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THE IMPACT OF CHINESE FDI ON EMPLOYMENT GENERATION IN THE BUILDING AND CONSTRUCTION SECTOR OF GHANA†

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Abstract

One of the major concerns of governments in Africa in general and Ghana in particular is unemployment and underemployment. Most developing countries especially African countries compete to attract foreign direct investment (FDI) into their economies with the desire of improving employment level and securing a sustainable development leading to economic growth. In view of this, the creation of jobs for the unemployed and technology transfer through Chinese investments has become complementary since Chinese FDI can be an important source for employment, economic growth and transformation processes. This study focuses on the contribution of China's FDI on employment generation in the building and construction sector of Ghana. By using a robust regression model, the results show that, Chinese FDI flows on employment through direct effects on building and construction sector of Ghana have positive and significance on employment growth. This means that, Chinese FDI contributes to an efficient workforce which benefits an economy from high productivity and leads to growth in individual household incomes.

Keywords: Chinese FDI, Employment Generation, Employment Sector, Economic Growth, Labor Market

1. Introduction

Developed and developing countries view FDI as one of the most important areas for the growth of their economies. In line with this, Ghana became a recipient of FDI inflows in the early 1990s after opening up its economy to overseas investments and funds from donor agencies such as the World Bank and the International Monetary Fund (IMF). The World Bank and the IMF help shift Ghana's economy from fiscal and monetary policies that were characterized by inefficient performance to a privatization policy-based approach on a pragmatic capitalist system in order

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to attract FDI from foreign countries. The World Bank working group in 2013 defined FDI as the net inflows of investment to acquire a lasting management interest in an enterprise operating in an economy other than that of the investor. Studies have shown that, influx of FDI contributes to the growth of an economy and this can in a way increase the chances of creating jobs. Many governments of developing countries have strategically outlined measures to improve FDI accumulation which has a direct impact on national development to increase employment. Ghana hopes that the Chinese FDI can have positive effects on the Ghanaian employment sector in order to contribute to economic development and reducing poverty in the Ghanaian economy. Therefore, FDI can play a major role in curbing this issue of employment creation since it is one of the most sensitive areas for developing countries especially Ghana.

The International Labor Organization (ILO, 1993) in its 15th International Conference of Labor Statisticians Report defined employment as "persons in employment comprises of all persons above a specified age for measuring the economically active population (e.g. 15 years) who during a specified short period, either one week or one day, were in paid employment or self-employment." Indeed, employment creation is one of the important objectives of development planning in a country. However, most new employment opportunities created are in the informal sector where growth rate is high compared to the formal sector. So, bridging the gap between targeted investments and domestic equity (Nahidi and Badri, 2014) can promote growth and reduce poverty in host countries. Although unemployment remains a major development issue in Ghana, recent improvements in Ghana's economic growth policies has not impacted positively on employment. Interestingly, poverty is still high at about 28.5% that clearly indicates that, the problem of employment is closely interlinked with the eradication of poverty. Again, the Ministry of Employment and Social Welfare of Ghana (MESW) in their National Employment Policy Report (2012) revealed that, out of the total population of about 25 million people in Ghana, about 7 million people live in poverty and over 4 million are in extreme poverty. This means that, the absolute number of people in poverty remains high and thus a major concern for the government of Ghana.

Many studies have raised the question whether FDI contributes to employment generation and a reduction of labor market problems in a country. Hill and Athukorala (1998) in their research "Foreign Investment in East Asia: A Survey" have shown that FDI's impact on the host country has been generally favorable in most developing countries since there have been visible positive impact on the creation of jobs in sectors attracting FDI inflows and occasionally in supportive domestic industries. Also, Buffie (1993) assessed the impact of foreign investment on underemployment in a two-sector dual economy model. He opined that, foreign investments lowered the level of manufacturing sector employment in the long run. He further indicated that foreign investment in the primary export sector was unambiguously welfare enhancing viewed over the entire transition part. However, Waldkirch *et al.* (2009) argued that, FDI had a quantitatively modest but significantly positive impact on manufacturing employment in Mexico by employing the GMM estimator suggested by Arellano and Bond (1991). Another study was conducted by Altzinger and Bellak (1999) into the relatively better domestic employment performance of direct FDI compared to indirect FDI and how it could be linked to FDI abroad showed that, direct FDI were more strongly determined by labor costs while indirect FDI was based relatively more on market seeking investment. Also, Federico and Alfredo (2007) surveyed 12 manufacturing industries and 103 administrative provinces during the 1996-2001 periods to assess the impact of Italy's outward FDI on domestic employment growth. Their investigations revealed that, FDI is associated with faster domestic employment growth that is relative to the national industry average with the control for the domestic industrial structure and area fixed effects. However, their findings also didn't support the phenomena that FDI was harming the domestic employment growth in the home country although higher levels of FDI negatively affected employment in small plants. Furthermore, Ndikuma and Verick (2008) stated that a key channel of FDI's impact on development was through effects on domestic factor markets, especially employment. This assessment was made based on the recent increase in FDI to African countries and numerous questions raised as to the impact it has on economic development and employment growth. Their findings suggested that, countries would gain much

from measures employed in improving domestic investments which inadvertently increases employment growth.

FDI inflows encourage the local enterprises to increases investments in the development projects and provide employment opportunities for the skilled and unskilled labor in the recipient country. Ghana Investment Promotion Center (GIPC, 2013) announced that, China was the leading contributor of FDI flow in Ghana with US$ 513.8 million in investment as at the end of 2012. The GIPC further stated that, the total employment generated by Chinese FDI stood at about 19,000 and Ghanaians received 15,932 (representing 84%) of total employment generated. The focus of this study is to undertake an empirical study regarding the relation between Chinese FDI and employment generation in Ghana during 2000 – 2012. The research is also categorized into various sections and section 1 will present the introduction followed by theoretical review while section 2 will focus on the nature of the Ghanaian labor market. Section 3 will focus on the research methodology and data followed by empirical results while section 4 is the summary and concluding remarks.

1.1. Theoretical Background and Hypothesis

Over the years, FDI has been one of the major issues researched about in most academic papers due to the influence it exerts on a country's economy. Various economists have stated that, FDI plays a major role in the global economic development (Massoud, 2008). Both developed and developing economies consider employment generation as a huge problem that affects the stability of their economies and as such, FDI can help curb this difficulty and attract some gains to help cushion the shortage of capital in economies in general and developing countries in particular. FDI brings about employment creation and new production capacity to improve the development of relevant industries leading to the economic growth of a country. The direct effects of FDI on employment occur when investments by foreign firms are beneficial as against the comparative advantage of host countries' domestic labor. Chen (2012) stated that, it will be a mistake and inexpedient if countries copy each other to deal with the issues of FDI since individual countries has different FDI situations and economic structures. Trade theory states that, FDI can ameliorate resource allocation which will lead to a rise in the levels of labor productivity and advertently an increase in employment. The theory further elaborates that; the effects of FDI on the levels of labor productivity can be directly affected by foreign firms operating in a host country. Nevertheless, there could be indirect effects on the host country if there is an improvement in the allocation of FDI towards employment generation. Host countries can be recipients of knowledge and skills as a result of FDI to improve labor productivity through the transfer of resources to improve host countries employment (Mahdavi and Aziz, 2004). However, employment may be reduced when FDI is linked to the integration of production units used for the optimization of developmental activities of manufacturing firms (William, 1999). Based on these assumptions, the following hypotheses were derived:

H1: Chinese FDI flows affect employment through direct effects on building and construction sector of Ghana.

H2: Chinese FDI flows affect employment through indirect effects on building and construction sector of Ghana.

Attracting FDI has been a key aspect of many developing countries developmental schemes due to the enormous contributions of FDI towards employment generation and economic growth. Due to this, the functions of governments have changed from being just economic players to a provider of an environment of doing business to achieve the full potential and benefits of FDI inflows. Therefore, there is the need to provide check and balances to avoid the abuse of power and authority allocated to various government departments and agencies that have oversight of FDI activities. These monitoring mechanisms give supervising agencies the licenses to monitor, reward and punish unacceptable behaviors concerning employment quotas in the industry since FDI can affect domestic investment. This will then be difficult to control

when over dependence on foreign interests is on the rise. Also, uncontrolled competition between regions in a country and among other countries (Ernst, 2005) can prevent the necessary investments in technical equipment and skilled labor which would create sustainable economic growth and employment generation. If the government of FDI recipient country is able to check the activities of both foreign and domestic firms, host governments will be able to systematically control and direct the activities in a well-developed industry. Since governments are also expected to create the environment for FDI inflows to increase domestic productivity, competition and improving international competitiveness. This will also alleviate integration into the global market and the creation of linkages with the domestic economy and participation in globalized production patterns. Based on the above assumptions, the following hypothesis was formulated:

H3: Government of Ghana policies affects the impact of foreign direct investment state in H1 and H2.

2. Nature of Ghana's Labor Market

Ghana is endowed with natural resources such as gold, diamond and quite recently oil. Gold is a major source of foreign exchange for Ghana and between 2008 and 2011, high prices for gold contributed to the good economic growth. In 2007, the industrial and service sectors accounted for about 50% and 30% of gross domestic product (GDP) respectively which was a huge contributing factor to the growth of Ghana's economy. On the issue of FDI, Ghana recorded about US$3 billion per year of FDI between 2009 and 2011which accounted for 8% and 14.4% of GDP growth in 2010 and 2011 respectively.

Despite Ghana's great progress in its economic growth, its labor market where workers find paying jobs, and employers find willing workers at a determined wage rates still has its own challenges. One of the most important socioeconomic matters that give policymakers of Ghana a nightmare is the lack of employment. The formal economy in the Ghana labor market employs about 10% out of the total labor force and the informal economy takes the remaining 90% workforce. In addition, the low rate of workforce in the formal economy is due to lower earnings by government workers compared to their counterparts in the private sector who enjoy high salaries. However, private sector employees mostly have higher job insecurity whilst government workers earn lower wages but have a guaranteed job security. This tends to be a dilemma for the working class in Ghana when making a choice to work in the public sector or the private sector.

Interestingly, there has been an abundant supply of labor force and the rising share of youth population after the 2010 Population and Housing Census exercises revealed that, Ghana's populations now stands at 25 million. This increase in population was due to the improved and modern technological medical facilities that resulted in a high fertility rate (Ghana Statistical Service, 2012). However, this creates another problem since the labor market becomes inefficient to either engage or create enough jobs for the economically youthful population resulting to an oversupply of labor. Notwithstanding, a very large proportion of workers in Ghana have secured employment in the informal economy due to the dynamic and flexible nature of this sector towards self-employment. Although the informal economy such as the agricultural sector employs about 50% of Ghana's labor force which accounts for the majority of the labor force in Ghana, its relevance in the provision of alternative employment opportunities in the country is minimal. This is because, the workers in this sector engage in agricultural and rural activities seen by many as the work for illiterates or people with less education, thus, undermining the crucial role it plays in tackling the issue of poverty alleviation. In addition, ILO-World Employment Report (1998) remarked that, "the level and quality of skills that a nation possesses are becoming critical factors" and as such "the root and branch of global competitiveness" is education and training (ILO, 1998, 10). In line with this, higher educational institutions in Ghana should re-align their educational objectives with the requirements of the economy to develop the human resource capacity to meet challenges posed by the domestic and international economy.

Over the past two decades, the Ghanaian labor market has undergone tremendous transformation as a result of the government's involvement in productive economic activities coupled with globalization. However, in recent times, the labor market has been hit with increasing number of underemployment issues contrary to the increasing open unemployment among tertiary students notably the university and polytechnic graduates. In lieu of this, the World Economic Forum/HIID (1998) points out that, Ghana is ahead of other African countries in terms of the supply of educated labor force. Nevertheless, finding a job is difficult in Ghana, and so, in the pursuit of happiness and survival to meet basic needs, people tend to offer to work even for lower wages. Therefore, many employers have taken advantage of this situation to maltreat employees by making them work for long hours with very little pay since they can substitute them at any time which causes vulnerability among workers. This usually makes workers seem workaholics but less productive at work. Hence, many pundits have cast serious doubts about Ghana's ability to cope with the ever changing and competitive global market considering the level of skills in the labor market now (See Table 1).

Table 1. Ghana's Industrial Distribution of the Employed by Sex

Industry	Male (%)	Female (%)	Total Average (%)
Agriculture	59.1	52.7	55.9
Fishing	2.3	0.5	1.4
Mining	1.1	0.3	0.7
Manufacturing	8.5	13.3	10.9
Electricity	0.3	0.1	0.2
Construction	3.5	0.1	1.8
Trade	8.4	21.6	15
Hotel & Restaurants	0.6	3.1	1.85
Transport & Communication	5.2	0.5	2.85
Financial Services	0.5	0.1	0.3
Real Estates	1.4	0.3	0.85
Public Administration	2.1	0.6	1.35
Education	3.6	2.3	2.95
Health and Social Work	0.8	0.8	0.8
Other Community Services	2	3.4	2.7
Activities of Private Households	0.4	0.3	0.35
Extra Territorial Organizations	0.1	0	0.05
Total	100	100	100

Source: Ghana Statistical Service, 2008.

2.1. Chinese FDI in Ghana at a Glance

China became the main source of FDI to Ghana in 2009, and by the turn of 2010, nearly more than 500 registered Chinese companies were undertaking projects in mining, mineral extractions, construction and oil and gas explorations. In 2009, China's FDI in the country was US$ 552 million and the volume of trade hit an impressive US$ 3.47 billion in 2011 at a growth rate of 69%. It jumped to US$ 5.12 billion in trade volumes at the end of 2012 with increases in total direct investments over US$ 500 million. What is more, the Chinese Embassy in Ghana reported that, the non-financial aspect of the Chinese FDIs had reached $101.14 million and bilateral trading volume between China and Ghana registered $5,434 billion in 2012.

Table 2. China's FDI as a Percentage of Total Investment in Ghana, 2000 – 2012

Year	Chinese FDI (US$m)	Annual Change (%)	Total FDI (US$m)	Annual Change (%)	China % share of Total FDI (%)	Annual Change (%)
2000	4.63	-	132.06	-	3.51	-
2001	6.42	39%	97.94	-26%	6.56	87%
2002	2.56	-60%	69.67	-29%	3.67	-44%
2003	2	-22%	118.48	70%	1.69	-54%
2004	2.83	42%	205.01	73%	1.38	-18%
2005	16.85	495%	213.74	4%	7.88	471%
2006	14.23	-16%	2,367.87	1008%	0.6	-92%
2007	153.17	976%	359.01	-85%	42.66	7010%
2008	11.7	-92%	3,540.13	886%	0.33	-99%
2009	22.96	96%	627.73	-82%	3.66	1009%
2010	96.47	320%	1278.59	104%	7.55	106%
2011	145.51	51%	7,685.57	501%	1.89	-75%
2012	34.47	-76%	5,630.70	-27%	0.61	-68%

Source: The annual change was Authors calculation based on data from Ghana Investment Promotion Centre, 2013.

Table 2 shows the total FDI (in US$ million) from China to Ghana between the years 2000 and 2012. In general, Ghana recorded US$ 513.8 million from 2000 to 2012 as a total of Chinese investments. China invested heavily in 2007 of all the years with US$ 153.17 million, and this makes it the largest percentage share of total investments at 42.66 percent. Investments decreased drastically in 2008 to 0.33 percent probably due to the global financial crisis but there was a rapid increase in investments from 2008 through to 2011 until it sharply decreased again in 2012. China's second largest investment flow to Ghana was in 2011, as they invested US$ 145.51 million. The lowest of Chinese share of total investment was recorded in 2003 with only US$ 2 million of investments coming from China.

2.2. Impact of China's FDI on Employment in Ghana

Ghana's economic achievements were because of its dependence on agriculture and natural resources. According to the Ghana Statistical Service, Ghanaians are increasingly demanding for employment , higher incomes, better educational facilities, better hospitals and as well as better environments to live. To meet these demands, Chinese investments have contributed immensely to employment and expected employment to be generated from newly registered projects.

Table 3 illustrates the total employment generation by Chinese companies from 2000 to 2012. Overall, the total employment generated stood at 19,000. The number of employment generations allocated to Ghanaians was 15,932, as it makes up 83.85 percent. Expatriates made up the remaining 3,068, which stood at 16.15 percent. There was an increase from 2003 to 2008 employment generation, and then it dropped in 2009. Although there was a decrease between 2008 and 2009 probably due to the global financial crisis, there was a dramatic increase from 2009 to 2010. The highest employment generation was in 2010 with 3,530 representing 2,791 Ghanaians and 739 expatriates respectively. What is more, the lowest employment generation was in 2000 with 229 representing 197 Ghanaians and 32 expatriates respectively.

Table 3.Total Employment Generation by Chinese Companies, 2000 – 2012

Year	Ghanaians	Annual Change (%)	Non – Ghanaians	Annual Change (%)	Total	Annual Change (%)
2000	197	-	32	-	229	-
2001	449	128%	60	88%	509	122%
2002	428	-5%	76	27%	504	-1%
2003	206	-52%	56	-26%	262	-48%
2004	385	87%	70	25%	455	74%
2005	1,078	180%	149	113%	1,227	170%
2006	1,350	25%	203	36%	1,553	27%
2007	1,816	35%	330	63%	2,146	38%
2008	2,062	14%	262	-21%	2,324	8%
2009	1,301	-37%	245	-6%	1,546	-33%
2010	2,791	115%	739	202%	3,530	128%
2011	2,649	-5%	575	-22%	3,224	-9%
2012	1,220	-54%	271	-53%	1,491	-54%
Total	15,932		3,068		19,000	

Source: The annual change was Authors calculation based on data from Ghana Investment Promotion Centre, 2013.

Table 4 shows the total sector breakdown of employment generation by Chinese companies from 2000 to 2012. In general, the Manufacturing sector recorded the highest number of employment generation with 7,355 representing 6,377 Ghanaians and 978 Non-Ghanaians. The general trading sector came in second with 3,987 representing 3,287 Ghanaians and 700 Non-Ghanaians. The building and construction came in third with 3,167 representing 2,631 Ghanaians and 536 Non-Ghanaians. The Liaison sector came in last place with the lowest number of employment generation at 212 representing 77 Ghanaians and 135 Non-Ghanaians.

Table 4.Total Sector Breakdown of Employment Generation by Chinese Companies, 2000-2012

Sectors	Ghanaians	Non – Ghanaians	Total
Agriculture	320	50	370
Building/Construction	2,631	536	3,167
Export Trading	216	56	272
General Trading	3,287	700	3,987
Liaison	77	135	212
Manufacturing	6,377	978	7,355
Service	1,845	426	2,271
Tourism	1,150	179	1,329
Total	15,903	3,060	18,963

Source: Ghana Investment Promotion Centre, 2013.

3. Research Methodology

3.1. Introduction

The questionnaires were distributed among Investors, Economists, Contractors, Civil Servants and Labour Consultants working in the building and construction sector of Ghana. Out of 150 questionnaires distributed, 99 responded (47 of them were Contractors, 25 were Civil Servants, 10 were Investors, 6 were Economists, and the remaining 11 were Labour Consultants). Also, out of the 99 respondents, 39 respondents had less than 5 years working experience, 46 respondents had between 6 to 10 years working experience, and 14 respondents had from 11

to 15 years working experience.The questionnaires used the Likert system of scaling to rank each feature to the extent that it's considered to be important on a scale of 1 to 7 (i.e. 1-Very low, 2-Low, 3-Moderately Low, 4-Fair, 5-Moderately High, 6-High, and 7-Very high).

3.2. Data Sources

The aim of the study is to find out whether China's FDI has any positive effects on employment sector in the building and construction sector of Ghana that can lead to economic growth. Chinese FDI in Ghana's Building and Construction Sector and its impact on employment for the period 2000-2012 data were from Ghana Investment Promotion Centre (GIPC) reports of 2013.

Table 5 shows the Pearson correlation independent variables identified in this study and the dependent variables (increase in employment and increase in low skill). Among the entire variables test to examine the stated hypothesis for this study, a few had a fairly significant correlation with the dependent variables. Although these variables did not have a much higher correlation coefficient value, the Aid in local capacity building has the highest correlation value 0.45 with employment growth where Implementation of accountability systems has the highest correlation value of 0.03 with low skill growth. Other variables such as access to financial packages and control mechanism to measure FDI performance within the nation had high correlation values of 0.40 and 0.42 respectively with employment growth while variables such as reduction in occupational health and implementation of investment policies had correlation values of 0.027 and 0.018 respectively with low skill growth. Among the independent variables identified in this study, all of them have a significant relationship with employment growth and most of the independent variables have no significant relationship with low skill growth. This means that, FDI to some extent has a positive influence on employment growth in Ghana as compared to low skill growth. This could be attributed to the alternative ways of financing by investing firms through start-up and operational capital to improve the local capacity by way of training domestic employees in the efficient usage of new technologies to gain competitive advantage over other firms on both national and regional levels. Also, there is the need to be a check and balance system that rewards and punish firms that excel or violate investment protocols to enable effective use of funds in a more symmetrical business environment capable of create sustainable jobs. The independent variables under study contribute to employment growth and to a smaller extent low skill growth.

Table 5. Results of the Correlation Analysis

Dependent Variables	Increase in Employment	Increase in Low Skill
Economic Growth	0.2120	-0.3395
Improvement in infrastructure	0.1433	-0.2317
Access to financial packages	0.4012	-0.1975
Provision of cost effective projects	0.3374	-0.0969
Reduction in occupational health	0.3247	0.0269
Provision of modern infrastructure	0.2529	-0.2643
Execution of timely projects	0.2322	-0.0736
Aid in local capacity building	0.4508	0.0047
Effective investment monitoring	0.1245	-0.1919
Provision of policy framework	0.1906	-0.0535
Implementation of accountability systems	0.0774	0.0336
Training of human resources	0.3978	-0.3347
Rewards and punishment to measure performance	0.4156	0.0109
Implementation of investment policies	0.0038	0.0180

Source: Authors calculation based on data from field survey, 2014.

3.3. Linear Regression

The general purpose of linear regression analysis is to examine more about the predictive model and relation between two different observed variables. This analysis will identify the sets of variables that have a significant influence on the dependent variable and the degree to which it does. The general form of the linear regression model used is:

$$Y = \beta_0 + \beta_1 X_1 + \ldots\ldots\ldots + \beta_n X_n + \varepsilon \qquad (1)$$

Where Y is the dependent variable, β is the regression coefficients, X is the independent variable, and ε is an error term.

Definition of Variables

Variable	Label	Variable	Label
IEM	Increase in employment (dependent variable)	ETM	Execution of timely projects
ILS	Increases in Low Skill (dependent variable)	ACB	Aid in local capacity building
EG	Economic growth		
IMPF	Improvement in infrastructure	EIM	Effective investment monitoring
ACFP	Access to financial packages	PPF	Provision of policy framework
		IAS	Implementation of accountability systems
PRP	Provision of cost effective projects	THR	Training of human resources
ROH	Reduction in occupational health	RMP	Rewards and punishment to measure performance
PMI	Provision of modern infrastructure	IIP	Implementation of investment policies

This study follows the hypothesis 1 and test for the direct impact of Chinese foreign direct investment on employment through direct effects on building and construction sector of Ghana based on the following estimation model:

$$\mathrm{IEM} = \beta_0 + \beta_1 \mathrm{EG} + B_2 \mathrm{IMPF} + B_3 \mathrm{ACFP} + \varepsilon \qquad (2)$$

$$\mathrm{ILS} = \beta_0 + \beta_1 \mathrm{EG} + B_2 \mathrm{IMPF} + B_3 \mathrm{ACFP} + \varepsilon (3)$$

Where the list of independent variables includes EG – economic growth, IMPF – improvement in infrastructure, and ACFP – access to financial packages (see Table 6 for the results of the estimation)

Interpretation of Hypothesis 1 Analysis

Table 6 shows the results of the regression for hypothesis 1. The regression analysis shows the relationship between independent variables and dependent variables. Increase in infrastructure in column (1) has a negative effect on employment growth with coefficient -0.212. This means that, rapid infrastructure development does not translate into employment growth. Also, access to financial packages and economic growth in column (1) has a direct impact on employment growth with coefficients 0.437 and 0.171 respectively. Also, access to financial packages by investing firms to boost their operations and contribute to job creation and employment growth had a t-value of 3.62 at $p < 0.01$ (2-tailed). This means that, one major positive impact of Chinese FDI is to provide an alternative access to financing projects. Also, economic growth

turns to evolve as low skill development had a t-value of 2.60 at $p < 0.05$ (2-tailed) which aids to develop local pool of expertise suited for diverse tasks. Furthermore, the independent variables have 15 percent and 12 percent influence on the dependent variable in columns (1) and (2) respectively. It can be seen that, the overall model fit is much lower as is evident in the r-square values which can be attributed to the large residual values of the data points. The robustness of this model showed that, 75% of the 8 models generated positive coefficient estimates and 25% generated negative estimates. There was no percentage of Significance rate estimates. The robustness t-statistic is 0.1395 indicating that the positive effect of Chinese FDI on employment growth through direct effects on Ghana's buildings and construction sector is a robust conclusion (see Table 7).

Table 6. Results of the Effects of Chinese FDI on Employment through Direct Effects on Building and Construction Sector of Ghana

Dependent Variable	Increase in Employment	Increase in Low Skill
	(1)	(2)
Economic growth	0.171	-0.418
	(0.99)	(2.60)*
Improvement in infrastructure	-0.212	-0.000
	(1.33)	(0.00)
Access to financial packages	0.437	-0.043
	(3.62)**	(0.39)
Constant	2.767	5.766
	(4.23)**	(9.43)**
Observations	99	99
R-squared	0.15	0.12

Notes: *=significant at the 5% level; **=significant at the 1% level; absolute value of t statistics in parentheses. **Source:** Authors calculation based on data from field survey, 2014.

Table 7. Results of Model Robustness of Hypothesis 1 based on Robust Regression

Variable of interest	ILS		
Outcome variable	IEM	Number of observations	99
Possible control terms	3	Mean R-squared	0.08
Number of models	8	Multicollinearity	0.12
Model Robustness Statistics:		Significance Testing:	
Mean(b)	0.0172	Sign Stability	75%
Sampling SE	0.1174	Significance rate	0%
Modeling SE	0.0373	Positive	75%
Total SE	0.1232	Positive and Sig	0%
Robustness Ratio:	0.1395	Negative	25%
		Negative and Sig	0%

Notes: Sample size varies across model specifications; Listwise deletion: 3 out of 102 observations will not be used.

We then look at the hypothesis 2 and test for the direct impact of Chinese foreign direct investment on employment through indirect effects on building and construction sector of Ghana based on the following estimation model:

$$\mathrm{IEM} = \beta_0 + \beta_1 \mathrm{PRP} + \mathrm{B}_2 \mathrm{ROH} + \mathrm{B}_3 \mathrm{PMI} + \mathrm{B}_4 \mathrm{ETM} + \mathrm{B}_5 \mathrm{ACB} + \varepsilon \qquad (4)$$

$$\mathrm{ILS} = \beta_0 + \beta_1 \mathrm{PRP} + \mathrm{B}_2 \mathrm{ROH} + \mathrm{B}_3 \mathrm{PMI} + \mathrm{B}_4 \mathrm{ETM} + \mathrm{B}_5 \mathrm{ACB} + \varepsilon \qquad (5)$$

Where the list of independent variables includes PRP – Provision of cost effective projects, ROH – Reduction in occupational health, PMI – Provision of modern infrastructure,

ETM – Execution of timely projects, and ACB – Aid in local capacity building (see Table 8 for the results of the estimation).

Interpretation of Hypothesis 2 Analysis

Table 8 shows the results of the regression for hypothesis 2. From the robust regression output, it shows that the independent variables had lower co-efficient value with the dependent variables. The Provision of modern infrastructure and the execution of timely projects in column (1) have a negative effective on employment growth with coefficients -0.034 and -0.046 respectively. However, in column (2), the execution of timely projects variable had a positive influence on low skill growth with coefficient 0.098. Also, it is evident in column (1) and (2) that, Chinese FDI positively affects the employment growth and increases low skill through the aid in local capacity building of workforce with a co-efficient values of 0.383 which is significant at one percent level and 0.107 in both columns (1) and (2) respectively. This means that, Chinese FDI contributes to an efficient workforce which benefits an economy from high productivity and leads to growth in individual household incomes. This is evidently so because most FDI is coupled with the transfer of knowledge and technology into this sector. The diffusion and adaptation of this knowledge and technology enables local building and construction firms to build its firms capacity to take on more complex and sophisticated projects. Furthermore, a well-developed local skill set provides a backbone for the achievement of quality and timely execution of projects in this sector. These enable the development a sustainable industrial sector. However, the independent variables have 22 percent and 9 percent influence on the dependent variables in columns (1) and (2) respectively. And this shows that, the independent variable does not have a significant influence on low skill growth. The robustness of this model showed that, 28% of the 32 models generated positive coefficient estimates and 72% generated negative estimates and significant. The robustness t-statistic is -0.1850 indicating that, the positive effect of Chinese FDI on employment growth through indirect effects on Ghana's buildings and construction sector is a robust conclusion (see table 9).

Table 8. Results of the Effects of Chinese FDI on Employment through Indirect Effects on Building and Construction Sector of Ghana

Dependent Variable	Increase in Employment	Increase in Low Skill
	(1)	(2)
Provision of cost effective projects	0.216	0.056
	(1.50)	(0.39)
Reduction in occupational health	0.134	0.032
	(0.95)	(0.23)
Provision of modern infrastructure	-0.034	-0.391
	(0.24)	(2.78)**
Execution of timely projects	-0.046	0.098
	(0.32)	(0.70)
Aid in local capacity building	0.383	0.107
	(3.12)**	(0.88)
Constant	1.778	4.290
	(2.81)**	(6.80)**
Observations	99	99
R-squared	0.22	0.09

Notes: *=significant at the 5% level; **=significant at the 1% level; absolute value of t statistics in parentheses.
Source: Authors calculation based on data from field survey, 2014.

Table 9. Results of Model Robustness of Hypothesis 2 based on Robust Regression

Variable of interest	ILS		
Outcome variable	IEM	Number of observations	99
Possible control terms	5	Mean R-squared	0.15
Number of models	32	Multicollinearity	0.10
Model Robustness Statistics:		Significance Testing:	
Mean(b)	-0.0212	Sign Stability	72%
Sampling SE	0.1126	Significance rate	0%
Modeling SE	0.0223	Positive	28%
Total SE	0.1147	Positive and Sig	0%
Robustness Ratio:	-0.1850	Negative	72%
		Negative and Sig	0%

Notes: Sample size varies across model specifications; Listwise deletion: 3 out of 102 observations will not be used.

The study further looks at the hypothesis 3 and test for the government of Ghana policies affecting the impact of foreign direct investment state in hypothesis 1 and hypothesis 2 based on the following estimation model:

$$\mathrm{IEM} = \beta_0 + \beta_1\mathrm{EG} + \mathrm{B}_2\mathrm{IMPF} + \mathrm{B}_3\mathrm{ACFP} + \beta_4\mathrm{EIM} + \mathrm{B}_5\mathrm{PPF} + \mathrm{B}_6\mathrm{IAS} + \mathrm{B}_7\mathrm{THR} + \mathrm{B}_8\mathrm{RMP} + \mathrm{B}_9\mathrm{IIP} + \varepsilon \quad (6)$$

$$\mathrm{ILS} = \beta_0 + \beta_1\mathrm{EG} + \mathrm{B}_2\mathrm{IMPF} + \mathrm{B}_3\mathrm{ACFP} + \beta_4\mathrm{EIM} + \mathrm{B}_5\mathrm{PPF} + \mathrm{B}_6\mathrm{IAS} + \mathrm{B}_7\mathrm{THR} + \mathrm{B}_8\mathrm{RMP} + \mathrm{B}_9\mathrm{IIP} + \varepsilon \quad (7)$$

Where the list of independent variables includes EG – economic growth, IMPF – improvement in infrastructure, ACFP – access to financial packages, EIM– Effective investment monitoring, PPF – Provision of policy framework, IAS – Implementation of accountability systems, THR –Training of human resources, RMP – Reward and punishment to measure performance, and IIP – Implementation of investment policies.

$$\mathrm{IEM} = \beta_0 + \beta_1\mathrm{PRP} + \mathrm{B}_2\mathrm{ROH} + \mathrm{B}_3\mathrm{PMI} + \mathrm{B}_4\mathrm{ETM} + \mathrm{B}_5\mathrm{ACB} + \beta_6\mathrm{EIM} + \mathrm{B}_7\mathrm{PPF} + \mathrm{B}_8\mathrm{IAS} + \mathrm{B}_9\mathrm{THR} + \mathrm{B}_{10}\mathrm{RMP} + \mathrm{B}_{11}\mathrm{IIP} + \varepsilon \quad (8)$$

$$\mathrm{ILS} = \beta_0 + \beta_1\mathrm{PRP} + \mathrm{B}_2\mathrm{ROH} + \mathrm{B}_3\mathrm{PMI} + \mathrm{B}_4\mathrm{ETM} + \mathrm{B}_5\mathrm{ACB} + \beta_6\mathrm{EIM} + \mathrm{B}_7\mathrm{PPF} + \mathrm{B}_8\mathrm{IAS} + \mathrm{B}_9\mathrm{THR} + \mathrm{B}_{10}\mathrm{RMP} + \mathrm{B}_{11}\mathrm{IIP} + \varepsilon \quad (9)$$

Where the list of independent variables includes PRP – Provision of cost effective projects, ROH – Reduction in occupational health, PMI – Provision of modern infrastructure, ETM – Execution of timely projects, ACB – Aid in local capacity building, EIM– Effective investment monitoring, PPF – Provision of policy framework, IAS – Implementation of accountability systems, THR –Training of human resources, RMP – Reward and punishment to measure performance, IIP – Implementation of investment policies (see Table 10 for the results of the estimation).

Interpretation of Hypothesis 3 Analysis

Table 10 shows the results of the regression for hypothesis 3. The regression analysis shows the relationship between government policies and the impact of Chinese FDI on employment in Ghana's building and construction sector through both direct and indirect effects. The training of human resources variable had the highest regression coefficient with employment growth at 0.483 and it is significant at one percent level. This means that, when government policies compel a vigorous training of its human resource base, it benefits the common people and

businesses. Also, the provision of financial packages and the timely execution of project on a cost-effective manner turn to have an impact on employment and skills increase. This shows that, government policies and regulations have a positive impact on the performance of Chinese FDI by promoting job creation, training, finance and education through the effective distribution and governmental policies on FDI. Table 10 further shows us that, the independent variables have 30 percent, 19 percent, 40 percent and 20 percent influence on the dependent variables in columns (1), (2), (3), and (4) respectively. Although these values may seem to be insignificant, it can be deduced that, robust regression helps eliminates all outliners and give us an absolute value. The robustness of this model showed that, 77% of the 2,048 models generated positive and significant coefficient estimates. The robustness t-statistic is 0.3812 establishing that, the positive effect of government policies affecting the impact of foreign direct investment state in hypothesis 1 and hypothesis 2 is a robust conclusion (see Table 11).

Table 10. Results of the Government of Ghana Policies Affecting the Impact of FDI State in Hypothesis 1 and Hypothesis 2

Dependent Variable	Increase in Employment	Increase in Low Skill	Increase in Employment	Increase in Low Skill
	(1)	(2)	(3)	(4)
Economic growth	0.105	-0.271		
	(0.60)	(1.53)		
Improvement in infrastructure	-0.121	0.034		
	(0.78)	(0.21)		
Access to financial packages	0.315	-0.088		
	(2.44)*	(0.67)		
Effective investment monitoring	-0.176	-0.013	-0.135	-0.154
	(1.11)	(0.08)	(0.98)	(1.06)
Provision of policy framework	0.013	0.061	-0.154	0.074
	(0.09)	(0.41)	(1.03)	(0.46)
Implementation of accountability systems	0.109	0.013	0.066	0.066
	(0.66)	(0.08)	(0.44)	(0.41)
Training of human resources	0.319	-0.381	0.483	-0.384
	(2.23)*	(2.63)*	(3.34)**	(2.51)*
Rewards and punishment to measure performance	0.227	0.196	0.234	0.090
	(1.77)	(1.52)	(2.00)*	(0.72)
Implementation of investment policies	-0.134	0.045	-0.133	0.007
	(1.07)	(0.35)	(1.11)	(0.05)
Provision of cost effective projects			0.290	-0.046
			(2.02)*	(0.30)
Reduction in occupational health			-0.068	0.150
			(0.48)	(0.99)
Provision of modern infrastructure			-0.140	-0.218
			(0.97)	(1.41)
Execution of timely projects			-0.038	0.088
			(0.29)	(0.63)
Aid in local capacity building			0.394	0.071
			(3.32)**	(0.56)
Constant	1.884	5.478	1.254	4.832
	(2.24)*	(6.44)**	(1.60)	(5.83)**
Observations	99	99	99	99
R-squared	0.30	0.19	0.40	0.20

Notes: *=significant at the 5% level; **=significant at the 1% level; absolute value of t statistics in parentheses.
Source: Authors calculation based on data from field survey, 2014.

Table 11. Results of model robustness of Hypothesis 3 based on robust regression

Variable of interest	ILS		
Outcome variable	IEM	Number of observations	99
Possible control terms	14	Mean R-squared	0.28
Number of models	16,384	Multicollinearity	0.24
Model Robustness Statistics:		Significance Testing:	
Mean(b)	0.0473	Sign Stability	77%
Sampling SE	0.1126	Significance rate	0%
Modeling SE	0.0517	Positive	77%
Total SE	0.1240	Positive and Sig	0%
Robustness Ratio:	0.3812	Negative	23%
		Negative and Sig	0%

Notes: Sample size varies across model specifications; Listwise deletion: 3 out of 102 observations will not be used.

4. Conclusion

One of the major concerns of governments in Africa in general and Ghana in particular is unemployment and underemployment. Most developing countries especially African countries compete to attract foreign direct investment into their economies with the desire of improving employment level and securing a sustainable development leading to economic growth. In view of this, the creation of jobs for the unemployed and technology transfer through Chinese investments has become complementary since Chinese FDI can be an important source for employment, economic growth and transformation processes.

This study was looking at the contribution of China's FDI on employment generation in the building and construction sector of Ghana. The study showed that, Chinese FDI flows affect employment through direct effects on building and construction sector of Ghana have positive and significance on employment growth. Also, increase in infrastructure had a negative effect on employment growth which means that rapid infrastructure development does not translate into employment growth. Also, access to financial packages and economic growth has a direct impact on employment growth. The study further showed that, Chinese FDI flows affect employment through indirect effects on building and construction sector of Ghana have a much lower relationship with employment growth. The Provision of modern infrastructure and the execution of timely projects have a negative effect on employment growth. However, Chinese FDI positively affects the employment growth and increases low skill through the aid in local capacity building of workforce. This means that, Chinese FDI contributes to an efficient workforce which benefits an economy from high productivity and leads to growth in individual household incomes.

In addition, the study found that, there was a relationship between government policies and the impact of Chinese FDI in Ghana's building and construction sector affect employment through both direct and indirect effects. The training of human resources had a positive effect with employment growth. This means that, when government policies compel a vigorous training of its human resource base, it benefits the common people and businesses. Also, the provision of financial packages and the timely execution of project on a cost-effective manner turn to have an impact on employment and skills increase. This shows that, government policies and regulations have a positive impact on the performance of Chinese FDI by promoting job creation, training, finance and education through the effective distribution and governmental policies on FDI. Despite the findings of this study, it is encouraged that, further research be conducted to examine the performance of FDI in other sectors of the Ghanaian economy in comparison to Chinese FDI and other foreign countries FDI in Ghana in order to give a comprehensive image of the influence of Chinese FDI in Ghana.

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