 1986-2014 with the Autoregressive Distributed Lag (ARDL) approach, the results found that market size and trade openness have positive significant effect on FDI. Inflation and real interest rate on the other hand showed a negative significant effect on telecommunication sector FDI.

The literature review presented has shown that there exist numerous theories and scholarly works on the determinants of FDI at sector level. However, there are few contradictory findings on the subject matter. This may be due to the different approaches employed by scholars. The review has also shown that there exists only one study (by Harvey & Abor, 2009) on the determinants of sector level FDI in Ghana. This therefore presents enough room for future research works to be done on the determinants of FDI at sector level in the Ghanaian context.

## 3. RESEARCH METHODOLOGY

### 3.1 Sample Size and Sources of Data

Three sectors (Agriculture sector, Services sector, and Manufacturing sector) were selected for this study based on the amount of data available. The study primarily used secondary data sources. The data for the sector FDI was obtained from the various reports of the Ghana Investment Promotion Centre which keeps records on registered projects by sector on quarterly basis. Figures for independent variables; market size (GDP), trade openness, infrastructure development, exchange rate, and inflation were obtained from the World Bank database. The data on labour cost was obtained from the Ghana Statistical Service annual reports. Reliability has been a major challenge associated with secondary data (Vartanian, 2011). To attest the reliability of the data collected, figures for the annual GDP, inflation rate, exchange rate, and wage rate collected was compared with the figures from the Bank of Ghana and other economic data sources to confirm that they were synchronized.

### 3.2 Selection of Variables

As outlined in the literature review, market seeking, efficiency seeking, and resource seeking provide the basic motivations for FDI. Several factors in the literature have been identified as measures of these motivations. Among the identified variables include; market size, labour cost, innovation level, infrastructure development, openness degree, the level of education, inflation, exchange rates, research and development, etc. Based on data availability, this study has selected six variables (as outlined in Table 1 below) as the possible determinants of sector level FDI in Ghana.

**Table 1.** Measurement of Variables

| Variable | Definition |
|---|---|
| FDI | FDI by individual sector |
| Market Size | Gross Domestic Product (GDP) |
| Exchange Rate | The real exchange rate |
| Trade Openness | The summation of imports and exports divided by GDP for a period |
| Inflation | Consumer price index |
| Labour Cost | The average wage rate |
| Infrastructure | The number of internet users per 100 people |

### 3.3 Model and Data Analytical Approach

Based on the variables selected, the model of the study is as follows:

$FDI = \alpha + \beta_1 MSize + \beta_2 WR + \beta_3 TOP + \beta_4 INFR + \beta_5 EX + \beta_6 INFL + \varepsilon$

where $\alpha$ is the intercept, and $\beta_1$ to $\beta_6$ represents the regression parameters in the model which are to be estimated, and can either be positive or negative. *FDI* is the value of Foreign Direct Investment by sector serving as the dependent variable. Market size, Labour Cost, Trade openness, Infrastructure development, Exchange rate, and Inflation represent the independent variables which are denoted by *MSize, WR, TOP, INFR, EX, and INFL* respectively. $\varepsilon$ in the model refers to the error term.

Regression analysis was carried out using the Ordinary Least Squares (OLS) estimation technique. The OLS estimates are the most reliable regression estimates because of their general quality of minimized bias and variance (Koutsoyiannis, 2003).

## 4. ANALYSIS AND RESULTS

### 4.1 Descriptive Statistics

Before establishing the major variables determining the inflows of FDI in the selected sectors, descriptive statistics was carried out on the potential variables. From the summary of the descriptive statistics in Table 2, market size has the highest mean value and the highest standard deviation of 22899 and 14957.86 respectively. The high standard deviation of market size (which is measured by GDP) indicates the fluctuating nature of Ghana's GDP. Also, as indicated in the descriptive statistics table, labour cost (measured by wage rate) has the lowest standard deviation and mean value. The lower standard deviation of labour cost depicts less variation in the cost of labour in Ghana for the period 2000 to 2014.

**Table 2.** Descriptive Statistics

| Variables | Mean | Stand Dev. | Minimum | Maximum |
|-----------|------|-----------|---------|---------|
| AgricFDI | 111.81 | 153.63 | 4.28 | 512.59 |
| ServFDI | 431.52 | 450.70 | 7.91 | 1281.59 |
| ManuFDI | 782.18 | 1275.77 | 9.58 | 4826.34 |
| Market Size | 22898.99 | 14957.86 | 4983.02 | 47805.07 |
| Exchange Rate | 63.17 | 47.08 | 0 | 107.74 |
| Trade Openness | 53.92 | 41.47 | 0 | 116.21 |
| Inflation | 16.03 | 7.13 | 8.70 | 32.90 |
| Labour Cost | 2.40 | 1.77 | 0.42 | 6.00 |
| Infrastructure | 5.39 | 5.38 | 0.20 | 18.90 |

### 4.2 Empirical Results on the Determinants of sector FDI in Ghana

Table 3 presents the empirical results of the multiple regression analysis on the determinants of sector level FDI in Ghana.

**Table 3.** Results of the Regression Analysis

| | Model 1 | Model 2 | Model 3 |
|---|---------|---------|---------|

|  | (Agricultural Sector) | (Services Sector) | (Manufacturing Sector) |
|---|---|---|---|
| **(Constant)** | (0.587) 0.573 | (-0.002) 0.998 | (-1.716) 0.124 |
| **Market Size** | (2.927) 0.0191* | (1.654) 0.137 | (-0.956) 0.367 |
| **Exchange Rate** | (-0.816) 0.438 | (-4.397) 0.002* | (1.921) 0.091 |
| **Trade Openness** | (0.684) 0.513 | (6.484) 0.000* | (0.562) 0.589 |
| **Inflation** | (-0.111) 0.914 | (0.301) 0.771 | (-0.076) 0.941 |
| **Labour Cost** | (-2.700) 0.0271* | (-1.166) 0.277 | (0.278) 0.788 |
| **Infrastructure** | (2.001) 0.0804 | (1.383) 0.204 | (0.935) 0.377 |
| **R²** | 0.649 | 0.959 | 0.564 |
| **Adjusted R²** | 0.385 | 0.928 | 0.238 |
| **DW Statistic** | 2.18 | 2.90 | 2.44 |

*Notes: Figures in parenthesis represent t- value    * denotes statistically significant at 5% level*

The results obtained in Table 3 indicate that the dependent variable (FDI by sector) and the independent variables in the regression models fit well as the $R^2$ values equate to 0.649, 0.959 and 0.564 respectively. The $R^2$ values further illustrate that the independent variables explain most of the variations in FDI in the three sectors considered. That is, about 64.9% of the variations in Agriculture sector FDI, 95.9% of variations in Services sector FDI, and 56.4% of variations in Manufacturing sector FDI are as a result of changes in market size, exchange rate, trade openness, inflation, labour cost, and infrastructure development. The Durbin-Watson statistic of 2.18, 2.90 and 2.44 in Model 1, Model 2 and Model 3 respectively indicate no autocorrelation signifying that the models are more reliable.

From Model 1 which depicts the determinants of FDI in the Agriculture sector, the results show that market size, trade openness, and infrastructure development have positive coefficients indicating a positive and direct relationship with Agriculture sector FDI. This indicates that a significant growth in these variables will lead to more inflows of FDI in the Agriculture sector. Exchange rate, inflation, and labour cost on the other hand are found to be negatively related to Agriculture sector FDI portraying that an increase in the amount of these variables will bring about a decrease in the inflows of FDI in the Agriculture sector.  At 5% level of significance, only market size and labour cost are found to be statistically significant, therefore serve as the major determinants of FDI in the Agriculture Sector. The significance of market size as a determining factor of FDI in the agricultural sector is consistent with the findings of Rashid and Razak (2016).

Model 2 illustrates the determinants of FDI in the Services sector. From the regression results, FDI in the Services sector is positively related to market size, trade openness, inflation, and infrastructure development. This means that FDI in the services sector increases as these variables surge. The positive value of inflation, which conforms to the expectation of this study, means that as Ghana's inflation increases (within certain range) investors are motivated to invest in the Services sector. This is because increases in prices of services provide a mechanism for the investors to maximize their profits.

Expectedly, the results present exchange rate and labour cost to relate negatively with Services sector FDI. Also, from the results, only exchange rate and trade openness are significant; hence serve as the key determinants of FDI in the Services sector. This result supports the findings of Bhasin (2014) who established trade openness as a significant variable influencing FDI in the services sector.

From the results in Model 3, Manufacturing sector FDI has a positive relationship with exchange rate, trade openness, labour Cost, and infrastructure development. On the other hand, as shown in the model, market size and inflation interrelated negatively with Manufacturing sector FDI. However, none of the variables have been found to be statistically significant. This means that the variables considered in this study do not significantly predict the inflow of FDI in the Manufacturing sector. The insignificance of the variables contradicts previous literature (Galan & Benito, 2001; Harvey & Abor, 2009; Anwar et al., 2013).


## 5. CONCLUSION

FDI has made a massive contribution to the economic development of Ghana. The amount of FDI in the country has increased substantially over the years with each sector contributing enormously to the economic growth of the country. This study empirically examined the significant factors influencing the inflow of FDI into the economic sectors of Ghana taking into consideration the Agriculture sector, Services sector, and Manufacturing sector. From the findings of this study, FDI in the Agricultural sector is influenced by market size and labour cost. For the Services sector, exchange rate and trade openness have been found to have a significant influence on the sector FDI. None of the variables however have significant influence on FDI in the Manufacturing sector.

The outcome of this study presents important implications for policy makers. Firstly, it is important to note that, since the country's market size significantly determines FDI inflows, it is imperative for the government to implement strategies that will enhance growth in the country's Gross Domestic Product. Secondly, as presented in the findings, trade openness significantly predicts the value of FDI inflows into the Services sector. Therefore, the government should enforce deregulation policies to further open up the economy for foreign investors in order to enhance more FDI inflows. Also, the significance of labour cost in determining FDI in the Agriculture sector has a policy implication. In order to attract more FDI into the country, stakeholders such as the Ghana Investment Promotion Centre should work in a close relationship with the Ghana Labour Commission and labour unions to ensure that the labour market is friendly to foreign investors by keeping wage rate at a minimum. In addition, although infrastructural development does not significantly predict FDI in any of the sectors, it has a positive relationship with FDI inflows in all the sectors. Therefore, it is crucial for the government to make massive investments in providing infrastructural facilities (for example, good transportation, energy resources and telecommunication) in order to make the country conducive and competitive for foreign investors. Finally, this study offers implications for academic researchers. The study adds to the vast literature on the determinants of FDI at sector level in developing countries, particularly Ghana.

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