FOREIGN DIRECT INVESTMENT INFLOWS IN AGRICULTURE, AGRICULTURE GROWTH, AND POVERTY IN SELECTED SUB-ORGANIZATION OF ISLAMIC COOPERATION COUNTRIES

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By

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ABSTRACT

Foreign direct investment (FDI) inflows are used to address the economic problems, such as poverty and agriculture growth. Encouraging the FDI inflows in agriculture is the most effective way to address poverty and food deficit issues in the Organization of Islamic Cooperation (OIC). Generally, this study attempts to examine the three-way relationships among FDI inflows in agriculture, agriculture growth and poverty. Specifically, the objectives of the study are to investigate the role of agriculture growth and poverty to increase FDI inflows in agriculture; to determine the impacts of FDI inflows in agriculture and poverty on agriculture growth; to examine the influences of FDI inflows in agriculture and agriculture growth on the poverty levels; and to test the relationships among FDI inflows in agriculture, agriculture growth and poverty. The Fixed Effects Model and the system Generalized Method of Moments were used to empirically analyze the variables of interest. This study used panel data of 31 selected OIC countries for the period of 2000-2015. The framework of the study is based on the Keynesian and liberal framework, the Cobb–Douglas production framework and the Dunning Ownership, Location, and Internationalization (OLI) framework. The findings of the study show that agriculture growth and poverty have a significant relationship with the FDI inflows in agriculture; FDI inflows in agriculture and poverty influence agriculture growth; and agriculture growth and FDI inflows in agriculture have a negative significant relationship with the poverty. Moreover, FDI inflows in agriculture have bi-directional causal relationships between agriculture growth and poverty. Agriculture growth has a significant effect on FDI inflows in agriculture and poverty. There is a bi-directional causal relationship from poverty to agriculture growth. The findings of this study suggest a new trade policy recommendations for attracting FDI inflows in agriculture, whether it is targeting on agriculture growth or poverty reduction.

Keywords: FDI inflows in agriculture, agriculture growth, poverty, OIC countries

ABSTRAK

Aliran masuk pelaburan asing langsung (FDI) digunakan untuk menangani masalah ekonomi, seperti kemiskinan dan pertumbuhan pertanian. Menggalakkan aliran masuk FDI pertanian adalah cara yang paling berkesan untuk menangani masalah kemiskinan dan defisit makanan di negara-negara Pertubuhan Kerjasama Islam (OIC). Secara umumnya, objektif kajian ini adalah untuk mengkaji hubungan tiga arah antara aliran masuk FDI dalam pertanian, pertumbuhan pertanian dan kemiskinan. Secara khususnya, objektif kajian ini adalah untuk menyiasat peranan pertumbuhan pertanian dan kemiskinan bagi meningkatkan aliran masuk FDI pertanian; menentukan impak aliran masuk FDI pertanian dan kemiskinan kepada pertumbuhan pertanian; mengkaji pengaruh aliran masuk FDI pertanian dan pertumbuhan pertanian ke atas tahap kemiskinan; dan menguji hubungan antara aliran masuk FDI pertanian, pertumbuhan pertanian dan kemiskinan. Model *Fixed-Effects Model* dan sistem *Generalized Method of Moments* digunakan untuk menganalisis pemboleh ubah yang terlibat. Kajian ini menggunakan data panel 31 buah negara OIC yang dipilih bagi tempoh 2000-2015. Rangka kajian berdasarkan kerangka Keynesian and liberal, kerangka pengeluaran *Cobb-Douglas* dan kerangka *Dunning Ownership, Location, and Internationalization* (OLI). Dapatan kajian menunjukkan bahawa pertumbuhan pertanian dan kemiskinan mempunyai hubungan yang signifikan dengan aliran masuk FDI pertanian; aliran masuk FDI pertanian dan kemiskinan mempengaruhi pertumbuhan pertanian; dan pertumbuhan pertanian dan aliran masuk FDI pertanian mempunyai hubungan negatif dengan kemiskinan. Selain itu, aliran masuk FDI pertanian mempunyai hubungan dua arah antara pertumbuhan pertanian dan kemiskinan. Pertumbuhan pertanian mempunyai kesan signifikan terhadap aliran masuk FDI pertanian dan kemiskinan. Didapati juga hubungan dua hala bersebab daripada kemiskinan kepada pertumbuhan pertanian. Dapatan kajian mencadangkan dasar perdagangan baru bagi menggalakan aliran masuk FDI pertanian, sama ada mensasarkan pertumbuhan pertanian atau pengurangan kemiskinan.

Kata kunci: aliran masuk FDI pertanian, pertumbuhan pertanian, kemiskinan, negara-negara OIC

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LIST OF ABBREVIATIONS

AG	Agricultural Growth
HCA	Agricultural Human Capital
MSA	Agricultural Market Size
BP-LM	Breusch and Pagan Lagrangian Multiplier Test
COMCEC	The Standing Committee for Economic and Commercial Cooperation of the Organization of The Islamic Cooperation
FAO	Food and Agriculture Organization
FAOSTAT	Food and Agriculture Organizations of the United Nations Database
FDI	Foreign Direct Investment
FDIA	FDI Inflows in Agriculture
FE	Fixed Effects
GDP	Gross Domestic Product
GLS	Generalized Least Square method
GMM	Generalized Method of Moments
GNI	Gross National Income
IDB	Islamic Development Bank
IMF	International Monetary Fund
LIFDC	OIC-Low Income Food Deficit Countries
LSDV	Least Square Dummy Variable
MNC	Multinational Corporations
OECD	Organization for Economic Co-operation and Development
OIC	Organization of Islamic Cooperation
OLS	Ordinary Least Squares
POV	Poverty
PPP	Purchasing Power Parity
RE	Random Effects
TOA	Agricultural Trade Openness
TSCS	Time-Series Cross-Sectional
UR	Unemployment Rate
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
VIF	Variance Inflation Factor test

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Foreign direct investment (FDI) inflows are used to address the economic problems of the host country. Focusing on the FDI inflows in agriculture is the most effective way to address poverty and food deficit issues among the poorest people. This chapter initially gives a background of the study, highlighting that poverty reduction and agriculture growth are two of the most important macroeconomic objectives of any country, supplemented by FDI inflows. In this chapter, evidence is presented on the persistent unresolved poverty and agriculture growth issues in selected Organization of Islamic Cooperation (OIC) countries. The research objectives are developed based on this. Lastly, after explaining the significance of the study, this chapter gives a precise note on the scope of the study, which rationalizes the link of FDI inflows in agriculture with poverty reduction and agriculture growth in selected OIC countries.

1.2 Background of the Study

The OIC was established in 1969 and has 57 member countries which are divided into four regions. The OIC cited by Castillo (2014) is basically "*the collective voice of the Muslim world*" and helps to "*safeguard and protect the interests of the Muslim world in the spirit of promoting international peace and harmony*". At present, it is the second largest international governmental group. The Food and Agriculture Organization (FAO) estimated that the world population will reach about 9.3 billion people by 2050, with almost 2.7 billion across OIC countries (FAO, 2013). Unfortunately, more than half of the people in OIC countries are still

living in poor conditions. Indeed, more than half of the OIC member countries are classified as low income food deficit countries. The growing population seems to be decreasing the agriculture growth of OIC countries, leading to poverty issues. According to the FAO (2013), an effective way to address poverty and eliminate food deficit issues among the poorest people is by enhancing the agriculture sector's growth through FDI inflows. As pointed out by the United Nations Conference on Trade and Development (UNCTAD, 2015), additional investments of over USD80 billion every year are needed in agriculture to meet target for reducing poverty in a sustainable manner that preserves natural resources and conducive for long term development.

The Statistical, Economic and Social Research and Training Centre for Islamic Countries (SESRIC, 2016) recently reported that the OIC has established a lot of action plans in an effort to reduce poverty and income inequality. Such plans are the OIC Programme of Action 2016–2025, the Istanbul Declaration and the Final Communiqué. All of these action plans have proven that strong efforts must be made to boost economic growth and eliminate poverty issues. For example, under the Istanbul Declaration, OIC countries have committed to improving intra-OIC trade by 25 percent in the next 10 years, while under the OIC Programme of Action 2016–2025, OIC countries have received numerous amounts of funding from the USD10 billion (RM45 billion) OIC Poverty Alleviation Fund, the USD12 billion Special Programme for Development of Africa, and the International Islamic Trade Finance Corporation (SESRIC, 2016).

Accordingly, this study focuses on the important role of FDI inflows in agriculture, agriculture growth and eliminating poverty in OIC member countries. Table 1.1 provides a complete list of the OIC member countries that were selected for the study based on the availability of data. These selected countries were then divided into three sub-groups according to their level of income as classified by the World Bank (low income economies, middle income economies and high income economies).

Table 1.1
Sub-Groups of OIC Member Countries

High Income	**Middle Income**	**Low Income**
Brunei Darussalam	Albania	Afghanistan
Bahrain	Algeria	Bangladesh
Kuwait	Azerbaijan	Kyrgyzstan
Malaysia	Egypt	Madagascar
Oman	Indonesia	Malawi
Qatar	Iran	Mauritania
Saudi Arabia	Jordan	Mozambique
Turkey	Kazakhstan	Nigeria
	Morocco	Pakistan
	Syria	Tajikistan
	Tunisia	Uganda
		Yemen

Source: World Bank, 2013

According to the UNCTAD (2014), lessons from Organisation for Economic Co-operation and Development (OECD) countries indicate that the largest investors in agriculture are usually from high income economies, and most investors prefer middle income economies because of their market size. As a result, FDI inflows in agriculture for high income economies and low economies are small compared to middle income countries. Additionally,

Figures 1.1, 1.2 and 1.3 offer support for the idea that the importance of FDI inflows in agriculture to high income economies and low income economies is greater, in spite of the fact that they receive a far smaller share of FDI inflows in agriculture than middle income economies do. In this regard, each of these sub-groups of OIC countries has its own problems and issues.

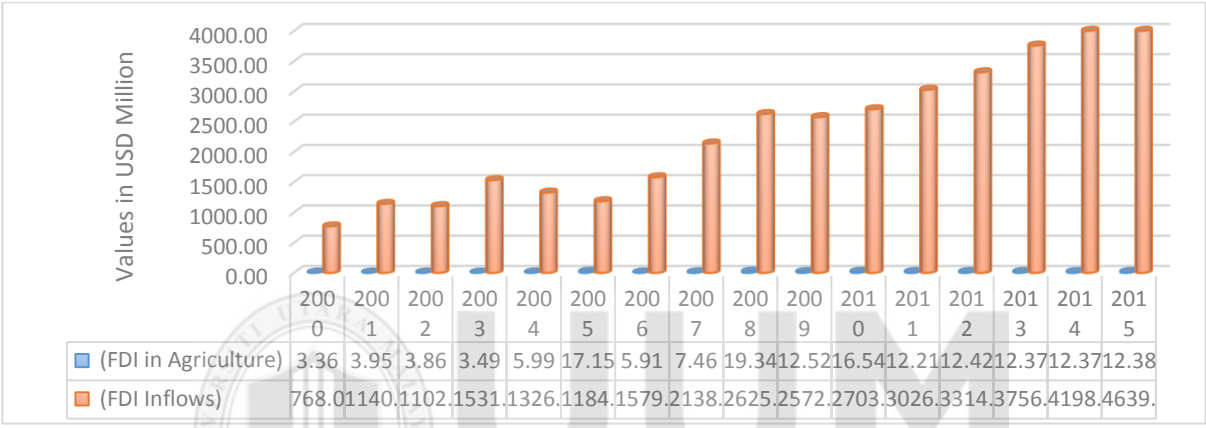

Figure 1.1:
FDI Inflows in Agriculture and Total FDI Inflows of OIC High Income Economies, 2000–2015

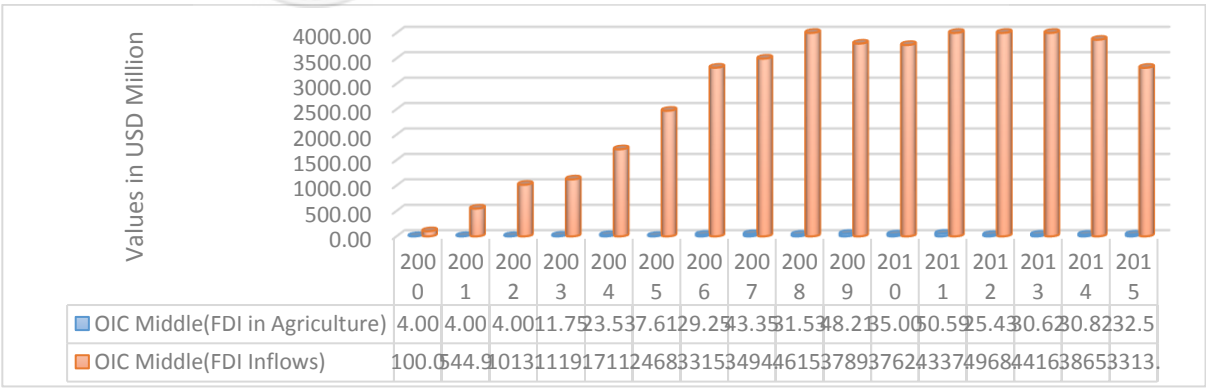

Figure 1.2:
FDI Inflows in Agriculture and Total FDI Inflows of OIC Middle Income Economies, 2000–2015

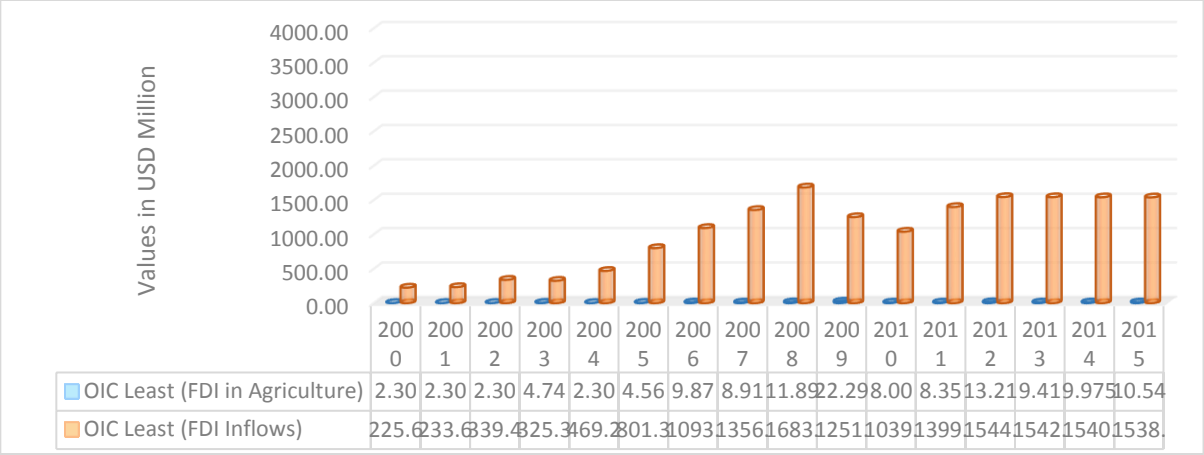

Figure 1.3:
FDI Inflows in Agriculture and Total FDI Inflows of Low Income OIC Economies, 2000–2015

FDI inflows in agriculture could benefit the OIC member countries by stimulating economic growth and enhancing food security (FAO, 2013). Generally, the data from the FAO shows that the significance of FDI inflows has increased markedly for all OIC sub-groups. In contrast, Figures 1.1, 1.2 and 1.3 show that the amount of inward FDI in OIC countries' agriculture sectors is too small compared to the great achievements in using FDI inflows across all sectors. The increasing total FDI inflows in all sub-groups of OIC countries did not contribute significantly to agriculture growth rates from 2000 to 2015. The significant increase in the volume of FDI but the small share of FDI inflows in agriculture offers a strong motivation for research on this phenomenon.

Figures 1.4, 1.5, 1.6 and 1.7 show the changing levels of FDI inflows in agriculture, agriculture growth, poverty and income inequality in selected OIC high income economies between 2000 and 2015. In these economies, the FDI inflows in agriculture fluctuated and each country had a distinctive trajectory (as in Figure 1.4). The same general low trend in FDI

inflows in agriculture can be seen in Figures 1.4 and 1.5, the OIC high income economies' agriculture growth has gone through two main phases. First, the average agriculture growth increased from 0.6 percent in 2000 to about 1.4 percent in 2009. Second, the agriculture growth rate started to decrease but remained positive after 2009.

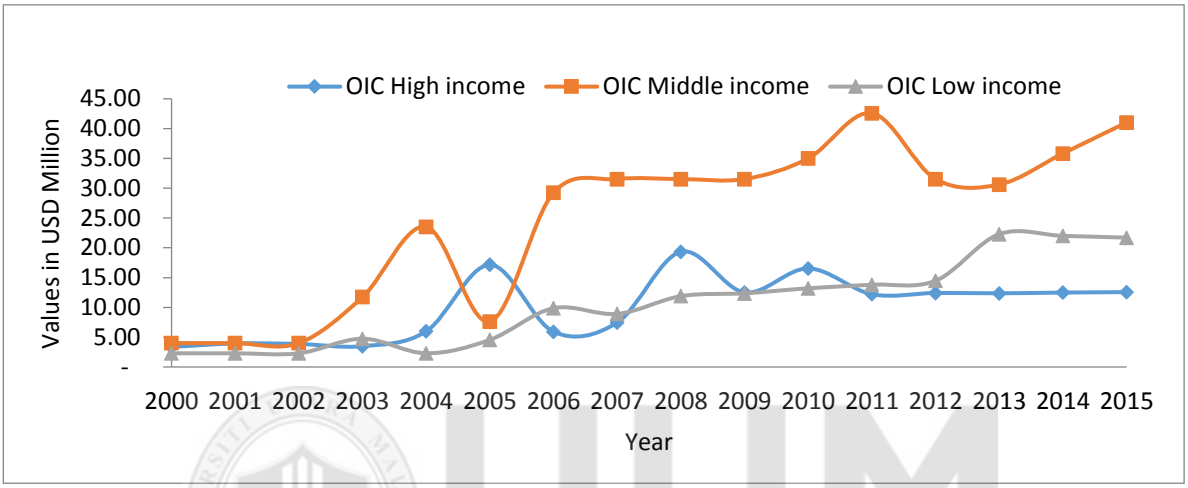

Figure 1.4:
FDI Inflows in Agriculture of OIC Countries, 2000–2015

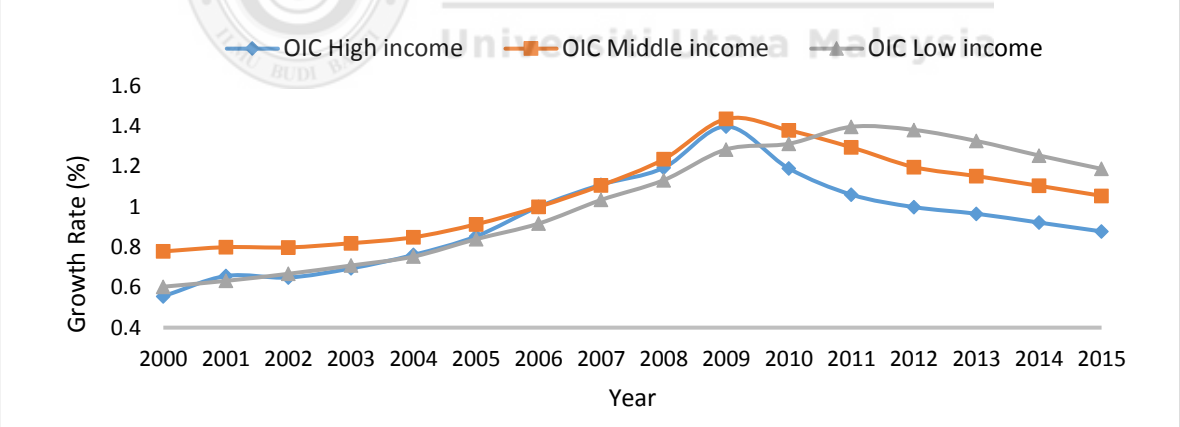

Figure 1.5:
Agriculture Growth (percentage change in gross domestic product (GDP)) in OIC Countries, 2000–2015

The figures 1.4 and 1.5 show that agriculture growth and FDI inflows in agriculture for OIC middle income economies were high but that there were high poverty and income inequality levels. The FDI inflows in agriculture was significant in Egypt and Indonesia, reaching more than USD250 million. The FDI inflows in agriculture among other countries in this group slightly increased year to year between 2000 and 2015, increasing by USD5 million to USD10 million each year.

OIC middle income economies had a high volume of FDI inflows and FDI inflows in agriculture in their countries. According to COMCEC (2013), OIC middle income economies countries with income levels between USD4,086 and USD12,615. The per capita GDP in these countries has a diverse pattern. In addition, the poverty rate in terms of the USD1.25 threshold is around one to two percent in this group. The gross national income per capita is between USD9,225 and USD21,824.

Figure 1.5 reflects how the governments of all groups immediately responded to the food crisis in 2008, agriculture growth decreased sharply from its normal upward trend (The Standing Committee for Economic and Commercial Cooperation of the Organization of the Islamic Cooperation (COMCEC), 2013). In 2009, all countries in the world, including OIC countries, were dealing with a food crisis, which put pressure on the OIC member countries' economies. This affected not only low income economies, but also high income economies, as food prices were very high, leading to a food deficit.

As shown in Figures 1.6 and 1.7, the statistics on poverty and income inequality have increased in recent decades. The positive increase in agriculture growth between 2000 and 2009 was not enough to eradicate poverty and income inequality in OIC high income economies, except for Brunei, Saudi Arabia and Oman, which achieved Gini index below than 25. Therefore, improvements in agriculture sectors are vital to reduce poverty, enhance food security, increase FDI inflows and provide employment opportunities.

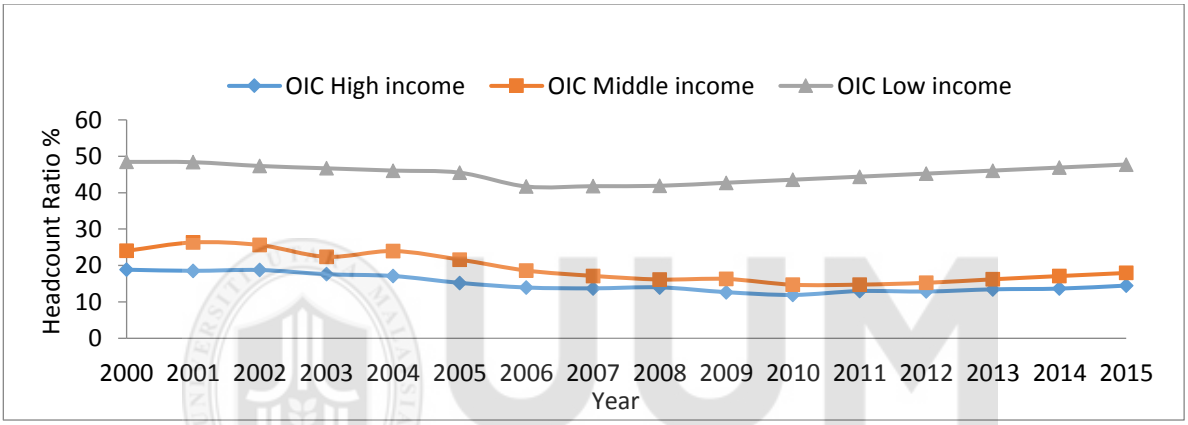

Figure 1.6:
Poverty Levels (headcount ratio at national poverty lines) of OIC Countries, 2000–2015

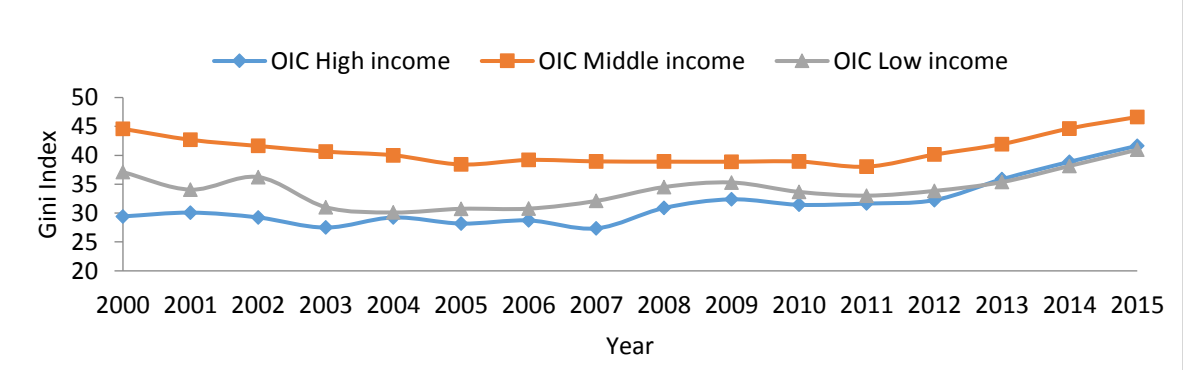

Figure 1.7:
Income Inequality Levels (Gini Index) of OIC Countries, 2000–2015

Additionally, this group of countries have growing populations but relatively low agriculture growth, which prevents addressing poverty, income inequality and food deficits. Indeed, the agriculture sectors of OIC high income economies have been secured and funded by the governments, leading to a lack of effort to attract investors into this sector (COMCEC, 2013). As the high income economies had stable economic growth and strong financial performance. However, the high income economies managed to attract foreign investors, but not significantly so in agriculture.

Regarding to OIC low income economies, Figure 1.6 reveals that the level of deprivation varies: the poverty rate ranges from less than 25 percent to more than 45 percent. Indeed, more than half of these middle income economies had GDP per capita levels of less than USD3,000 and more than half of the countries in this group are classified as low income food deficit countries(COMCEC, 2013). According to the latest estimates by the head of the United Nations (UN, 2015), low income OIC economies countries with income levels between USD1,036 and USD4,085. In the lower income group, GDP per capita levels vary between USD1,908 and USD6,614, while more than half of these countries have GDP per capita levels lower than USD3,000. In low income OIC economies, GDP per capita levels vary between USD769 and USD2,370. More than half of these countries have GDP per capita levels lower than USD1,500 (UN, 2015). All countries in this group can be classified as low income food deficit countries due to slow trends in agriculture growth and FDI inflows in agriculture, as well as high poverty and income inequality levels, all countries in this group have Gini Index values above 25, as shown in Figure 1.6 (COMCEC, 2013).

In addition, SESRIC (2014) classified low income OIC economies under the low development category. In fact, in more than one-third of these countries, the share of the population classified as poor is between 50 percent and 74 percent. As expected, OIC low economies have worse poverty levels, with the GDP per capita less than USD2,370 for this group (UN, 2015). Parallel to the low income, the income inequality level is more than 25, as shown in Figure 1.6. Similarly, almost all these countries have extremely urgent hunger situations, especially Pakistan and Nigeria. Deprivation in living conditions contributes to poverty reach more than 60 percent.

1.2.1 FDI Inflows in Agriculture

FDI inflows provides capital to boost numerous aspects of economic development of a province or a country. FDI inflows is a main factor of a country's economic development and in combating issues of poverty and income inequality. Due to its computable nature, FDI inflows has attracted the interest of many researchers (Anwar & Sun, 2011, Li & Liu, 2005 & Licai et al., 2010), who have empirically examined its relationship with other economic indicators. In addition, the impacts of FDI inflows on economic growth, poverty reduction and income inequality have been examined in the private sector, countrywide and across several countries. As highlighted by many researchers, to reduce poverty, an appropriate sector is vital where the poor are depending (Anwar & Sun, 2011, Li & Liu, 2005 & Licai et al., 2010). Nelson and Pack (1999) highlighted a link between poverty reduction and FDI inflows in specific sectors. FDI inflows in agriculture is said to have a positive effect on economic growth, the reduction of poverty and income inequality. The agriculture sector directly and indirectly influences the livelihoods of the poor (Eastwood

& Lipton, 2001). Agriculture growth is a key source for the public and private sectors to gain opportunities to invest and provide raw materials for agriculture businesses in rural and urban areas. If a large proportion of residents stay in rural areas that mostly depend on farming to survive, raising the productivity of agriculture is vital to stimulate economic growth and country development (Nelson & Pack, 1999). Therefore, an effective way to address poverty and eliminate food deficit issues among the poorest people is by enhancing the agriculture sector through investment.

FDI inflows in agriculture can benefit OIC member countries by stimulating economic growth and enhancing food security. FDI inflows in agriculture reduces the incidence of poverty and increases GDP (Ligon & Sadoulet, 2007). FDI inflows in agriculture in OIC countries strongly affects poverty reduction, income inequality reduction and GDP growth, as emerged between 2000 and 2015. FDI inflows in agriculture in selected OIC countries peaked in mid-2015. Nevertheless, FDI inflows in agriculture of OIC countries were still considered low compared to the total FDI inflows, and most investors prefer investing in middle income economies. Figures 1.8 and 1.9 show that the poverty and income inequality levels contrasted with the FDI inflows in agriculture during the period 2000 to 2015. However, it is observed that the rise in FDI inflows in agriculture between 2000 and 2008 successfully increased agriculture growth and reduced poverty and income inequality. Overall, the growth in FDI inflows in agriculture helped in the alleviation of poverty and income inequality levels and increased the agriculture growth of OIC countries.

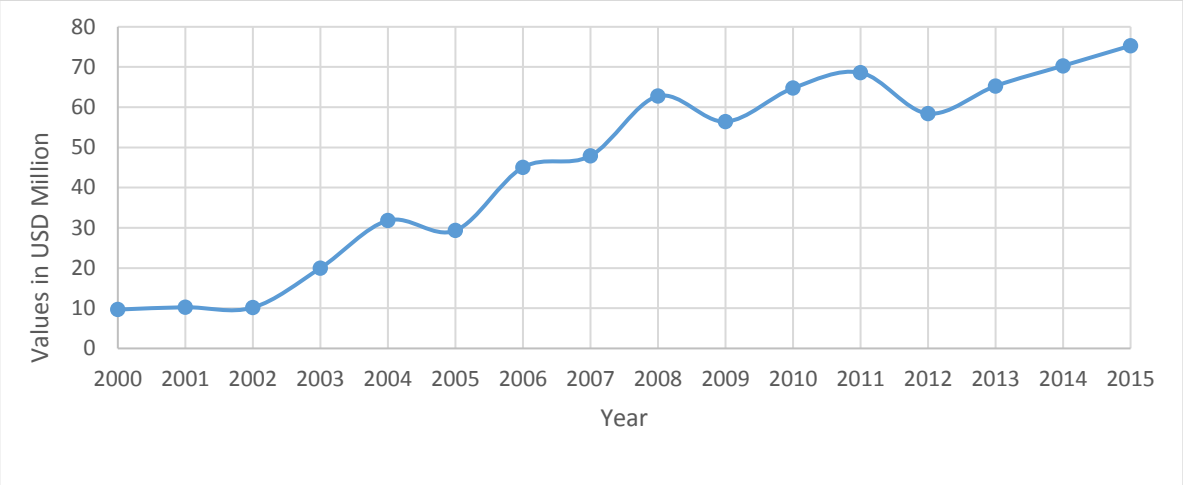

Figure 1.8:
FDI Inflows in Agriculture in USD of OIC countries, 2000–2015

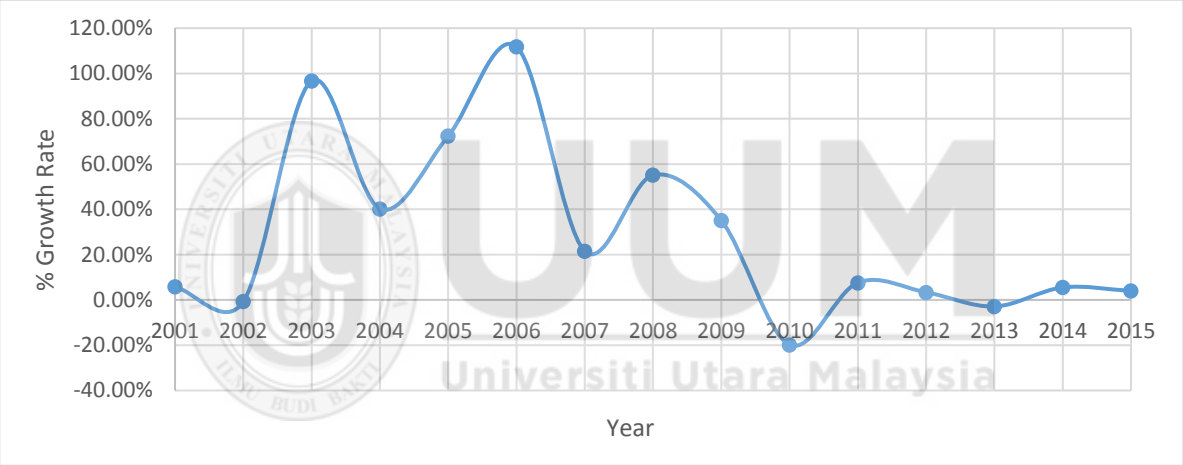

Figure 1.9:
Percentage Change in The Growth Rate of FDI Inflows in Agriculture of OIC countries, 2000–2015

The growth of FDI inflows in agriculture is imperative to eradicate poverty, ease chronic food insecurity and tackle rising food prices. Moreover, the current market conditions present investment opportunities in countries with potential in the agriculture sector. Such investments would not only address the issue of food security but also stimulate economic growth. Strong efforts must be made in order to increase the growth of the agriculture sector by investing in the sector at the national level or through attracting foreign investors to invest

in this industry. Thus, focusing on FDI inflows in agriculture grants an opportunity for OIC member countries, and government funding is important to support the growth of the agriculture sector to address many issues. Some issues have put pressure on the governments of OIC member countries to seek funding from other countries, and some governments have limited their financial assistance for the agriculture sectors. In high income economies, the agriculture sectors have been secured and funded by the governments. In contrast, the agriculture sectors in low income economies are often taxed due to the large sizes of the sectors. As such, FDI inflows in agriculture is most critical for middle income economies and low income economies. FDI inflows in agriculture is an important tool to fight poverty and plays an integral role in nurturing better collaboration and integration among OIC countries. Agriculture growth is a key factor in the reduction of poverty and income inequality, and FDI inflows in agriculture is essential to such growth.

1.2.2 Agriculture Growth

The agriculture sector is an important determinant of economic growth and affects the reduction of poverty and income inequality. It is an essential source of food for the least-developed, contributes to the national income and provides employment. These roles are even more pronounced in developing economies where the majority of residents live in rural areas and rely directly or indirectly on this sector. With the sector being a vital source of employment, with over 65 percent of developing countries' labour forces depending on agriculture, it is not surprising that agriculture development is essential in any poverty alleviation policy. In some countries, agriculture contributes more than 20 percent of GDP.

The significance of the agriculture sector was highlighted in 2008, when food prices increased suddenly and supplies were limited, which led to food security issues in several OIC member countries. The crisis resulted in rising food prices, exerting strain on the OIC member countries' economies and having adverse effects on people's lives, especially those in low income groups. This caused civil conflict in some countries and hampered the governments' efforts in achieving poverty and income inequality reduction.

According to Haktanir (2003), agriculture was very important to people in ancient times due to their lack of advanced technologies. Nowadays, agriculture is still a leading source of employment around the world, especially in OIC countries. Moreover, according to Thirtle et al. (2001), a one percent increase in agriculture sector will reduce the world's population who have only one USD to survive on each day by about 0.83 percent. In the case of Asia, the relationship between agriculture growth and economic stability is quite strong, with every USD1 of additional farm earnings creating a further USD0.80 in non-farm earnings (Hazell & Ramaswamy, 1991). The multipliers are even stronger in Niger and Burkina Faso, with every USD1 of additional farm income creating a further USD0.96 and USD1.68, respectively, of non-farm earnings (Delgado et al., 1998).

As shown in Figure 1.10, agriculture growth rates increased between 2000 and 2009, in line with a growth in FDI inflows in agriculture. Agriculture growth increased for more than 10 years, probably as a result of the increasing populations of a number of OIC countries. According to FAO (2014), in 2012, there were 1.6 billion people living in OIC countries. From the statistics observed (FAO, 2014), 66.3 percent of the people were engaged in agriculture activities, especially people living in rural areas, but agriculture growth was only

about 1.5 to 2 percent per year. Furthermore, the growth of the agriculture sectors decreased between 2009 and 2015. As a result, the rapid rise in the total population paralleled decreasing growth trends in the agriculture sectors, contributing to poverty.

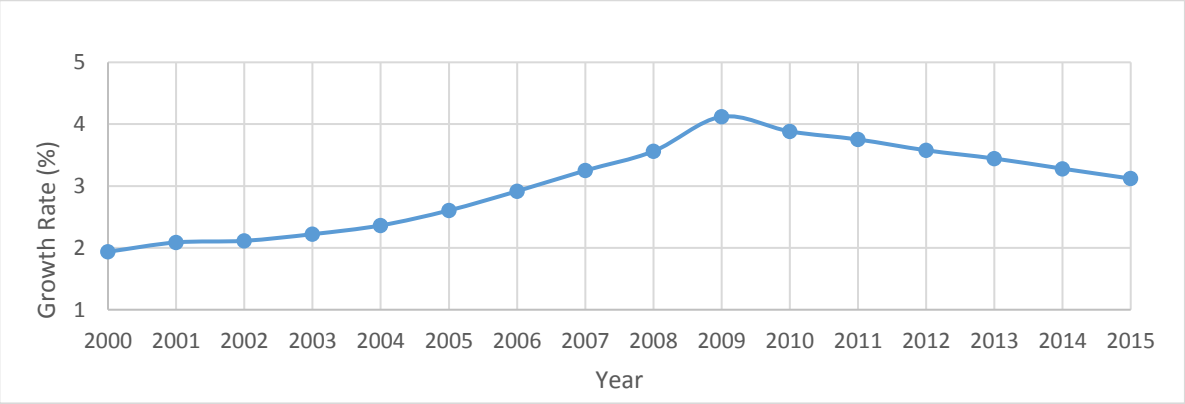

Figure 1.10:
Agriculture Growth in OIC Countries, 2000–2015

The slow growth of the agriculture sectors (Figure 1.10) mirrored that of the manufacturing sectors (Figure 1.11). Based on past research, the consumption of services and manufactured goods is growing rapidly compared to agriculture goods consumption, thus agriculture's share of GDP has declined (Chebbi, 2010). Furthermore, some countries are focusing on manufacturing or non-agriculture goods and services. Indeed, when consumer incomes grow, the consumption of manufactured goods and services increases.

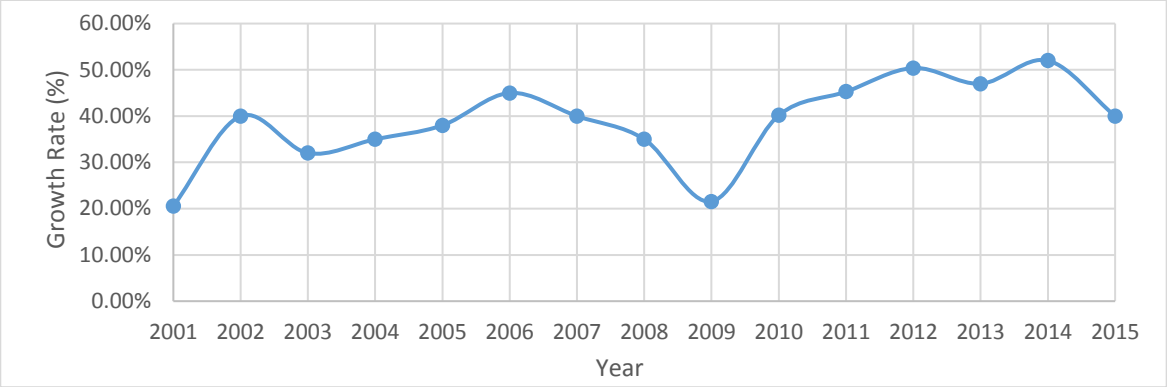

Figure 1.11:
Percentage Change in The Growth Rate of The Manufacturing Sectors of OIC Countries, 2000–2015

In addition, the relationship between agriculture sectors and total GDP is inverse, as GDP one country increases more than less importance to the agriculture sector (COMCEC, 2013). In line with the facts stated here, the significance of agriculture in national economies differs extensively, and there is a need to focus on the agriculture strategies and policies of OIC countries. Overall, the growth of the agriculture sector differs from country to country but is generally important to OIC member countries.

1.2.3 Poverty

FDI inflows in the host country may have direct and indirect effects on poverty reduction. The indirect impact of FDI inflows on the reduction of poverty is through economic growth, which results in the improvement of living standards due to an increase in GDP, the improvement of technology and productivity, and the improvement of the economic environment. It is possible to see employment growth and a reduction in the number of people living below the poverty line when there is no improvement on FDI inflows activities such as labour force, safety nets and demand for labour, which have a direct effect on

poverty levels (Nguyen, 2003). FDI inflows makes an important contribution to the reduction of poverty through employment creation. Therefore, to reduce poverty, the government should provide a healthy business environment through creating the required economic and political conditions.

In the case of OIC countries, the levels of poverty and income inequality became unresponsive to FDI inflows in agriculture and agriculture growth patterns between 2009 until 2015, as shown in Figures 1.12 and 1.13. The decreasing FDI inflows as in Figure 1.8 for year 2009 until 2015 caused a continuous increase in poverty and income inequality levels and a decrease in agriculture growth. This reveals that even though the FDI inflows of the agriculture sectors increased between 2010 and 2015, this did not reduce poverty and income inequality levels, nor enhance agriculture growth.

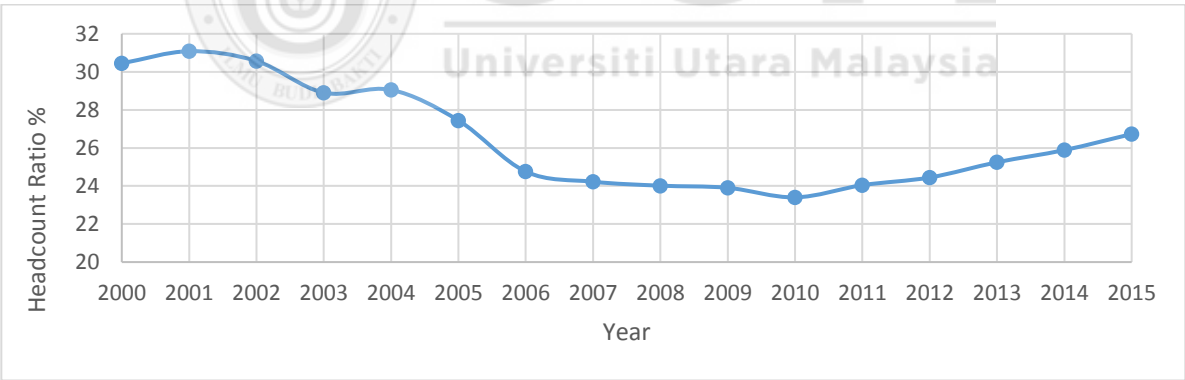

Figure 1.12:
Poverty Level (headcount ratio at national poverty lines) of OIC Countries, 2000–2015

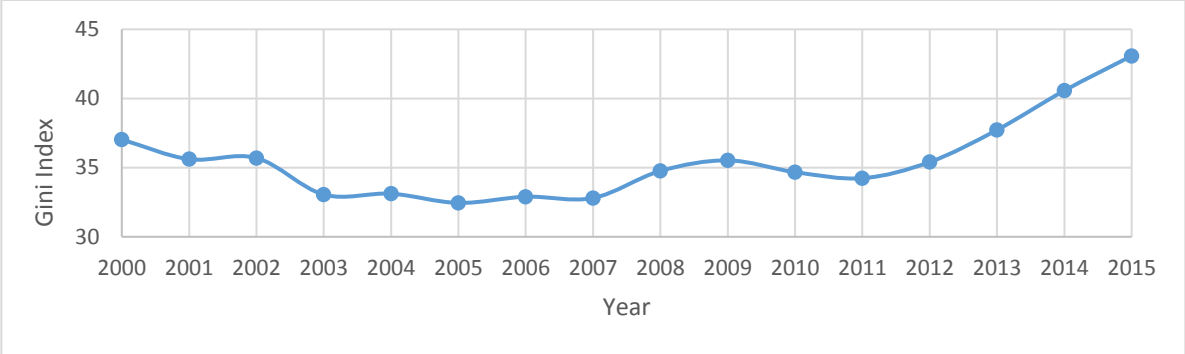

Figure 1.13:
Income Inequality Level (Gini Index) of OIC Countries, 2000–2015

Figure 1.13 shows that the level of income inequality represented by the Gini Index (which measures the degree of inequality in the distribution of family income in a country) decreased between 2000 and 2007. Overall, the level of income inequality in OIC countries is considered high because the countries' income distributions are consistently recorded Gini index at 25 and above. Recently, many least-developed and developing economies are suffering from issues of unemployment, population growth, economic recession, poverty and income inequality (UNCTAD, 2014). These issues require great attention because related to basic human needs. Moreover, the world is still facing an urgent problem with poverty issues such as food security and income inequality. Shah (2011) estimated that 50 percent of the world's population survives on less than USD2.50 per day. In addition, recent economic and food crises have worsened this situation. Regardless of continuous efforts, many people are still living in poor conditions due to low salaries and high underemployment rates (SESRIC, 2014).

By the year 2030, the World Bank aims to eliminate extreme poverty and income inequality in all countries. The agriculture sector is associated with hunger and food security issues, especially in low income and middle income economies (FAO, 2014). The FAO (2014) estimated that 842 million people (or about 12 percent of the world's population) are undernourished. The FAO (2011, 2013) showed that the majority of undernourished people are located in developing regions of South Asia (552 million people), sub-Saharan Africa (SSA) (223 million people) and Latin America (47 million people). The 161 million undernourished people in OIC member countries account for 19 percent of the world's total undernourished people. According to SESRIC (2014), the frequency of undernourishment is very high in OIC low income food deficit countries (LIFDCs), namely Chad, Comoros, Sudan, Togo, Sierra Leone, Mozambique and Yemen.

According to FAO (2010), for most OIC countries, poverty has been at unsatisfactory level for the last few decades. Indeed, in 2012, the percentage of people living on less than USD1.25 per day was 46.5 percent in the middle income OIC economies and 64.9 percent in the low income OIC economies. Evidence from the FAO (2014) shows that among the 1.6 billion people living in OIC countries in 2012, 52 percent were living in poverty. The World Bank (2014) indicated that the poverty levels of OIC countries have remained very high, aligning with the percentage of the world's total poor: the world's total poor was recorded at 33.1 percent in 2011 but only 22 percent in 1990 (World Bank, 2014). Alpay (2013) estimated that the total OIC population living on no more than USD1 a day between 2008 and 2010 was 15.6 percent, compared to the global average of 11.6 percent and the average for developing countries of 11.7 percent. Similarly, the World Bank (2014) stated that the total OIC population living on no more than USD1.25 a day was about 17.4 percent

between 1990 and 2011. Non-monetary poverty indicators vary greatly extent among OIC countries. For example, the Human Development Index values of OIC countries are between 0.855 and 0.304, Multidimensional Poverty Index values are between 0 and 0.642, and Global Hunger Index values are between 0 and 33.6.

Looking into the poverty issues in OIC countries, SESRIC (2014) showed that income inequality and multidimensional poverty continue to be distressingly high, particularly in SSA and South Asia. Moreover, most of the governments of these countries are dealing with serious economic, financial, environmental, social, demographic and political issues that are difficult to solve. As a whole, the poverty profiles of OIC member countries categorized by income levels reveals that around 99 percent of poor, 59 percent was in lower middle income economies and 41 percent in low income economies (SESRIC, 2014). LIFDCs are countries with a high prevalence of undernourishment, owing to conflicts, low income levels, high poverty levels and high political unpredictability. These countries are unable to produce adequate food to meet their domestic demands but cannot import it due to a lack of capital. The OIC member countries with the most extreme Global Hunger Index values are Chad, Comoros and Sierra Leone. In this respect, food deficiencies continue to affect 27 countries of the OIC, with 18 of these classified by the FAO as "countries in crisis requiring external assistance". In general, LIFDCs are characterized by low public incomes, high debt servicing costs, inefficient tax systems and unexpected security of expenditures.

1.3 Problem Statement

Nowadays, many economies, mainly developing and least-developed economies, suffer from unemployment, slow economic growth, poverty and income inequality problems. The FAO (2014) stated that approximately 1.6 billion people were living in OIC member countries in 2012. However, agriculture sector growth decreased between 2009 and 2015. Consequently, the combination of the reduction in agriculture growth and the growing populations led to poverty. Issues of poverty and agriculture growth in OIC countries have been serious problems for several decades (World Bank, 2015). In addition, serious cases of poverty, food insecurity and income inequality in several OIC member countries, such as Burkina Faso, Jordan, Morocco, Niger and Yemen, led to social unrest and riots during the 2008 world financial crisis. Thus, these countries were directly affected by political and economic instability.

The shortage of FDI inflows in agriculture is one of the main reasons why many countries are caught in the cruel situation of poverty with limited agriculture sector growth (FAO, 2013), as such FDI inflows can combat poverty and can promote economic growth (SESRIC, 2016). However, many development partners of the OIC are helping by providing financial resources and implementing various action plans to support these countries. Among OIC countries, FDI inflows in agriculture has grown in the last 10 years, but it has not helped much to increase agriculture growth and reduce poverty levels, owing to economic problems (World Bank, 2015). It is worth noting here that the tendency of poverty and agriculture growth in all OIC countries is never seen in the same according to the flow of FDI inflows in agriculture (FAO, 2015). The observations of this study show that FDI inflows in agriculture and agriculture growth do not correlate but both are considered as sources for reducing poverty and income

inequality. Figures 1.12 and 1.13 show that the responsiveness of poverty and inequality to FDI inflows in agriculture is low across all groups. Therefore, this study reflects on the unresolved problems of poverty and agriculture growth in the presence of heavy FDI inflows in agriculture.

FDI inflows in agriculture is critical to achieving global poverty reduction targets. Improvements in agriculture sectors via FDI inflows are needed to reduce poverty and increase agriculture growth. According to Suleman and Naiya (2009), the agriculture sectors are critical to OIC member countries' economies, contributing 11.2 percent of these countries' total GDP. In addition, SESRIC (2014) stated that many of the governments of OIC countries are not spending and investing wisely in important sectors that could help the countries to eliminate poverty, especially the agriculture sectors. Presently, the FDI inflows in agriculture and agriculture growth levels of OIC countries are at relatively low levels compared to the total FDI inflows and growth rates of other sectors (FAO, 2015). Furthermore, the total population for all regions around the world is already more than the percentage share of agriculture, worsening the poverty crisis (COMCEC, 2013). This is compounded by the current economic crisis in OIC countries, making it more difficult to get the large investments needed to stimulate sectors' growth (FAO, 2015). The current market conditions present investment opportunities in countries with potential in the agriculture sector (FAO, 2013). Strong efforts must be made in order to increase the productivity of agriculture, mostly in food goods, by investing in national agriculture or through attracting foreign investors to invest in this industry.

Agriculture was the mainstay of economic activity in the majority of OIC low income OIC countries with high levels of poverty. It is clear that unmitigated environmental degradation and climatic changes will not only push hundreds of millions of people into hunger and poverty, but will also undermine the progress made so far to eradicate poverty in OIC low income economies (SESRIC, 2014). This suggests the need to conduct in-depth research on the effects of FDI inflows in agriculture and how such investment can contribute to accomplishing the goals of reducing poverty and income inequality levels and stimulating agriculture growth in the host countries.

Governments and international donors are key players in stimulating the agriculture sectors. Wise and Murphy (2012) concluded that funding agriculture development programmes is more accepted and practised. Increasing investments from all players, in particular from farmers, governments and international donors, are needed. Although this is encouraging, the current strict measures as a response to the global financial and economic crises are likely to reduce such spending. This might increase the gaps among the emphasis on agriculture development, promised financial support and actual disbursement. According to COMCEC (2013), government spending on agriculture and the provision of public goods in rural areas (e.g. related to markets, transportation, infrastructure and research) are highly positively correlated with capital funded and productivity, as the government provide incentives for the private sector and farmers to further invest in productive assets.

In SSA, for example, a region where over 60 percent of the population live in rural areas and the level of dependence on agriculture for overall economic growth is very high, the sector is seriously neglected, with public sector spending on agriculture accounting for only four percent of total government spending (FAO, 2015). Additionally, according to Suleman and Naiya (2009), when the economy grows, the FDI inflows and share of the agriculture sector in GDP decline, the number of people employed in the agriculture sector declines, and the outcome from agriculture sector turn to manufacturing development. Similarly, as highlighted by Chebbi (2010), the performance of agriculture sectors directly affects the performance of manufacturing sectors. Chebbi (2010) raised the concern that growth in the manufacturing and service sectors tends to reduce the share of the agriculture sector in GDP.

The issue of poverty is a global phenomenon. Recently, the FAO (2014) estimated that about 12 percent of the global population are characterized as undernourished. Moreover, 50 percent of the world's population survive on only about USD2.50 per day (Shah, 2011). The FAO (2015) indicated that for the last few decades, the poverty levels of most OIC countries have been unsatisfactory. Most of the governments of these countries are dealing with serious economic, financial, environmental, social, demographic and political issues that are difficult to solve. Additionally, SESRIC (2014) categorized the poverty profiles of OIC member countries by income levels, revealing that around 99 percent of poor, 59 percent was in low, middle income economies and 41 percent in low income economies. Several researchers have agreed that poverty can be reduced by stimulating agriculture growth, such as through FDI inflows in agriculture (Bruno & Easterly, 1998; Nguyen, 2003, Sachs, 2005; Ang, 2008; Menyah & Wolde-Rufael, 2010; Sharma, 2010; Anwar & Sun, 2011). Taking a closer look,

Figures 1.5 and 1.6 reveal that agriculture growth is an important tool to combat the poverty and inequality issues in OIC countries, but not due to FDI inflows in agriculture.

The largest investors in agriculture are mostly from high income economies, and most investors prefer middle income economies because of their market size. Moreover, the OIC focuses on the low income economies, wanting to attract as much FDI inflows as possible to increase the financial resources of these economies and promote their economic growth and living standards. Actually, low income economies accounted for two-thirds of global FDI inflows and four-fifths of global outflows in the 1990s (UNCTAD, 1998). Additionally, the rise in FDI inflows from 2000 to 2015 seemed to decrease the volume of FDI inflows in agriculture for all OIC countries. The total FDI inflows of all sub-groups of OIC countries have increased since 2000 but not especially so in agriculture. The OIC's efforts to attract and increase the FDI inflows are working but do not focus on FDI inflows in agriculture sectors, which could benefit OIC member countries by stimulating their economies and enhancing food security through increasing agriculture growth. FDI inflows in agriculture sector is critical for low and middle income economies countries but not as much for high income economies. In this regard, each sub-group of OIC countries has its own problems and issues. It must be considered that agriculture performance differs across OIC sub-regions due to the challenges and complications arising from different agriculture land types, natural resources (e.g. water), modern agriculture infrastructures and agro-ecological conditions.

1.4 Research Questions

i. Is agriculture growth and poverty reduction important to aid FDI inflows in agriculture sector amongst selected OIC countries?

ii. To what extent does the FDI inflows in agriculture impact on poverty and agriculture growth in selected OIC countries?

iii. How does FDI inflows in agriculture and agriculture growth influence the poverty levels in selected OIC countries?

iv. Are there any bi-directional relationships among poverty, agriculture growth and FDI inflows in agriculture in selected OIC countries?

1.5 Research Objectives

The general objective of this research is to examine the three-way relationships among FDI inflows in agriculture, agriculture growth and poverty. The specific objectives are:

i. to investigate the role of agriculture growth and poverty to aid FDI inflows in agriculture amongst selected OIC countries.

ii. to determine the impacts of FDI inflows in agriculture on poverty and agriculture growth in selected OIC countries.

iii. to examine the influences of FDI inflows in agriculture and agriculture growth on the poverty levels in selected OIC countries.

iv. to test the simultaneous relationships among FDI inflows in agriculture, agriculture growth and poverty in selected OIC countries.

1.6 Scope of Study

This study focuses on the current poverty reduction and agriculture growth strategy that is related to FDI inflows in agriculture in selected OIC member countries. Thus, this research analyses the factors of FDI inflows in agriculture that affected the poverty levels and economic growth of 31 OIC countries during the period 2000–2015. This study examines the significance of the relationships among three dependent variables: FDI inflows in agriculture, poverty and agriculture growth and the main potential determinants in 31 OIC member nations using panel data. The purpose of this study is to get a better understanding of the effects of FDI inflows in agriculture on the poverty and agriculture growth levels of OIC countries. This study uses several important economic variables, such as trade openness, human capital, market size and unemployment rate. This research entirely depends on secondary data. The major data sources are OIC annual reports, the FAO statistical database (FAOSTAT), the Islamic Development Bank (IDB), COMCEC, the World Bank and Thomson Reuters DataStream Professional.

1.7 Significance of the Study

By and large, this study contributes to the literature, knowledge and economic policymaking in the following ways. These empirical insights are of particular interest to policymakers, as they could help them in building sound economic policies to sustain economic development. The findings of this study could improve the ability of the authorities of the OIC to make better decisions regarding welcoming FDI inflows in agriculture. From the literature review, the existing studies on FDI inflows in agriculture have not analysed determinants of poverty alongside economic growth specifically in agriculture sectors. The relationship between these variables and FDI inflows in agriculture sectors of OIC countries is ambiguous. This study

not only examines and estimates the conventional determinants of poverty and growth, but also explores the contribution of FDI inflows in agriculture, which has not been included in previous studies. Thus, this study provides a better understanding of the influences of FDI inflows in agriculture on the poverty levels and agriculture growth of OIC countries, at least from the empirical dimension. The importance of the study is also reflected in the unresolved problem of poverty in the presence of heavy FDI inflows in agriculture. This requires an exploration through empirical findings, especially cross-country comparison.

Despite the plethora of studies on poverty, agriculture growth and FDI inflows, the empirical evidence is not clear about these factors in the agriculture sectors of OIC countries. Following criticisms of the traditional assumption of a one-way causal link between FDI inflows and growth, recent studies have considered the possibility of two-way (bidirectional) or non-existent causality among these variables (Kholdy, 1995). In other words, these studies have proposed that: (1) not only can FDI inflows in agriculture influence poverty and agriculture growth but poverty and agriculture growth can also cause FDI inflows in agriculture; or (2) there are no causal links among the three variables. From the numerous existing studies, the causal link between FDI inflows in agriculture with poverty and economic growth as an empirical question seems to be dependent upon the set of conditions in the host country's economy. Although a number of economic theories point to a positive relationship between FDI inflows and poverty, the direction of causality between the variables has continued to generate controversy among economists, especially regarding determining whether poverty can cause FDI inflows. Additionally, few studies have tested all these constructs (FDI inflows in agriculture, poverty and agriculture growth) in a single model in the OIC context.

1.8 Organization of the Study

The study is divided into five sections. Chapter 1 outlines facts related to agriculture growth and poverty and the importance of FDI inflows in agriculture, supplemented by a discussion on the significance and scope of the study, together with the research problem. This chapter has also defined the key intentions of the study by means of the research questions and objectives, ending by briefly describing the organization of the study. Chapter 2 has introduced key theoretical and empirical statements and suggestions regarding the determinants of FDI inflows in agriculture, as well as indicates the theories and evidence on FDI inflows's relationship with agriculture growth and poverty levels. It concludes by underlining the literature gap, strengthening the justification for carrying out this research. Chapter 3 discusses the theoretical and empirical research that led to the development of the conceptual framework. After providing justifications, operational definitions, measurements and objectives for all the variables, the model of the present study is presented. As well as describing the data sources, the last section of the chapter explains the methods of analysis used to accomplish the objectives of the study. Chapter 4 is designed to host data presentations and analysis. Lastly, summary of findings, policy implications of the findings as well as the recommendations would be provided in the fifth chapter.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The relationship between FDI inflows with poverty and economic growth process has been a topic of intense debate for a long time. There is a large amount of literature analyzing the linkages between poverty, economic growth and FDI inflows. FDI inflows is an important determinant of poverty reduction and economic growth, especially in the host developing countries, and whether poverty and economic growth, in turn, determines the inflows of FDI inflows is still debated among the economists. In fact, the role of FDI inflows in promoting poverty and economic growth has been viewed differently under different poverty and economic growth theories. The Neoclassical theories stress on the rate of capital accumulation as a means of poor countries raising their standards of living that lead to the reduction of poverty. Development economists emerging after the Second World War have advocated for a big push and more coordination by governments if poor countries are to develop. Based on the various schools of thoughts, several economic models have been developed over the years in an attempt to explain the determinants of poverty reduction and economic growth both in the short and long run. In the short run, the classical school identifies physical capital accumulation as the determining factor affecting the pace of economic progress. In addition, they stress on the importance of social overhead capital or infrastructure, good leadership and capital accumulation as the way to develop. The Neoclassical theory by Solow (1957) based on Cobb-Douglas Production Framework predicts convergence in growth rates on the basis of poor economies will grow faster compared to richer ones. The reality, however, is that over

years divergence has been the case. The volume of capital flow to the poor economies relative to the rich has been low. The Neoclassical theory of poverty and Neoclassical theory of economic growth has sought to provide an explanation on the consequences as well as the causes of the presence of FDI inflows in developing countries. In the Neoclassical theories, FDI inflows are a solution to fill the saving-investment gap, the foreign exchange gap, and the fiscal gap in host developing countries to help on poverty reduction and stimulate the economic growth. Moreover, the Eclectic theory of FDI, which was developed by Dunning (1988), provides a tool to explain the influence of economic growth on FDI inflows attraction to host countries then reduce the poverty level. The Dependency theory found the cause of underdevelopment to be external to the socio-economic formations of the less developed countries. The FDI inflows not only resulted in enclave development but also diminished the possibilities of development. The dependency idea is also considered in the literature of unequal exchange (Krugman, 1981). Lastly, the extended Cobb-Douglas Production Framework helps to explore the three-way linkage between the three variables: FDI inflows, poverty reduction and economic growth (Greene, 2007, Gujarati & Porter, 2009, Ruxanda & Muraru, 2010 & Omri, 2013). It is therefore worth investigating the interrelationships between the three variables by considering them simultaneously in a modeling framework. Based on this interaction, this modeling can help policymakers to build sound economic policies to sustain economic development. The debate has been dominated by an orthodox perspective comprising the Classical and Neoclassical, Keynesian and Liberal, Endogenous Growth models and the recent development economists. In sum, the Classical, Neoclassical Growth theories, Keynesian, Liberal and the Endogenous Growth theories support strongly the role of FDI inflows in promoting economic growth as well as poverty reduction.

2.1.1 Theoretical Review on the FDI Inflows in Agriculture

The effect of FDI inflows varies because each sector has its own features and link to other sectors in different ways. There are three main sectors of the economy: primary, secondary (manufacturing) and tertiary (services). The primary sector basically means the production of raw materials and foods, agriculture, quarrying, mining, forestry, and fishing are included into that sector. Usually, the production process in that sector is very hard to divide into parts and it requires a lot of efforts and capital. The investments into the primary sector can cause a rise in wages in that sector and therefore attract labour from other sectors of the economy. That might lead to the deindustrialization and as a result, other sectors and secondary sector, in particular, will become less competitive.

As highlighted by many researchers that to reduce poverty it must be in appropriate sectors where the poor are depends (Nelson & Pack, 1999). Agriculture sectors directly and indirectly impacts the poor livelihood; the factor of production the poor possess and use most is labour, and sometimes land as well (Eastwood & Lipton, 2001). Nelson and Pack (1999) explained by being in link with poverty and the specific sector scattering of foreign investments; the relationship between poverty and FDI inflows' applied sector. Agriculture, industry and service sector are said to have the most foreign investments and poverty intensive sector and have a positive effect on the reduction of the poverty. If the poverty is experiential according to the sector, it can see that poverty rate taking place in the agriculture segment is more vital than the other two sectors. FDI inflows in agriculture sector is the most tool in reducing poverty when compared with the ones taking place in the other sectors.

According to Rosegrant and Hazell (2000), efficient use of labour and human capital of the poor can lead to broader economic growth and rapid growth of agriculture sector in attacking poverty. The agriculture sector can also increase the national income by producing the higher output of agriculture. But due to overpopulation increases, it is so difficult to get a sufficient land and water resources to obtain good production in agriculture. Agriculture sector also can increase the GDP of countries because it will reduce the rate of poverty compared with other sectors that are in a particular of the country (Ligon & Sadoulet, 2007).

Human survival is dependently based on the agriculture; people needs agriculture because it is basic component of human life and offers the essential needs (COMCEC, 2013). It becomes a key factor for the government especially in developing countries to eliminate poverty and enhance the rural development. Gruen and Klasen (2008) found that to eliminate poverty, GDP of agriculture must be improved and focus on rural area. The agriculture sector has lengthy of time that been ignored as poverty reduction and main factors of development. It must bear in mind that agriculture performance in OIC region are differently among its sub-regions due to multiple challenges and complications arising such as different type of agriculture land, natural resources, water resources, modern agriculture infrastructures and agro- ecological conditions. Improvements on agriculture sector are vital to make sure reduction on poverty, enhancing food security, and providing employment opportunities.

The Eclectic theory of FDI inflows provides a tool to explain the influence of economic growth on FDI inflows attraction to host countries. Based on the standard Neoclassical theories (Solow, 1957), economic growth is based on the utilization of land, labour and capital in production. The literature review suggests that the impact of FDI inflows in

agriculture can be positive or negative. For example, according to Dries and Swinnen (2004) found that there are positive spill overs effects resulted by the vertical and horizontal FDI inflows in the dairy sector of Poland. The improvement of agriculture and the status of farmers are linked to the transfer of technology and know-how that are a result of FDI inflows (Djokoto, 2012). According to Gerlach and Liu (2010), some case studies have shown that FDI inflows contributes positively to the increase in the agriculture production in developing countries.

Hallam (2011) explained how FDI inflows can have a positive impact on agriculture in host countries. The agriculture could benefit from technology transfers, which lead to greater domestic productivity, increase in production and employment in addition to reduction in domestic prices. The effect of sectorial FDI inflows on productivity across economic sectors is tested by Tondl and Fornero (2010) for the Latin America. By considering the productivity in agriculture and fishery sectors as a dependent variable, they found a positive effect from agriculture FDI inflows and positive spill overs from manufacturing and services FDI inflows. The spillover effect of manufacturing FDI inflows may be explained by the presence of foreign capital in agri-food industries which requires more efficiency in agriculture production. Regarding the spillover effect from FDI inflows in services, the agriculture sector can be beneficial by enhanced productivity in transport sector.

Similarly, Suleman and Naiya (2009), claimed that high economy grows was usually causing the share in GDP of agriculture sector start to decline. Because of that, the number of people employed in agriculture sector also declines and the outcome from agriculture sector turned to development of manufacturing. Agriculture sector is very imperative to the

development and economic growth; it can be observed by supplying outputs as inputs to other industries. There is demand of intermediate input from other industries from agriculture sector. Indirectly, the growth of agriculture sector will increase. According to Hakan (2003), throughout the history, agriculture was very important in civilization to ancients' people. Therefore, ancients' society need depend on the agriculture because before this, there are no advanced technologies.

Nevertheless, nowadays, the agriculture is still becoming and lead as the primary source toward industry and employment around the world and in OIC countries also. The research from Houssem (2010), the outcomes proposed that the economic sectors in Tunisian cointegrate and be likely to move together and the outcome is rejected because of weak exogeneity of agriculture sector. Therefore, all the result tends to agree that to do the analysis on growth, agriculture must consider of the intersectors by the policymakers. Nevertheless, in the short run term, while Tunisia is part on the OIC countries started to improve and increasing the service quality and reorganization of the banking sector, the results point out that there are no beneficial from development of the agriculture sector.

2.1.2 Theoretical Review on Determinants of FDI Inflows

Dunning (1988) has proposed three conditions necessary for a firm to undertake FDI inflows. The Eclectic theory of FDI, often referred to as the Dunning ownership, location, and internationalization (OLI) framework, attempts to give explanations of determinants FDI inflows. OLI stands for ownership advantages, location advantages and internalization advantages, which are conditions that determine FDI inflows. The research purposed to examine the determinants of FDI inflows in agriculture, thus, the Eclectic theory or OLI

Framework was developed by Dunning in 1977, also known as OLI framework will used in this study. A number of theories have been developed to explain the determinants of FDI inflows. Extensive reviews of the main FDI theories and determinants of FDI range from the Economic theories of Vernon (1966), the internationalisation theories of Krugman (1981) and Dunning's (1993) eclectic paradigm. However, the main theory adopted in this research are drawn from Dunning (1977; 1993) who suggested that the main factors that drive FDI inflows have been the need to secure market access, the opportunities presented by large scale privatization processes and the degree of political and economic stability. Dunning proposes that the undertaking of FDI inflows is determined by the realization of three groups of advantages are ownership specific advantages, locational advantages and internationalization incentives.

Ownership specific advantages arise from the firm's size and access to markets and resources, the firm's ability to coordinate complementary activities like manufacturing and distribution and the ability to exploit differences between countries. According to Chakrabarti (2001), market size has been argued to be accepted as a significant determinant of FDI flows, by both past empirical studies and economic theory. Natural resources, historically, are the most important determinants of FDI inflows. From the 19th century up to the eve of the Second World War about 60 percent of the world stock of FDI was in natural resources. The need to secure economic and reliable sources of mineral and primary products for the industrializing nations of Europe and North America, natural resources were the major reason for the expansion of FDI (Dunning, 1993).

Locational advantages includes differences in country natural endowments, transport costs, macroeconomic stability, cultural factors and government regulations. When a firm find more profitable to move a plant of production and produce in the foreign country from where it is importing since it is cheaper than the localization advantage occurs. These help to determine which countries are host to MNEs foreign production. The localization advantage, all those factors such as economies of scale, the factor prices, the size of the market, customs duty barriers, law trade, transport costs, price elasticity of demand, income per capita, monetary policy, sovereign risk (inflation, volatility of exchange rate) which in an overall analysis make more profitable to a firm the decision to invest directly in a foreign country rather than exporting. Through its effect on the cost of inputs and the price of outputs, inflation reduces the real return on investment and firms' competitiveness. Hence, countries that pursue policies that reduce inflation rate have better chance in attracting FDI inflows. Low and predictable inflation rate is central for the long-term investment of both domestic and foreign companies. Therefore, higher and unpredictable inflation will decrease the inflows of FDI inflows (Beirhanu, 1999).

Human capital is a measured of economic value of an employee's skill set. The concept of human capital recognizes that all labour is equal that the quality of employees can be improved by investing them. The particular focus is on impact of FDI inflows on human capital enhancement the poverty reduction based on agriculture sector in Asian country. The major impact human capital in reducing the poverty if the once individual are employed by MNE company their human capital may be further enhance through training and on the job learning. The potential benefits of FDI inflows for host countries include human capital

development and higher wages (Maher, 2001). Essentially human capital refers to the education, skills, ability and knowledge of individual (Garavan et al., 2001). UNCTAD (1998) concluded that in an increasing competitive environment for foreign investment capital, least develop country should pay greater attention to the development of human resources, infrastructure and entrepreneurship which have a significant bearing on the locational choice of transnational corporation.

According to Kyrkilis and Pantelidis (2003), exchange rate is an influential factor in affecting the outward FDI inflows to Brazil and Singapore. Exchange rate is such an influencing factor for FDI inflows, particularly is due to it is an uncontrollable tool when performing transactions globally. All of the import and export transactions are now conducted at the market currency exchange rate (Lokesha & Leelavathi, 2012). Internationalization incentives arises from exploiting imperfections in external markets. These include the reduction of uncertainty and transaction costs in order to generate knowledge more efficiently and the reduction of state generated imperfections such as tariffs, foreign exchange controls and subsidies.

Dunning (1977) argues that having low wages, natural resources and big market is not enough for a country to attract FDI inflows. According to Erdal and Tatoglu (2002), the locational determinants of FDI inflows can therefore be summarized as market size and market growth, raw materials and labour supply, political and legal environment, host government policies, geographical proximity and host country infrastructure. Khadaroo and Seetanah (2010), Kok and Ersoy (2009), Asiedu (2002, 2006), Kumar (2001), Kinoshita

(1998), Wheeler and Mody (1992) and Root and Ahmed (1979) found positive impact whereas, Quazi (2005) claims insignificant effect of infrastructure on FDI inflows.

The economic process of a country and in particular the inflows of FDI into a country can be disrupted by unsettled, implicit or explicit, internal or external political disputes and crises. Without stable political conditions, whatever the economic environment may be, a county's effort to create a more hospitable environment for oversea investors cannot be fruitful. Political instabilities can delay FDI inflows until the storm weathers away or diverts away for good (Beirhanu & Kibre, 2003). In addition to the mentioned macro-level determinant of FDI inflows, numerous other factors are mentioned as host country determinants of FDI inflows in the literature. Some of them are contract law, the image of the host country, availability of investment fund, governance, human resource development, degree of openness, urbanization, coherent and stable macro and sectoral policies (Beirhanu & Kibre, 2003, Asiedu, 2002, UNCTAD, 1998).

2.1.3 Empirical Review on Determinants of FDI Inflows

2.1.3.1 Human Capital

According to Miyamoto (2003), the development of human capital will lead to FDI inflows growth. Further, according to Checchi et al. (2007), FDI inflows and human capital has positive relationship. Thus, FDI inflows are able to promote more higher education and increase the development of skilled labour. However, based on the studies of Zhuang (2008), the author determined that FDI inflows has various effects towards different levels of education in China.

In addition, according to some reading, supply and demand function of the agriculture labour force in Taiwan exists as well as agriculture capital. However, agriculture labour force in Taiwan are predicted continue to decrease although having agriculture capital. Moreover, many small size farmers have not given up cultivation because of low comparative advantage of agriculture sector in Taiwan. Rodriguez and Pallas (2008) examined the determinants of FDI inflows in Spain during the period 1993 until 2002 by using panel data. As a result, the author examine that human capital and the export potential of the sector are the most important determinants. Masron and Abdullah (2010) also examined the effects of market size, human capital and opening of the economy toward FDI inflows into ASEAN. Based on the studies, it concluded that market size, human capital and opening of the economy had shown positive effects towards FDI inflows into ASEAN.

Further, traditional agriculture production are focuses more on labour intensive. The number of productivity in agriculture will affect the number of labour used and in general, women are mostly been employed in the agriculture sector compared to men. On the contrary, nowadays agriculture sector has been improved by technology and the productivity level also increasing. Technology helps to utilized more intermediate inputs such as fertilizers, tractors, and harvesters irrigation in agriculture sector. The use of technology is able to save more time and increase the efficiency of production. Thus, the need for labour in agriculture production has been reduced.

2.1.3.2 Trade Openness

Grossman and Helpman (1990) find that openness to trade is having positive impact on economic growth in the long term. It would increase the productivity, international competitiveness, and export revenues. On the other hand, according to Bahmani-Oskooee and Niroomand (1999) and Edwards (1992), there are positive impacts of openness to trade on economic growth. Besides that, according to Edwards (1993), Frankel and Romer (1999), Sachs and Warner (1995), Dollar and Kraay (2002), Cline (2004) and Winters (2004), there are positive correlation between trade, growth and poverty reduction. There are some drawbacks to trade openness such as adjustment costs.

Apart from that, Pfaffermayr (1994) examined that there is positive relationship between FDI inflows and the volume of trade among countries. The author concluded that a foreign investor would invest in a country that has strong connection in trade. According to Rahman (2000), the bigger export in the country, the higher competitiveness and it will attract foreign investors to invest. For instance, Sekkat and Varoudakis (2007) have identified that trade openness plays an important role for FDI inflows. In addition, Srinivasan and Bhagwati (2001) have identified trade have a significant in FDI inflows.

By using time series techniques, Belloumi (2014) found that the trade of openness and economic of growth contributed on FDI inflows in Tunisia. In contrast, Goswami and Haider (2014) found that there are many past researchers that investigated trade openness in FDI inflows, but the result is negative. For instance, Abbott and Vita (2011) confirm that foreign capital inflows contribute in trade liberalization.

2.1.3.3 Market Size

Chakrabarti (2001) stated that the efficient of resources utilization and economies exploitation includes market size. If the market size grows, it will cause the increasing of FDI inflows with further expansion. According to Aqeel and Nishat (2005), the importance of the two determinants and there are the market size and also its growth. It is magnified to foreign investor who operate in industries characterized by relatively large economies of scale because of after the market can obtain the certain threshold price, the foreign investor can easily exploit the economies scale. Ren and Pentecost (2007) stated that the market size are generally measured by GDP, GDP per capita, GNP, GNP per capita and the growth rate affect the growing host market and have positive factor for the profitable investments. The result of the research studies support that there are positive relationship between the market sizes on inward FDI. The Gross National Product (GNP) of EEC was also being applied as a substitution for the variable of market size. Such assumption had also been assured by many experiential studies based in developing host nations. In addition, by shifting technology, encouraging exports, and expediting inter-regional and intersectional flows of labour and capital, the FDI inflows had tended to increase the productive efficiency of supply allocation of the domestic sectors. Liu et al. (2012) stated there was a relationship between FDI inflows and economic development, as that provincial difference of inward FDI inflows had essential policy repercussions.

Loree and Guisinger (1995) and Wei (2000) investigated that China has a large market size that can get the large FDI inflows. For instance, developed countries unable to get the large FDI inflows because of the small market size (Odi, 1997). By using analytical approach, market size contributes in FDI inflows and countries with a good economic growth can attract the foreign direct investment to enter their country (Lipsey, 2000). Holland and Pain (1998) as well as Asiedu (2002), examined the determinants of FDI inflow and concluded that growth and market size are the significant determinants. In addition, according to Tallman and Fladmoe (2002), a larger firm size demonstrates greater availability mainly in managerial resources and financial. Makki and Somwaru (2004) investigated the determinants of FDI inflows in food-processing based on United Stated (US) companies. The market size, per capita income, trade openness, inflation and exchange rate are found significant for US food processing enterprises.

Yuan, Chen and Wang (2010) claimed that large market size was good for developing economies of scale, which in respect, it able to reduce costs and rise profits. Such determinant was so important that, many scholars even agreed it to be a positive role in attracting investment. According to Kok and Ersoy (2009), the researchers had claimed that there is a significant positive relationship between market and FDI inflows. Resmini (2000) investigated the effect of market size on the FDI inflows in manufacturing sector in Central and Eastern European countries that with larger populations caught the attention of more investors and bring in higher FDI inflows rather than the countries having smaller populations.

Latest studies by Goswami and Haider (2014), market size is an economic determinant of FDI inflows that important to the multinational companies (MNC). Market size are measured by GDP, per capita income or size of the middle class ans it is very important for FDI inflows. This is because, it will provide the potential for local sales, greater profitability of local sales to export sales and relatively diverse resources and effect the local sourcing more feasible. In the research also, there are differ under different conditions between market size and growth. Market size is the number of buyer or seller for a product or service that is being offered in a market. Market size is very important to be studied to ensure that the products or services are being sold to the buyers after the producers introduce it. If the demand is high, the production shall be sufficiently and efficiently to meet the needs and requirements of the buyers. Supported by Goswami and Haider (2014), the market size is very important to develop the company's market no matter inside or outside the country and it will affect FDI inflows also. The market size is very important for FDI inflows. It can generate high profits for some companies and attract foreign companies entering the country. However, the market size of the host country is important for FDI inflows in developed countries but not in developing countries. In addition, the per capita income in developing countries has shown significant positive impact toward the FDI inflows whereas results negative impact toward FDI inflows in developed countries (Goswami & Haider, 2014).

On the other hand, Nunes et al. (2006) examined the determinants of FDI inflows during the period 1991 to 1998. The research found that market size, infrastructure and inflation have positive impact towards FDI inflows. According to Choong and Lim (2007), the results had explained that the significant variable would be local market size, and the

Chinese FDI inflows was negatively affected by the competitor's market size. Goldstein and Pusterla (2010) indicated that market size can additionally be an appealing component, of the beneficiary economy, subject upon the goods, and the need to use the capacity of local production, which the home market can't retain. Meanwhile, Al Nasser (2010) claimed that an essential role played by FDI inflows in underwriting to economic development. The impact of FDI inflows on economic growth was depends on the host economy based conditions. The experiential results from the research indicated that with technology distant and a strong adverse interaction effect of FDI inflows with the state of school achievement on economic development, there was a robust encouraging relations impact of FDI inflows. Rogmans and Ebbers (2013) also claimed that a more ambiguous effect could have been by other measures of market size or market attractiveness. The research pointed out that high levels of per capita GDP indicated markets with high expenditure power and this could be anticipated to increase market seeking FDI inflows. In addition, Rogmans and Ebbers (2013) stated that high per capita GDP was usually accompanied with high labour costs, causing the country less attractive for investments in.

2.1.3.4 Unemployment Rate

In conjunction, recent study on investment show that FDI inflows may generate direct impact increase in employment rate and training of the labour force by the way of poverty reduction in the host country (Nguyen, 2003). On the other hand, FDI inflows contribute to the employment of unqualified poor people who do not have a job become employed by courtesy through of these investments and start to gain their pays, it's effect on an increase unemployment rate and the poverty arising. According to the estimations done by Asiedu

(2004), FDI inflows taking place in the developing countries has provided 26 million direct and 41.6 million indirect employments. If employment increases provide positive contributions for the reduction of the poverty, the most important factor determining the level is the wage to be paid by the foreign investors to their employees. In other words, wage taking place below the poverty threshold cannot secure the persons from poverty in despite of getting them closer to it (Watkins & Fowler, 2002). In addition, Dar, Presley and Malik (2004) investigated that the causality of relationship between FDI inflows and unemployment for Pakistan. The result shows there are two-way causalities between most of the variables with theoretically anticipated relationships are attained.

According to Shahbaz and Aamir (2008), the FDI inflows provides direct and important contributions to the reduction level of poverty by providing employment opportunities. Although employment growth contributes positively to reduce poverty, the level at which poverty reduction is determined by income wages. If the investors pay wages above the poverty line to people them employ, the poverty reducing impact of these investments is high, but if they pay below the poverty line, the poverty reducing impact is limited. In other words, wages below the poverty line pushes people to poverty line but does not help them recover from poverty.

2.1.4 FDI Inflows Impact on Economic Growth

2.1.4.1 Theoretical Insight on FDI Inflows and Economic

Following the traditional Neoclassical approach to growth, the FDI inflows can affect growth only in the short run (Solow, 1957). The long run growth is only possible through a permanent increase in the level of technology and is taken to be exogenous in

Neoclassical growth models. Yet, more recent growth models consider technology to be endogenous and see a role for capital in the creation of technological advances (Romer, 1990). Capital allows for investment in the development of new ideas and skills, and since knowledge is to some extent at least a public good, it raises the level of technology not only within the firm but in the entire of economic growth. These externalities account for the permanent advance of the level of technology, which is needed to promote economic growth in the long run. Thus, according to the new growth theories, capital including FDI inflows can permanently affect output growth through increased investment in technology and know-how, increasing the overall level of knowledge and technology in the economy.

FDI inflows in particular is believed to be more important for growth than other sources of capital. As a result, FDI inflows would contribute directly and more strongly than domestic investment to accelerated levels of growth in an economy because of the more advanced levels of technology, managerial capacity and know-how, resulting in higher levels of efficiency and productivity. However, others have argued that the assumption of foreign firms being more efficient than domestic firms is not necessarily true (Krugman, 1998, Hausmann & Fernandez, 2000). Besides a general provision of capital that can be invested in the adoption and imitation of more advanced technologies and knowledge, FDI inflows in itself often embodies higher levels of technology and know-how. FDI inflows is described as a whole package of resources: physical capital, modern technology and production techniques, managerial and marketing knowledge, entrepreneurial abilities and business practices (Todaro, 1992; de Mello, 1997).

Meanwhile, the Eclectic theory of FDI inflows views that if one country have a high level of GDP, it becomes a tools to attract more FDI inflows into the host countries. Similarly, supported by endogenous growth theories, FDI inflows can stimulates the economic growth in host countries (Borensztein et al., 1998). This theory highlights the important of FDI inflows that viewed as a way to meet the requirements of capital as well as to transfer new technologies for stimulate the economic growth. The impact of FDI inflows on economic growth also captured in the Harrod Domar model which is also known as capital fundamentalism theory. The main importance in this theory is that economic growth is dependent significantly on the FDI inflows in agriculture. Lastly, Ryoo and Smith (2007) reviews from the set of macroeconomic variables of Keynes and the New-Keynesian theory that FDI inflows becomes the key element in stimulate the economic growth of the host country.

2.1.4.2 Empirical Linkage of FDI Inflows and Economic Growth

Throughout some studies from Lunn (1983), Schneider and Frey (1985) as well as Culem (1988) claimed that FDI inflows able to bring significant effect on economic growth in a country. In fact, a country with a stable macroeconomic condition can benefits from FDI inflows by receiving more FDI inflows and as well as their economic. The studies also support by Romer (1990) and Lucas (1988) concluded that FDI inflows is able to increase the economic growth. Globerman (1979) claimed that FDI inflows has a positive impact on economic growth of the developing countries but there are opposite result based on other studies. On the other hand, during 1970 to 1985, Sanchez-Robles (1998) investigated the studies in Latin America about the relationship among three variables such as FDI

inflows, public infrastructure and economic growth. As a result, economic growth and FDI inflows have significant relationship.

However, based on the studies of Bengoa and Robles (2003) in Latin America, FDI inflows needs to be supported with adequate human capital and economic stability in order to have positive relationship with economic growth. According to Lööf, Johansson, and Ebersberger (2006), FDI inflows can enhance on host economic growth for developing countries but not for developed countries. Based on the studies of Neuhaus (2006), the economic growth in developing countries experience with strong capital inflows and technology transfer through FDI inflows. In contrast, FDI inflows bring significant benefit through global technology diffusion in developed countries. Nissanke and Thorbecke (2010) explained that there are two approaches that can be used to explain inequality of growth linkage.

Previously, traditional approaches argue that inequality in income and wealth can enhance economic growth. There are several reasons to explain why inequality in income can contribute to economies grow faster. Inequality results in higher savings and higher investment in physical capital. Therefore, the economies able to grow faster compare to equal income distribution. The studies also supported by Nissanke and Thorbecke (2010) and concluded that inequality will lead to greater uncertainty, lower investment activities and high transaction costs. Blomstrom et al. (1992) concluded there are positive relationship between the growth of income per capita and the average of the FDI inflows to GDP ratio in developing countries. In addition, Borensztein et al. (1998) argued that there are negative relationship between FDI inflows and economic growth at first but when

they combined the factors of FDI inflows and human capital accumulation on growth the result turn out to positive significantly. In their work, Borenzstein et al. (1998) also found that FDI inflows is an important vehicle for the transfer of technology and contributing more to growth than domestic investment. However, according to these studies, higher productivity holds only when the host country has a minimum threshold stock of human capital.

From the literature, it is clear that a country‘s ability to take advantage of the positive effects of FDI inflows might be limited by local conditions such as the development of the local financial markets, or the educational level of the population of the country which are generally called absorptive capacity. Alfaro et al. (2004) provided the facts that only countries with well-developed financial markets and human capital gain significantly from FDI inflows in terms of their growth rates. Liu et al. (2012) tested the long-run relationship among agriculture growth, FDI inflows and trade in China. Using a co-integration framework with quarterly data for exports, imports, FDI inflows and growth from 1981 to 1997, the research found the existence of a bi-directional causal relationship among FDI inflows, growth, and exports. Their results similar to the finding of Gerlach and Liu (2010). Hansen and Rand (2006) investigated the direction of causality between FDI inflows and GDP for a sample that consist 31 developing countries covering the 1970-2000 period. The authors reported the FDI inflows was shown to have a lasting effect on the economic growth of the countries. Therefore, they concluded that FDI inflows causes growth through knowledge transfers and adoption of new technology.

Sridharan et al. (2009) analysed the causal link between FDI inflows and economic growth among the BRICS (Brazil, Russia, India, China and South Africa) countries. The results revealed a bi-directional causal relationship between growth and FDI for Brazil, Russia and South Africa, while unidirectional causality runs from foreign direct investment to growth in the case of India and China. Oscar (2007) investigated the causal relationship between FDI inflows and economic growth in Uganda. The author‘s results indicated that FDI inflows causes economic growth, and that the variables are positively related. FDI inflows can contribute to economic growth by expanding the capital stock, just like all other types of capital inflows.

Macroeconomic studies use aggregate FDI inflows for a cross-section of countries and mostly suggest a positive link between FDI inflows and growth, however, often dependent on particular conditions. For example, De Gregorio (2005) shows using panel data of 12 Latin American countries, that the effect of foreign investment on GDP growth is about three times larger than for domestic investment. Also Borensztein, De Gregorio, and Lee (1998), Balasubramanyam (2001) and Xu (2000) find that FDI inflows contributes more to GDP growth than domestic investment.

Balasubramanyam (2001) finds similar results and concludes that FDI inflows can, under certain conditions, be a powerful instrument for economic development. The positive link that is mostly found between FDI inflows and economic growth is very likely to be highly endogenous. Theoretically the causality can run in both directions, FDI inflows can cause growth through various effects, but on the other hand a growing economy is likely to attract more FDI inflows since it provides new market and profit opportunities. In contrast, many

researchers have been argued that several of the empirical studies on FDI inflows and economic growth do not account for this endogeneity and therefore fail to identify causality between FDI inflows and economic growth (Carkovic & Levine, 2002). Correspondingly, there were indications whereby there is negative or no relationship between FDI inflows and economic growth in several studies. According to Akinlo (2004), by using the ECM, the impact of FDI inflows on economic growth in Nigeria had shown an insignificant adverse effect of FDI inflows on economic growth.

The main argument is that foreign owned companies export more because have better access to international markets through their link with the home economy. Especially efficiency-seeking and strategic-asset-seeking FDI inflows into the manufacturing sector (and services) would lead to increased exports (Aitken et al., 1997; UNCTAD, 2002). The impact of FDI inflows on the current account is difficult to assess but it is estimated that exports by foreign owned companies are very high in certain developing countries. For example, FDI inflows would account for around half of total exports in China, Malaysia, Costa Rica and some Eastern European countries, and for a quarter or more in Latin America, Slovenia and Romania (Sumner, 2005). Aitken et al. (1997) find for the Mexican manufacturing sector that multinationals are more likely to export than domestic firms. Through its contribution in exports FDI inflows may positively affect the balance of payments which is important for countries with a large current account deficit as in many African and Southeast Asian countries and bring about more balanced growth. Also the existence of vertical spill over effects from foreign investment in the agriculture sectors of developing and transition countries has recently received a lot of attention in the empirical literature.

2.1.5 FDI Inflows Impact on Poverty

2.1.5.1 Theoretical Insight on FDI Inflows and Poverty

To reduce poverty, investment in basic infrastructure includes education, health, transportation will benefit the poors assisting initial access to markets or to basic social services and increase human development (Loayza, 2010). The Post Keynesian view of poverty that linked with infrastructure facilities, established and advances infrastructure facility describes the wealth of the country then provides an opportunity for FDI inflows. An established and advance infrastructure facility of the host country provides great platform for investment and leads to greater FDI inflows. In addition, a country which has a prospect to attract FDI inflows will encourage a country to provide good infrastructure facilities, so the chance of positive effect on FDI inflows. Further, the Cobb-Douglas agriculture production function also used in several studies to test for the effects of transportation infrastructure and electricity on the agriculture growth (Felloni et al., 2001).

Importantly, Keynesian theory realizes that fiscal policy need more focus from the government especially on public investment at macroeconomic level. According to Keynes (1964), the most prominent pioneer of liberal economics, Keynesian model reflected from Neoclassical theory that agreed on economic growth as the main determinants key in against poverty through economic development forces. Shanghai (2004) claimed that growth is not enough, it also essential to accompany economic growth by investments through effective and adequate delivery of social infrastructure, health and education for the well-being of poor people. Policy reform by the government on investment strategy in developed human capacity will stimulate the economic growth.

Keynesian and liberal theory explained aggregate investment have positive relationship with employment rate from the set of macroeconomic perspectives; investment as main key to stimulate the economic growth thus reduce poverty. In addition, new political economy of development theories argues that greater inequality reduces the economic growth. According to Kanbur (2000), economic growth can be affected due to the political factor and social instability as well as inequality.

Though, Agarwal (1989) said in 19th century it was never used the term FDI inflows even though economic activities were quite common. In this regard, globalization has achieved new attention focus on relationship between FDI inflows and poverty reduction especially for developing countries. FDI inflows make living standard of people improved which lead to decrease the poverty can be achieved when employment in all sectors increase beneficiary from increasing of FDI inflows. Sumner (2005) reviews from Keynesian and Liberal theory about the FDI inflows impact such as social and economic aspect on human development. The social aspect includes improving welfare and reducing poverty, while the economic aspect includes improving technical progress, infrastructure, creating jobs and developing labour skills. Similarly, FDI inflows affects human development through areas such as and political cultural and social issues, capital market access, formation, structure of markets, fiscal revenues, technology and skills, and employment and incomes (UNCTAD, 1999). FDI inflows also gives impacts on welfare (Sumner, 2005), FDI inflows impacts on the formation of welfare directly by creating new jobs and indirect effects of FDI inflows on welfare occur at macro level through reducing instabilities and production costs thus increase international competitiveness, directly affects the efficiency of business market.

2.1.5.2 Empirical Linkage of FDI Inflows and Poverty

FDI inflows in the host country may have direct and indirect effects on poverty reduction. The indirect impact of FDI inflows on the reduction of poverty is through economic growth which results in the improvement of living standards due to the increase in GDP, improvement of technology and productivity, as well as the economic environment. If the FDI inflows increase, it is possible to see that employment growth and the reduction of people living below the poverty line due to the improvement of labour force, safety nets and the increase in demand for labour have a direct impact on poverty (Nguyen, 2003, Anwar & Sun, 2011). The direct and indirect poverty reducing effects of FDI inflows are not the same in all conditions and can vary depending on many factors; these factors are the investment quantity and quality, type of the investment, conditions of the sector where investment occurs, technological improvements, taxes paid by FDI inflows, efficiency of the investments and wages. In addition to this, because these factors are affected by economic and politic conditions, economics and politics are one of the most important determinants of the impact of FDI inflows on poverty (Shahbaz & Aamir, 2008, Anwar & Sun, 2011).

The empirical literature shows mixed results on the impact of FDI inflows on poverty. Pan-Long (1995) argues unambiguously that FDI inflows are very likely to worsen the income distribution in developing countries. Only in East and South East Asia, FDI inflows tends to reduce inequality. Mah (2002) and Zhang and Zhang (2003) find that FDI inflows deteriorate the income distribution in respectively Korea and China. Choi (2006) finds for a sample of 119 countries that FDI inflows is positively associated with income inequality.

In contrast, Lindert and Williamson (2001) and Milanovic (2002) find no significant relationship between FDI inflows and income inequality. Pan-Long (1995) argues that the significant relationship found between FDI inflows and inequality might be due to geographical differences in inequality, rather than to a causal effect of foreign investment. Some studies focus specifically on wage inequality between skilled and unskilled workers. Taylor and Driffield (2004) found that inward flows of FDI inflows contributed to wage inequality for the UK manufacturing sectors. Freeman et al. (2001) find no evidence for a consistent relationship between FDI inflows and wage inequality in a large sample of developing countries. Te Velde, Willem and Morrissey (2001) find evidence that the wage premium paid by foreign firms is higher for skilled workers.

2.2 Economic Growth and Poverty

2.2.1 Theoretical Insight on Economic Growth and Poverty

The Neoclassical of traditional economic theory on poverty views supply as the main factor of poverty and income. Neoclassical economics rely on individual stance towards poverty that depends on human and physical capital as a function of productivity. The prominence allocated to the roles of the government allows focus more on public goods and inequality issues, which may affect level of poverty not obviously acknowledged by orthodox economists. Economic theory of growth and productivity is based on the Neoclassical production function further discuss in Neoclassical Cobb-Douglas Production Framework. Solow (1957) based on Cobb-Douglas Production Framework showed the importance of technological progress on economic growth with the help of the growth accounting approach will give impact to the poverty alleviation.

In addition, the New-Keynesians explain about the significant of poverty with economic growth; Keynes (1964) have confidence that overall growth in income is the single most effective component in poverty elimination. Keynesian model from Neoclassical theory highlights that economic growth as the main determinants key in against poverty through economic development forces. However, Kenneth (1958) claimed that Liberal theory turns around the idea that not only economic growth cause poverty but also wide-ranging underdevelopment in its various aspects.

Meanwhile, Keynesian and liberal theory described extensive studies multiple cause of poverty mainly on unemployment issues, underdevelopment economic and ways to reduce poverty through fiscal and monetary policy; further explanatory on government intervention that focus on macroeconomic level (Kenneth, 1958). Generally, economic growth can reduce poverty rates prediction by many policy makers. However, according to Haveman and Schwabish (2000), there is negative relationship between economic growth and poverty rates. Indeed, Haveman and Schwabish (2000) claimed in their studies that poverty have negative impact on GDP but positive impact on unemployment rates. The factors for the negatives relationship between GDP and poverty because of gender issues (increasing female workers), decreased income transfer liberty, long stagnant of average income and low job opportunities. Reduction of poverty through economic growth can be done if total number of population growth lower than GDP growth rate (Jenkins, 2002), poverty can be reduced when GDP economic growth higher than population growth shows increasing in level of investment. Generally, developing and underdeveloped countries have poverty problems because of having high population growth rate and on the other hand economic

growth is very low lead to deficit problems. As long as the poverty rate gets reduced, the counties become more enriched and not involving with economic crisis or war.

Many researcher agreed that growth become the most single important factor in reducing poverty on a national level and income of poverty (Shanghai, 2004). Gallup et al. (1999) shows that "growth is good for the poor"; the poor gain equivalently from growth in the mean income a result which has been highlighted. He also found that across countries average incomes of the poorest quintile moved almost with overall average incomes. This is equivalent to saying that the share of the poorest quintile is uncorrelated with log GDP per capita. Furthermore, according to Roemer and Gugerty (1997) found an increase in the per capita GDP strongly links with average incomes of the poor that can benefit from economic growth on average the poor do benefit from the growth because their study illustrate that an increase in the rate of GDP per capita leads to a one for one increase in the average income bottom 40 percent of income distribution of the poorest.

Indeed, it is arithmetically difficult to reduce poverty without economic growth in a very poor country. Thus, Goldberg and Pavcnik (2004) claimed the main determinant of poverty reduction appears to be economic growth. Poverty reduction can be categorized into two that includes change in the composition of income and faster economic growth. If a country is experiences slow growing in economic or not at all, then actions that improve the distribution of income is compulsory will reduce poverty. In Latin America, Besley and Burgess (2003) conduct analysis on calculation that a one standard deviation reduction in inequality could reduce almost by more than half in SSA and half in Latin America of poverty level. The

economic growth rates need may exceed what can be reasonably expected; compared with what could be required if an increase in economic growth resulted in a one-to-one or higher increase in the income of the poor, if economic growth raises the income of the poor by less than one-to-one, this implies that, for a given target of poverty reduction over a certain period of time. However, Gruen and Klasen (2008) detected there is triple effect when the economic growth increase that are decreases on inequality, enhances the poverty level and reduce poverty immediately.

Nonetheless, there is still an argument on whether the poor can benefits from economic growth that lead to increase in living standard of the poor and whether the poor can have advantage from economic growth. For example, Ravallion (2001) highlights that it contradict from the results of Dollar and Kraay (2002) that growth raises the income of the poor by about as much as it increases the incomes of everyone else. Whereas the complexity of absolute and incidence poverty in developing countries inclines to fall with growth, Dollar and Kraay (2002) discover that the experience is varied by looking behind averages. A one percent of growing in average consumption or household income will fetch anything from a decrease in the poverty rate of 0.6 percent. There is a huge heterogeneity in the gains to the poor from a given rate of growth, the sources of this heterogeneity being the differences in regions within countries that make generous in contraction and aggregate growth and the differences initial inequalities between countries.

Ghura et al. (2003) said pro-growth policies may have to be alleviated by distributional considerations that has important consequences for economic policy if economic growth typically leaves the poorer groups behind. Hence, the role for policies that take into account the distributional impact of economic growth. Easterly and Levine (1997) stated that for growth reducing policies impact from the endowment of public goods and create positive incentives through ethnic multiplicity that may increase divergence and thereby hamper agreement. Similarly, Alesina et al. (2003) argue that the provision of most public goods, such as education, roads, libraries, and sewer systems is inversely related to ethnic fragmentation in localities. Conversely, in economies with high levels of inequality the political process may lead to income redistribution policies that hamper economic growth because of distortions (Alesina & Perotti, 1996).

2.2.2 Empirical Review Linkage between Economic Growth and Poverty

The relation between economic growth and poverty has been the subject to an extensive economic literature and the link between growth and poverty especially in the long run has become a well-established fact. Dollar and Kraay (2002) show, using country panel data for four decades, that growth is inequality neutral and leads to proportional income raises for the poorest income quintile. Ashley (2008) agrees that in periods of economic growth also the poor benefit from this growth, although not equip proportionally. Also Ravallion and Chen (1997) show that poor people benefit from rising average income, using micro-econometric analysis and household survey data from more than 40 countries.

While, Ravallion and Datt (2002) find that economic growth is positively related to poverty reduction across Indian states, using survey data over about four decades. In a recent paper Kraay (2006) investigates the cross-country variation in changes in the headcount measure of poverty for a large set of developing countries for the 1980s and 1990s. Kraay (2006) discoveries that average income growth is the main source of poverty reduction, counting for 70 percent of the variation in poverty in the short run and for 97 percent in the long run. These results all underscore the importance of economic growth for poverty reduction. Yet, in the short run, there might be a trade-off between growth and poverty reduction. Economic growth might indeed not directly benefit the poor. Especially in countries characterized by high income and asset inequality, economic growth might not be related to poverty reduction in the short run (Pasha & Palanivel, 2003; Ravallion, 2001). Income growth will generally not immediately and directly benefit those who are trapped in poverty because of initial asset inequality coupled with market failures and because of spatial externalities.

2.2.3 Theoretical Review on the Determinants of Economic Growth and Poverty

The Neoclassical of traditional economic growth theory on poverty views supply as the main factor of poverty and income. Neoclassical economics rely on individual income that depends on human and physical capital as a function of productivity. According to Friedman (1962), education level becomes important mainstream of human capital. Becker (1964) found importance human capital theory that highlight the skills of workers are important for the economic development. Income of one person differs from each other because of the level of educations and skills workers such as training, education and mobility according to human capital theory. There are a strong relationship between

marginal productivity and wages if market set at perfect competition and equilibrium attained. Lydall (1968) claimed variation of personal earnings come from the mixed education of individual level, intelligence and environment.

Meanwhile, countries that the government less invest in education having many poor households (Machin & Reenen, 2010). In addition, the government developed a policy based on human capital theory views on poverty, all the income of individual cannot be fully equalized because of different level of human capital characteristics such as education, skills and etc. but the government can help to improve the level of individual achievement by spending more on education of the poor people. While reducing tax and government regulations on business as a way to increase physical capital (Boskin & Stein,1987). Persky (2004) said that from the classical economic theory increase the level of poorer satisfaction by using a rich man to transfer its income to a relatively poor man. The traditional classical economic theory also reviews that if full equality presence such as direct transfers of wages subsidies it will increase the productivity of labour and social welfare. The Neoclassical theory mentions that government's intervention in competition and a free market will lower the poverty level by increasing efficiency in production that caused high productivity of labour and income.

Bruni (2006) reviews that the Neoclassical approach creates perverse incentives that make poverty even worse because the poor get the support from the government that leads to less work effort. The poor people willfully depending on government redistribution and welfare; less participate in the labour force and social issues (Murray, 1984). According to Persky (2004), the support from the government such as high minimum salary will make high

immigrants choose to go to the developed countries because of the factors of globalization. Indeed, Shovlin et al. (1997) criticisms that investment and productivity growth would increase by greater saving on government incentives. The Neoclassical theory can be done if the government provide appropriate incentives, meaning that the government should less interfere in the economic system.

Keynesian theory has two perspectives to explain poverty; unemployment (underdevelopment economic) and redistribution efforts of government intervention. Unemployment rate as the main factor cause of poverty and inequality according to Kenneth (1958), Minsky (1965) and Foster (1998). Therefore, achievement of full employment is important objectives for the government to eradicate poverty. Labour Markets will be more efficient due to more workers and the wages of low income workers will increase when the unemployment rate is low also lead to low poverty and generate income equality (Minsky, 1965). Furthermore, Huber and Stephens (2001) claimed high unemployment rate would make the government to reduce their redistribution efforts that caused deficit spending and fiscal problems. However, low unemployment rate and the wealthy economy would make the government to increase their redistribution efforts through more substantial in providing social transfers that can reduce poverty and inequality.

In the case of Liberal theory, economic underdevelopment such as human, infrastructure, business, natural, public institutional and knowledge capital issues become the major focus in liberal theory (Sachs, 2005). Under liberal theory, logically if one individuals have no jobs means that the individuals have no income categorized as poor people so that

unemployment is said as primary source of poverty. In this context, individuals able to seek better social capital status through career opportunity and motivated by higher expected income by dealing with individuals investment and borrowing facilitating to prevent status of lifelong poverty in future (Ulimwengu, 2008). Reinstadler and Ray (2010) claimed that the unemployment rate have an indirect effect such as unemployment risk and direct impact on poverty. Indeed, Unemployment risk that related to indirect effects includes higher income workers can easily being fired due to employer cannot afford to pay their salary during business and economic downturn. Nevertheless, the aggregate factors influencing the individual's characteristics the likelihood from becoming poor such as regional employment are significant. In addition, globalization and industrialization can provide job opportunity for regional that can increase employment rate and the main focus to eliminate poverty (Edwards, 1998).

Keynes (1964) continues highlighted tax policy is also important factors for poverty because it affects income distribution that controls the household consumption. Keynesian model supported using tax policy to equalize incomes because its effect in increasing the tendency to consume; fiscal policy is used as a deliberate tool for the more equal distribution of incomes. To increase consumption and spending for speedy economic growth, fiscal policy such as charges high tax rates on capital gains, unearned income and inherited wealth. Definitely, profit taxes on businesses affects human development through raising money from redistribution activities such as family or child allowances, pension programs , liberal social insurance and increases in state expenditure included greater spending on education, health, housing and recreation, travel (Keynes, 1964). Furthermore, corporate tax and indirect taxes come from FDI inflows activities can cause total tax

revenue increasing effectively. Thus, poverty can be reduce by increasing total tax revenues which the poor people may fully utilize from the financing of services or investment directly such as in-kind or cash assistance or indirectly then FDI inflows have positive involvement on the reduction of the poverty.

In Muslim countries, the institution of Zakat was built to support the government regulations on the development process for purposes of meeting the need for resources allocation, affirmative policies, positive discrimination and long- term national development agenda. For instance, investments undertaken with the proceeds of Zakat in the interest of the poor and needy must be courteously protected against the mishap of market forces; such investments must in the name of the poor and other helpless groups are geared on the way to long-term livelihood (Adelman & Yeldan, 2000).

In addition, based on keynesian and liberal theory to the beneficial effects on human development, growth, productivity, and investment, some studies have acknowledged negative impact of inflation on the poor. Inflation arises when the nominal wages on which low employees depend on stagnate or grow below than prices, inflation can depress employees' real income and lead to poverty. Similarly, Agenor (2004) conducted research based on 38 countries found poverty always affect by inflation because of the prices of basic goods are affected by household income. Inflation also can caused deflation for example asset market bubbles, massive increase in housing prices or rental house may carry with them an enriched risk of homelessness for those who low income to pay rent or interest who hold few assets so as to be entitled to apply for mortgages, and where social housing is absent or in short supply (Early & Olsen, 2002). Thus, housing and asset bubbles

contribute to increase in poverty by debtor unable to pay their debt linked to financial crises that may accompany deflation of such bubbles.

Keynesian and liberal theory continues to determine the cause of poverty, market failures such as moral hazard, externalities, and adverse selection is also a key factor can caused poverty. The Neoclassical approach claimed uncertainty about the role of government although targeted strategies to address market failures may be warranted in some cases. Lastly, Neoclassical theory, Keynesian and liberal theory found many other determinants of poverty, trade openness is also a key factor to reduce poverty by increase a host country production and domestic technology especially in agriculture sector.

2.2.4 Empirical Review on the Determinants of Economic Growth and Poverty

2.2.4.1 Human Capital

The variations perspective in Neoclassical theory lies the greater emphasis placed on the macro side in Liberal theory in comparison with the more micro orientation of former models. The role of the government in the economy therefore tackle the center of the issues through investment in public education that encourage economic growth via the famous multipliers and the improvement of abilities it necessitates. In other words, it is struggled to helping human capital growth through the government intervention against poverty is needed in a wide variety of economic perspectives. In Brazil, Menezes Filho et al. (2004) reveal on their empirical study that growth can have a direct impact on the poverty by human capital development through the poor educational results and highlight the importance of human capital in stimulating pro-poor growth.

Correspondingly, Dreze and Sen (2002) also agreed on the role of education enabling people to make use of economic opportunities shaped by the government. Generally, many researchers agreed on nurturing educational achievement levels means moving people out of poverty; investments in human capital impossible to happen automatically if other corresponding factors are not play their role. Larger pool potential of entrepreneurs who can set up their own business which practices modern technology can increases the pool of people who can have a better opportunities of their career development shows that improving literacy facilitates on pro-poor growth (Chhibber & Nayyar, 2007).

In contrast, Ghura et al. (2003) make a reviews on the Classical and Neoclassical theory about the government interventions such that suggested the existence of the government in all circles of the economy should be limited. The human capital productivity of the poor is an important as determinant of their ability given that by conducive environment provide by the government that the poor can get advantage from the enhanced opportunities. In order to foster poverty relief, there needs to combine growth promoting policies along with human resource development to develop an effective antipoverty policy. McDowell (1995) said many sociologists unsatisfied on the issues of poverty alleviation created by economists that neglect the roles of social and institutional organisation in the process of economic development. Economist also claimed that certain community efforts to improve their living standard are empirical correlates of successful communities; poverty as a tools shape the local social structure (Farmer et al., 1989). In this case, poor people in rural Pennsylvania for example concerted efforts on community action to achieve their common local goals, and cohesion generally influenced manufacturing development.

2.2.4.2 Trade Openness

Trade openness presented as the ratio of the export plus import divided by GDP (Nunes et al. 2006). In literature, Khan and Sattar (2010) stated trade openness is also a main factor to reduce poverty that leads to increase domestic technology and efficiency of production resulted to agriculture growth increase and poverty will reduce. From an empirical point of view, Attanasio (2004) found that increases in the probability of unemployment before and after tariff reductions were not larger in manufacturing than in non-traded sectors, this resulted from their studies in urban Colombia on whether the increase in the probability of being unemployed was greater for workers in the manufacturing sector than for workers with the same observable characteristics in non-traded-good sectors such as restaurants, wholesale and retail trade, hotels, construction, etc. However, this evidence is based on a very aggregate industry definition, while the information on unemployment is not directly linked to changes in trade policy.

Nicita (2004) tries to evaluate the impact of trade liberalization on poverty in Mexico by estimate the relationship between tariff reductions and household welfare. Next, by reviewing the example of Vietnam, Dollar and Kraay (2002) show that this country experienced a large increase in per capita income and no significant change in inequality when it opened up. Thus the income of the poor has risen radically, and the number of Vietnamese living in absolute poverty dropped sharply from 75 percent of the population in 1988 to 37 percent in 1998. Of the poorest five percent of households in 1992, 98 were better off six years later. Another interesting study by Porto (2005) highlighted to the role played by the informal exports barriers to trade like cumbersome customs practices,

transport costs, bribes and costly regulations. Porto (2005) finds that such barriers have significant effects on poverty in Moldova shows that improving export practices would reduce poverty from an initial headcount ratio of 48.3 percent to a poverty rate between 45.5 percent and 43.3 percent. This means that informal export barriers would be responsible for lifting between 100,000 and 180,000 Moldovan citizens out of poverty. With a population of 3.5 million, these are large effects.

Topalova (2007) uses the sharp trade liberalization in India in 1991, spurred to a large extent by external factors, to measure the causal impact of trade liberalization on poverty and inequality in districts in India. Topalova (2007) discovered that in rural districts where industries more exposed to liberalization were concentrated, poverty incidence and depth decreased by less as a result of trade liberalization compared to a rural district experiencing no change in tariffs, a district experiencing the mean level of tariff changes saw a 2 percent increase in poverty incidence and a 0.6 percent increase in poverty depth, a setback of about 15 percent of India's progress in poverty reduction over the 1990s.

From a cross-country point of view, Epaulard (2003), studying the link between macroeconomic performance and the change in the poverty rate among 47 episodes of growth and 52 episodes of economic downturn in developing and transition economies, finds that trade openness does not impact directly the change in the poverty rate. However, she finds that it reduces the absolute value of the elasticity of poverty to economic downturn. In other words, the more open a country, the less any percentage point economic downturn will increase its poverty rate. Others numerous empirical studies suggest that

trade complements rather than substitutes for FDI inflows. Much of FDI inflows is export oriented and may also require the import of complementary, intermediate and capital goods. In either case, volume of trade is enhanced and thus trade openness is generally expected to be a positive and significant determinant of FDI inflows (Sahoo, 2006). More liberal policies and trade facilities presents opportunity for FDI inflows to come to the hosting country.

2.2.4.3 Market Size

According to Alon (2010), researcher explained that, commonly, the most favorable choice for market size motivations was GDP, because it was the best replicates aggregate market demand, due to GDP had being foreseen as the most direct measure of national income size. In term of this, as being mentioned earlier, GDP and poverty did has relationship with market size. The purchasing power of a country and its market size were reflected by levels of real GDP and poverty level of the host country. Root and Ahmed (1979) and Bhattacharya et al. (1996) claimed that prospects of market potential was increased by a growing market and economies of scale would be generated by a large market size. In another words, GDP also had the similar relationships of economic growth, therefore, economic growth can be taken account on market size then. Based on Sahoo (2006) studies, the author indicated several important determinants of the economic growth in South Asian countries such as market size, the growth of labour force, infrastructure and as well as trade openness.

Based on Al Nasser (2010), the outcomes in this study claimed that an essential role played by market size in underwriting to economic development. Lokesha and Leelavathi (2012) considered that the important determinants of economic growth in India are market size and income of its population. More companies can be accommodated by bigger markets, both national and overseas, and manufacturing tradable products can be assisted in order to attain scale and scope of economic thus lead to reduce poverty level of that particulars country. According to Alam and Ali (2013), if GDP deviates from the equilibrium position due to some sort of shock to the system, countries with greater market size, low labour costs and improved quality of infrastructure will reassure their positions more quickly. Boermans, Roelfsema and Zhang (2011) indicated that overseas investors were appealed by the Chinese provinces with among one of them due to larger market size that have a strong GDP growth.

Erdal and Mahmut (2008), state in the studies, found that the GDP growth rate to be a significant explanatory variable probably indicate the current size of national income is small effect the FDI inflows decisions than growth performance may have less relevance. Then, the result on market size being unanimous. Meanwhile, According to Lokesha and Leelavathi (2012), there are many variable that are considering such as market size, income of its population and GDP growth very important determinants of poverty. Thus, if the companies join and can be accommodate in national and overseas by bigger markets. Plus, products, services or good are very popular in the market size in order to attain scale and scope of economic. So, it can affect the country GDP and poverty level of one country.

The larger the market size, the more easily investment to enter. A rapidly growing economy provides better opportunities for making profits than the ones growing slowly or not all (Lim,1983) and an impressive rate of economic growth will be taken as a favourable signal by foreign investors when making investment decisions (Asiedu 2003; Erdal & Tatoglu 2002). GDP can be used to capture the influence of proven economic performance (Obwona 2003), so the annual growth rate of real GDP is used as a measure of how attractive the market is. Generally speaking, the larger the agriculture market size is, the more FDI inflows it attracts that will enhance the GDP and reduce the poverty level.

2.2.4.4 Unemployment

Many researchers such as Galbraith (1958) and Minsky (1973), focuses on unemployment as the key determinant of poverty and inequality. As Minsky (1968) summaries that all the job of eliminating poverty can be done through the accomplishment and sustaining of tight full employment. Minsky (1965, 1968) also claims that when unemployment is low will forces the labour markets to be tight thus it lead to increase low income workers and will also draw more workers into the labour market. Both of these factors can lower the poverty level and produce greater income equality. Huber and Stephens (2001) also agreed that by prosperous the economy growth and low unemployment rates in a ways to reducing inequality and poverty, the government is able to be more liberal in providing social transfers and can subsidize more. Under the liberal view, the supreme importance allocated to unemployment as a primary source of poverty is based on the logic that if individuals do not receive labour income, they are consider poor. Aassve et al. (2005) explained the poverty on individual income perspectives, if poorer fail to maintain their current job and

exiting employment given insufficient salary for maintaining the standard of living above the poverty line they will expected return to poverty. Pemberton et al. (2016) also reviews that individuals likely to face poverty in retirement due to gaps in entitlements on social security and pension systems.

Sen (1999) emphasizes the importance of short term that is transitory poverty and long term likes persistent poverty influences ability to transform into entitlements from assets. Similarly, Reinstadler and Ray (2010) found two types of impact on poverty that the unemployment rate have a direct and indirect impact. The direct impact includes a higher aggregate unemployment rate can increases the viewpoint of individual unemployment and the wage bargaining power of the employed that are at higher risk such as receiving a lower wage or higher chances of being fired when the aggregate regional unemployment rate rises are example of indirect impact of unemployment rate towards poverty. Significantly, Reinstadler and Ray (2010) also found that the main individual characteristics manipulating the likelihood of being poor give an impact on the aggregate factors such as regional employment. This gives support to the Keynesian theory that stress on implying a need for regionally focused policies notably on investment at the macroeconomic level; the efficacy of nationwide fiscal policy.

In contrast, the fact that employment is generally alleged as an anti-poverty tool, in practice employment may possibly cause poverty under some specific conditions. For example, despite the reduction in the unemployment rate, a cases like this took place in Germany during the most recent crisis poverty has actually increased and just over half of the 14

million people in the UK that consider as poor people were from working families (Kyzyma, 2014). Indeed, according to Pemberton et al. (2016), low paid jobs may produce inequality work when there is an adequate safety net or if jobs are accepted may lead to poor health because not enough of money to get a better health treatment. Insecure and precarious jobs includes the expansion of low paid, part time and temporary jobs can be result into drastic supply-side. Machin (2009) found that labour market reforms aimed at bringing the flexibility; linked to technical changes which are dropping the demand for unskilled labour and therefore reducing wages for such work.

2.3 FDI Inflows, Poverty Reduction and Economic Growth

2.3.1 Theoretical Linkage of FDI Inflows, Poverty Reduction and Economic Growth

The importance of investment and FDI inflows basically highlights by the Neoclassical model on poverty and economic growth created from the Solow's growth model (Solow, 1957). Solow forecasts the growth rates of the poorer countries will grow more rapidly compared to richer countries. Most of the researcher believes that although FDI inflows helps to reduce income poverty by promoting growth, it is neither effective in reducing other aspects of poverty nor deals with income inequality. Subsequently, Dunning (1993) reviews the analysis of international investment to reduce poverty are limited to isolated studies of individual cases since the 1950s even though the theories of FDI inflows already formulated in the early 1970s. Thus, various theories of FDI inflows has been formed and caused disagreements and debate among scholars about whether FDI inflows still becomes mechanism as a substance for economic growth.

Indeed, the views of FDI inflows to reduce poverty especially in developing countries has attained new attention at a global level. The form of FDI inflows has included acquisitions and cross-border mergers which refers to investments that create new production facilities opportunity in host countries. The Classical and Neoclassical theories viewed FDI inflows is a way to allocate capital to a place where it is most productive and hence enhances economic growth through filling the saving investment gap. For the endogenous growth theories, FDI inflows, in addition to filling the saving investment gap, helps as a channel to reduce poverty, transfer knowledge, promote learning by doing, and bring in technology spillovers and human capital augmentation. Consequently, FDI inflows stimulates economic growth in host countries. The Eclectic theory of FDI inflows, on the other hand, provides a tool to explain the influence of economic growth on FDI inflows attraction to host countries.

According to Klein, Aaron and Hadjimichael (2001), poverty reduction may have indirect or direct effects on FDI inflows in the host country. The growths in GDP, productivity, technology, economic and financial improvement are good examples of the indirect impact of FDI inflows to eliminate poverty so that will lead to a better standard of living. FDI inflows is providing capital to boost numerous aspects of the economic development of a province or country plays as main factors in the country's economic future development. Due to its computable nature, FDI inflows has attracted many researchers who empirically examine its relationship between other indicators of economies. The impact of FDI inflows on poverty reduction, job opportunities, tax revenues, management and labour skills, and use of technology in the private sector has been examined regionally, countrywide or among several countries. Additionally, in endogenous growth models, which emphasize on the

importance of external factors like FDI inflows on economic growth, FDI inflows is generally assumed to be more productive than domestic investment, since FDI inflows encourages the incorporation of new technologies in the production function of the host economy (Borensztein et al., 1998). In this view, FDI-related technological spillovers offset the effects of diminishing returns to capital and keep the economy on a long-term growth path. Endogenous growth models acknowledging the role of technological progress, in the long run, propose that introduction of new accumulating factors such as knowledge, human capital, innovation will induce self-maintained economic growth.

In Neoclassical growth models with diminishing returns to capital, FDI inflows has only a short-run growth effect as countries move towards a new steady state and thus, the impact of FDI inflows on growth is identical to that of domestic investment. According to this theory, in the long run, given the diminishing marginal returns to physical capital, the recipient economy could converge to the steady state growth rate as if FDI inflows had never taken place leaving no permanent impact on the growth of the economy (De Mello, 1997). The volume of capital flow to the poor economies relative to the rich has been low. Based on the early Neoclassical model, interest rate gaps become the main reason one company invest in other countries or trade to other countries to get the advantages from interest rate differential. In this case, the capital transfers from low earning of investment country to another country where the earnings of investment are high. Besides, Rostow (1971) has developed an economic growth model of the stages of growth to explain the presence of FDI inflows in the economic transition process in developing countries to eliminate poverty. In the model, FDI inflows into developing countries are viewed as a way to meet the

requirements of capital as well as to transfer new technologies during their transitional economies. This is captured in the Harrod Domar model which is also known as capital fundamentalism. The main emphasis in this model is that economic growth is dependent on the savings investment ratio. Since developing countries in general, have underutilized land and labour and exhibit low savings rate, the marginal productivity of capital is likely to be greater in these countries than in the developed countries. Thus, these theories of development assume that interdependence between the developed and the developing countries can benefit the latter. This is because capital will flow from rich to poor areas where the returns on capital investments will be higher, helping to bring about a transformation of backward 'economies.

Ryoo and Smith (2007) views from the set of macroeconomic variables that Keynes and the New-Keynesians theory that aggregate investment has positive effect with employment; the key element in stimulate the economic growth that can permit poverty reduction. Investment is important because it can reduce poverty and also unemployment rate among suppliers of labour; Keynes views as socialization of investment that includes raised in taxes, government revenue, bond issue, should be funneled for encouraging the public investment. Entrepreneurs and businessman at the same time would be prompted to invest in profitable projects rather than saving their money if the direct taxes were raised. Similarly, According to Jefferson (2012), tax had a negative impact on poverty rates, a tax is required to fund antipoverty activities, while the lower tax collection can diminish demands on antipoverty activity. The emphasis on FDI inflows to reach the corresponding goals of poverty reduction, employment, and economic growth is vital in certain sectors which are considered to be the

important multiplier effects in business strategy. Correspondently, human development, infrastructure, agriculture, and education sectors can help alleviate poverty by generating value added and boosting the economic growth.

2.3.2 Empirical Linkage of FDI Inflows, Poverty Reduction and Economic Growth

The direct impact of FDI inflows on poverty can be seen through the increase in employment and the reduction of people living below the poverty line resulting from the increase in the demand for employment, the improvement of workforce and safety nets. Roemer and Gugerty (1997) indicate that on average the poor do benefit from the economic growth because their study shows that an increase in the rate of GDP per capita leads to a one for one increase in the average income of the poorest (bottom 40 percent of income distribution). Nelson and Pack (1999), Kakwani (2000), Li and Liu (2005) and Licai et al. (2010) agree that the positive effects of FDI inflows tend to outweigh the negative effects, resulting in economic growth and poverty reduction.

Furthermore, Roemer and Gugerty (1997) suggest that on average the poor do benefit from economic growth. An increase in the growth rate per capita GDP strongly correlates with average incomes of the poor. FDI inflows mainly promotes growth and affects the quality of growth especially poverty reduction and thereby reduces income poverty. It may reduce the adverse shock to the poor from financial instability and improve the capacity management of the government. It also increases the safety nets for the country and through government led programs to redistribute assets and income (Klein et al. 1999). Semmler and Nordstrom (1999) suggest that economic integration is generally a positive contributor to

poverty alleviation, by allowing people to exploit their productivity potential, promoting economic growth, and helping the country to prevent the unexpected shocks. Although Semmler and Nordstrom (1999) found no direct links between FDI inflows and poverty reduction, the research concluded that the scale effects which are the impact of FDI inflows on growth via economic activities, and employment outweighed the quality effects which are the direct impact of FDI inflows on poverty reduction, level income of poor, and skill improvement.

Hung (2005) investigates the impact of FDI inflows on growth and poverty reduction by regression analysis using panel data from 1992 to 2002 across 12 provinces and cities of Vietnam. Hung agreed that FDI inflows has direct and indirect effects on growth and poverty reduction. Dollar and Kraay (2002) studied income and economic growth using the Squire and Deninger Database, the study detect that income of the poor have a significant positive relationship with growth. In this case, FDI inflows become the main key to stimulating economic growth and important ingredient for poverty relief. The investigation is done in 80 countries periods over 40 years by testing the relationship between bottom 20 percent of the income distribution the income of the poor with overall income using data on the income of the poor and mean income. In addition, Nelson and Pack (1999) agreed that the positive effects of FDI inflows have a tendency to compensate to negative effects, resulting in poverty reduction and economic growth.

Aaron (1999) studies the relationship between FDI inflows and poverty reduction in two parts: firstly examines if inflows of FDI inflows in a province affect the economic growth of the province positively. Aaron also aims to reveal whether there exists a negative correlation between economic growth and the number of people living below poverty line. These two-phased researches would consequently refer to that the increase in inflows of FDI inflows results in poverty reduction. It concludes that there is a positive correlation between FDI inflows and economic growth. This study also used partial regression analysis to support the other hypothesis, which states that FDI inflows indirectly reduces poverty in the host province.

Soumaré and Gohou (2009) also investigate the FDI inflows impact on growth and poverty reduction empirically by using econometric models on panel data across African countries. They examine the FDI inflows contribution to poverty reduction in Africa and any possible differences in the function of FDI inflows to reduce poverty between regions of Africa. They refuse to use gross data of variables as GDP and FDI inflows and choose to use ratios such as FDI net inflows over the gross capital formation. By this way can help aim to obtain more specific and detailed results. The researchers also employ the human development index rather than using GDP only as a variable to achieve more specific results on welfare. This study conclude that there is a bi-directional causality link between FDI inflows and GDP per capita, therefore, FDI inflows reduces poverty and increases welfare. Anwar and Sun (2011), Li and Liu (2005) and Licai et al. (2010) also found the similar results. On the other hand, the relationship between FDI inflows and welfare varies substantially across regions of

Africa. For example, FDI inflows affects welfare in Central and Eastern Africa, despite that its impact in Northern and Southern Africa remains insignificant.

2.4 Literature Gap

The agriculture sector has been appearing in many studies and research paper but there is less number of study is being related to the FDI inflows in agriculture. Many studies in the literature have dealt with the issue of FDI inflows and their potential benefits for developing countries in terms of job creation opportunities, technology transfers, and growth and development. The significance of agriculture sector was given further highlight in 2008 when food prices increase suddenly and supplies of food were limited, it leads to food security issues in several OIC member countries, and caused civil conflict in some others. The food crisis in 2008 resulted in rising food prices, exerting strain on the OIC member countries' economies with their adverse effects on people lives especially in the low income groups. This is hampering governments' efforts towards achieving the poverty reduction. Given the relative importance of the sector, it is important to highlight some of the constraints hampering the further growth and development of the sector. Based on previous studies, it is difficult to find the correlation between agriculture sector and FDI inflows in research to estimate the impact of the FDI inflows in agriculture on poverty and economic growth, especially among OIC countries. Besides that, the FDI inflows among the OIC countries is the lowest if compare to the other's country around the world. The OIC country is a majority of the lower income country and the high income country having a less percentage to make the comparison.

Many types of research have studied the effect of FDI inflows on economic growth but its relationship with agriculture growth and poverty has been little surveyed. Many types of research kept economic growth as a dependent variable in a relationship with FDI inflows and appear in many studies that importance of FDI inflows contribute to economic growth. Discussing the choices of economic growth as the dependent variable for FDI inflows in agriculture, not all the researchers measured agriculture growth, generally used economic growth as the measurement. Thus, this study conducted using agriculture growth that direct link to FDI inflows in agriculture that focusing in this area. To countervail these developments, increasing investments from all actors, in particular from farmers themselves, governments and international donors, are needed. Government spending on agriculture and provision of public goods in rural areas, e.g. related to markets, transportation, infrastructure or research are highly positively correlated with capital formation and productivity as it provides incentives for the private sector and farmers to further invest into productive assets. Although this is encouraging, the current austerity measures as a response to the global financial and economic crises are likely to reduce these spending. This might increase the gap between the emphasis on agriculture development, the promised financial support, and actual disbursement.

Based on the previous literatures, FDI inflows have direct and indirect effects on poverty reduction. The researcher had reviews that there is limited study on determinants of poverty that take account of FDI inflows in agriculture as their variables. Most of the researcher only took a single measured of FDI inflows as determinants of poverty. In the case of OIC countries, the level of poverty is very high compared to non-OIC countries. Nevertheless, the direct and indirect poverty reducing effects of FDI inflows are not the same in all conditions

and can vary depending on many factors; the empirical literature shows mixed results on the impact of FDI inflows on inequality. These standard poverty and growth determinants define a basic model that may then be adjusted according to the specific research issues at hand, as well as data considerations. Furthermore, since FDI inflows affects poverty through an agriculture growth process, it is useful to examine its determinants. In the case of OIC countries, the level of poverty is very high compared to non-OIC countries.

Irrespective of the level of sophistication and technological advancement achieved by mankind, agriculture remains the backbone of human existence and survival. Despite the benefits arising from technological progress, the corresponding higher yields and more resistant crop varieties, the basic need and fundamental problem still facing the world and OIC member countries is food security. As mention early, the food crisis resulted in member countries, mostly the GCC, to explore agriculture investments in other countries. This focus of FDI inflows in agriculture presents a unique opportunity for some OIC member countries which have under-utilized agriculture land. In richer countries, agriculture has been protected and subsidized by the government. On the contrary, agriculture in the poorer countries often been taxed because large agriculture sector provides extensive and available taxes bases. Public funding is important to support the growth of agriculture sector. Some crisis has put pressure on public funding in other countries and some government may cut down the financial support to the agriculture sector. Besides the fact, agriculture spending is one of the most important tools in promoting agriculture development. To close this gap in existing literature, the aim of this study is to analyze the various potential determinants of FDI inflows for a sample of OIC economies.

Moreover, research using econometric models to evaluate the relationship between the inflows of FDI inflows, growth, and poverty reduction in OIC countries is lacking. One of the possible reasons for this is that the availability of the data on FDI inflows in agriculture, poverty, and agriculture growth as well as others determinant variables are limited in OIC. Based on the extent and depth of the problem, it must be reiterated that poverty reduction does not only involve food availability, but also food accessibility and utilization by all people. The inflows of foreign direct investment to OIC countries is very low compared to other parts of the world. By doing panel data analysis, it is important to find out which determinants of FDI inflows in agriculture are the most significant.

2.5 Conclusion

This chapter has identified, after visualizing theoretical standpoints and empirical researches, that there is the linkage between FDI inflows and poverty-GDP nexus focusing on agriculture sector of OIC countries. Therefore, reviewing this chapter it gets confirmed that the research gap prevails in this particular area, that is, neither do a research conducted for evaluation of FDI inflows in agriculture impact on poverty and GDP in OIC countries sub-group. Thus, in the light of suggestion of theories and empirical literature, this chapter paves the ground of building up a conceptual framework that is to describe the directions in recognizing how FDI inflows in agriculture can reduce poverty and stimulate the economic growth.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides the further explanation required before reporting the empirical analysis of the effects of FDI inflows in agriculture on the agriculture growth and poverty levels of selected OIC countries. This chapter is divided into multiple sections, beginning with an explanation of the development of the conceptual framework based on previous theories and empirical research on FDI inflows in agriculture. This is followed by a discussion of the hypothesis building based upon the empirical evidence on the effects of the independent variables on agriculture growth and poverty levels. This chapter also discusses the techniques used to analyse the data and test the variables. The balanced panel data collected was analysed quantitatively using regression equations, which were solved using the statistical software STATA version 13.0. Following the specification of the model and the operational definitions and measurements of the variables, this chapter ends by describing the sources for data collection and the methodological and analytical techniques used.

3.2 The Conceptual Framework

The purpose of this study was to identify the impact of FDI inflows in agriculture on agriculture growth and poverty levels in OIC countries based on some of the models available in the literature that have been applied in previous studies. This study depended on three influential empirical frameworks: the Keynesian and Liberal Framework, the Cobb–Douglas Production Framework and the Dunning OLI Framework, based on the literature review

described in the previous chapter. Regarding poverty and economic growth, the Keynesian and Liberal Framework has been used in many studies on poverty and economic growth, mainly on unemployment issues, economic underdevelopment and ways to reduce poverty through fiscal and monetary policy (government intervention at the macroeconomic level) (Kenneth, 1958). Unemployment is the main factor that causes poverty and income inequality, according to Kenneth (1958), Minsky (1965) and Foster (1998). When unemployment rates are low, labour markets become more efficient and the wages of low income workers increase, leading to low poverty and generating income equality (Minsky, 1965).

By contrast, economic underdevelopment, such as human, infrastructure, business, natural, public institutional and knowledge capital issues, is the major focus in Liberal theory (Sachs, 2005). Under Liberal theory, logically, no jobs means no incomes, so the unemployed are categorized as poor people and unemployment is considered the primary source of poverty. In this context, individuals are able to seek better social capital through career opportunities and are motivated by higher expected incomes; individual investments and borrowing facilitate the prevention of poverty (Ulimwengu, 2008).

The economic theory of growth and productivity is based on the Neoclassical production function in the Cobb–Douglas Framework. Based on this, Solow (1957) showed the importance of technological progress for economic growth with the help of the growth accounting approach. Solow decomposed GDP growth into growth related to various inputs. In conclusion, applications of the Cobb–Douglas production framework and the Keynesian and liberal framework have used trade openness, human capital, unemployment rate, market

size and FDI inflows as important determinants of poverty and economic growth. The main idea of this study was to examine the relationship between FDI inflows in agriculture, agriculture growth and poverty, thus the study used the Eclectic theory or OLI framework developed by Dunning in 1977. A number of theories have been developed to explain the importance of FDI inflows, including the economic theory of Vernon (1966), the internationalisation theory of Krugman (1981) and Dunning's (1993) Eclectic paradigm.

According to the World Investment Report 2001 (UNCTAD), theoretically, the influence of FDI inflows differs depending on the sector of the economy where it is directed. The effect of FDI inflows varies because sectors have their own features and link to other sectors in different ways. There are three main sectors of the economy: primary, secondary (manufacturing) and tertiary (services). The primary sector basically entails the production of raw materials and foods, agriculture, quarrying, mining, forestry, and fishing. Investments in the primary sector can cause a rise in wages in that sector and therefore attract labour from other sectors. This might lead to deindustrialization; as a result, other sectors (particularly the secondary sector) will become less competitive.

3.3 Model Specification

The main theory adopted in this study was drawn from Dunning (1977, 1993), who suggested that the main factors that drive FDI inflows are the need to secure market access, the opportunities presented by large-scale privatization processes and the degree of political and economic stability. The second theory used to evaluate the impact of FDI inflows in agriculture on agriculture growth in OIC countries includes other important economic growth

determinants adopted by many previous researchers, including Bruno and Easterly (1998), Ang (2008), Menyah and Wolde-Rufael (2010), Sharma (2010) and Anwar and Sun (2011). The poverty model, adapted from Keynes (1964), was specified to measure the impact of FDI inflows in agriculture on poverty levels in OIC countries. The determination of the effect on poverty by using variables of FDI inflows and agriculture growth, which reduces poverty (Mirza et al., 2003, Calvo & Hernandez, 2006, Shahbaz & Aamir, 2008), was attempted, and headcount was used (as it had by many previous researchers) to test poverty. The extended Cobb–Douglas production framework helped to investigate simultaneously the relationships among FDI inflows in agriculture, agriculture growth and poverty in OIC countries.

3.3.1 The FDI Inflows in Agriculture Model

The first objective in this study was to investigate the role of agriculture growth and poverty to aid FDI inflows in agriculture. Thus, this research depended on the Cobb–Douglas agriculture production function. First, the model was constructed by the famous Cobb–Douglas production function:

$$Y = AK^{\alpha}L^{\beta} \qquad [3.1]$$

where Y is the GDP, K is the domestic capital, L is the labour force and A refers to the productive efficiency factor.

The Cobb–Douglas production model includes capital and labour. The parameters α and β are the elasticities of domestic capital, and labour. The assumption is that economic growth is determined by the inflows of FDI, increments in domestic capital, government expenditures and the labour force in the country.

By linearizing Equation [3.1], Equation [3.2] is termed as:

$$Y = Log\ A + \alpha\ LogK + \beta\ LogL + \gamma\ LogF \qquad [3.2]$$

Thus, the function can be further specified as follows:

K = f(Tradeopen,Marketsize),

L = f(Poverty,Unemploy,Humancapital),

F = f(GDP), and

FDI = f(Trade Openness, Market Size, Poverty, Unemployment Rate,
Human Capital, GDP) [3.3]

Equation [3.3] were adapted from Dunning (1993) and previous literature on FDI. Equations [3.3] can be further specified as Equations [3.4]. Equations [3.4] suggests that growth and other variables can potentially determine FDIA, (Pagoulatos, 1983; Overend et al., 1997; Walkenhorst, 2001; Makki, and Somwaru, 2004; Li and Liu, 2005; Licai et al., 2010). The FDI inflows in agriculture (FDIA) model was adapted from Licai et al. (2010) to analyse the determinants of FDIA of OIC countries by using agriculture human capital (HCA), agriculture market size (MSA), agriculture growth (AG) and agriculture trade openness (TOA).

$$LogFDIA_{it} = Log\ A + \alpha_1\ LogTOA_{it} + \alpha_2\ LogMSA_{it} + \beta_1\ LogPOV_{it} + \beta_2\ LogUR_{it} + \beta_3\ LogHCA_{it} + \gamma\ LogAG_{it} + \mu_{it} \quad [3.4]$$

where:

FDIA = FDI inflows in agriculture (USD)

TOA = Agriculture trade openness (% of GDP)

MSA = Agriculture market size (constant USD)

POV = Poverty (headcount ratio)

UR = Unemployment rate (%)

HCA = Agriculture human capital (%)

AG = Agriculture growth (annual %)

i = Country ; Low ; *i* = 1,…….,12, Middle ; i = 1,…….,11 and High ; i = 1,…….,8

t = Time period ; t = 1,2……16

$\alpha_1, \alpha_2, \beta_1, \beta_2, \beta_3$ and γ = coefficients of the independent variables

μ = is the error term

3.3.2 Agriculture Growth Model

The second objective in this study was to determine the impact of FDIA on AG, as referenced by Solow (1957), using the Cobb–Douglas agriculture production function. This model is based on the assumptions of growth theory as specified by Solow (1957), Romer (1990) and Mankiw, et al. (1992) and as employed by Borensztein et al. (1998), Ayanwale (2007) and Goss et al. (2007). For the purpose of empirical analyses, Equation [3.4] was further adjusted by proxying all functions into the equations. Hence, further developing the concept of the

impact of FDIA on AG, Equation [3.5] is similar to the equations modified by Lin, Thirtle and Wiggins (2001), Li and Liu (2005) and Licai et al. (2010).

$$LogAG_{it} = Log\ A + \alpha_1\ LogTOA_{it} + \alpha_2\ LogMSA_{it} + \beta_1\ LogPOV_{it} + \beta_2\ LogUR_{it} + \beta_3\ LogHCA_{it} + \gamma\ LogFDIA_{it} + \mu_{it} \quad [3.5]$$

3.3.3 Poverty Model

Equation [3.6] suggests that FDIA and other variables can potentially determine POV reduction (Bruno & Easterly, 1998; Nguyen, 2003, Sachs, 2005; Ang, 2008; Menyah & Wolde-Rufael, 2010; Sharma, 2010; Anwar & Sun, 2011). The following regression model was adapted from the Keynesian framework, and Equation [3.6] was further adjusted according to Pervez and Rizvi's (2014) conceptual framework, focusing on the agriculture sector.

$$LogPOV_{it} = Log\ A + \alpha_1\ LogTOA_{it} + \alpha_2\ LogMSA_{it} + \beta_1\ LogAG_{it} + \beta_2\ LogUR_{it} + \beta_3\ LogHCA_{it} + \gamma\ LogFDIA_{it} + \mu_{it} \quad [3.6]$$

Equation [3.6] shows that FDI inflows, economic growth and other controllable variables can potentially determine poverty reduction, as determined by Keynesian and liberal theory and many researchers (Bruno & Easterly, 1998, Ang, 2008, Menyah & Wolde-Rufael, 2010, Sharma, 2010; Anwar & Sun, 2011). The choice of these variables was based on their potential relevance and the relative importance of POV to OIC countries' agriculture sectors.

3.3.4 Simultaneous Equation Model

The extended Cobb–Douglas production framework has helped to explore the links among the three variables: FDIA, POV and AG. They were considered simultaneously in a modelling framework. To evaluate the impacts of FDIA on POV and AG, and to investigate the causality relationships with POV and AG, the study used the two-step System Generalized Method of Moments (GMM) approach (Gujarati & Porter, 2009; Omri, 2013). This approach is appropriate when estimating systems of equations that are over-identified (Ruxanda & Muraru, 2010; Greene, 2007) and it has been the preferred choice in empirical studies with numerous systems of equations (Ghatak & Halicioglu, 2007). The links among these variables were empirically examined by using Equation [3.7], Equation [3.8] and Equation [3.9].

$$LogFDIA_{it} = Log\ A + \alpha_1\ LogPOV_{it} + \gamma\ LogAG_{it} + \mu_{it} \quad [3.7]$$

$$LogAG_{it} = Log\ A + \alpha_1\ LogPOV_{it} + \gamma\ LogFDIA_{it} + \mu_{it} \quad [3.8]$$

$$LogPOV_{it} = Log\ A + \alpha_1\ LogAG_{it} + \gamma\ LogFDIA_{it} + \mu_{it} \quad [3.9]$$

In addition, all the models were examined using the proposed relationships for a panel of OIC countries and for three different types of OIC economies based on income level: high income economies, middle income economies and low income economies. Indeed, according to Blonigen (1997) and Faeth, (2009), the effects of FDI inflows vary across countries, industries and enterprises, but most of the extant empirical studies have focused on FDI inflows at the national or regional level. In order to evaluate the impact of FDIA on the performance of

different economies, this study used a framework similar to those used by Barrios (2000) and Sasidharan and Ramanathan (2007).

Lastly, in order to estimate the effect of FDIA on different sub-groups of OIC countries, Equation [3.10], Equation [3.11] and Equation [3.12] were add.

$$LogFDIA_{ijt} = Log\ A + \alpha_1\ LogTOA_{ijt} + \alpha_2\ LogMSA_{ijt} + \beta_1\ LogPOV_{ijt} + \beta_2\ LogUR_{ijt} + \beta_3\ LogHCA_{ijt} + \gamma\ LogAG_{ijt} + \mu_{ijt} \quad [3.10]$$

$$LogAG_{ijt} = Log\ A + \alpha_1\ LogTOA_{ijt} + \alpha_2\ LogMSA_{ijt} + \beta_1\ LogPOV_{ijt} + \beta_2\ LogUR_{ijt} + \beta_3\ LogHCA_{ijt} + \gamma\ LogFDIA_{ijt} + \mu_{ijt} \quad [3.11]$$

$$LogPOV_{ijt} = Log\ A + \alpha_1\ LogTOA_{ijt} + \alpha_2\ LogMSA_{ijt} + \beta_1\ LogAG_{ijt} + \beta_2\ LogUR_{ijt} + \beta_3\ LogHCA_{ijt} + \gamma\ LogFDIA_{ijt} + \mu_{ijt} \quad [3.12]$$

where:

j = sub-groups of OIC countries; Low, middle and high income economies

3.4 Data and Sampling

Panel data for the period 2000–2015 for OIC countries was used for analysis. From Table 3.1, the data was sourced from the UNCTAD database, the World Bank development indicators database, OIC annual reports (2000-2015), the FAO and Thomson Reuters Data Stream Professional. This study highlights the recent states of the agriculture sectors of OIC countries.

Table 3.1
Variable definitions

Variable	Abbreviation	Unit of Measurement	Sources
Poverty level	*POV*	Poverty headcount ratio at national poverty lines	World Bank, UNCTAD, OIC annual reports, FAOSTAT and Thomson Reuters DataStream Professional
Agriculture growth	*AG*	GDP agriculture growth (annual %)	
FDI inflows in agriculture	*FDIA*	Total net inflows in USD	
Agriculture trade openness	*TOA*	Trade in agriculture (% of GDP)	
Agriculture human capital	*HCA*	Enrolment at least in higher education of agriculture sector (%)	
Agriculture market size	*MSA*	Agriculture value added (constant USD)	
Unemployment rate	*UR*	Unemployment rate	

3.5 Justification of Variables

3.5.1 FDI Inflows in Agriculture

FDI inflows in agriculture (FDIA) are net inflows of investment to acquire a lasting management interest in an enterprise operating in an economy other than the home country of the investor. The measurement of FDIA is the sum of equity capital, reinvestment of earnings, and other long-term and short-term capital as shown in the balance of payments. The commonly used currency to measure FDIA is the USD. Reichert and Weinhold (2001) found that FDIA usually causes growth, although the relationship is highly heterogeneous

across countries. Choe (2003) and Zhang (2001) detected two-way causation between FDIA and growth, but the effects were more apparent from growth to FDIA. Bende-Nabende et al. (2003) found both negative and positive direct effects of FDIA on output for APEC countries. Their results indicate that growth effects are more likely to be positive in less developed countries. The results of Chowdury and Mavrotas (2006) suggest that in the case of Chile, GDP growth attracts FDIA, while for Thailand and Malaysia, there is evidence of causality in both directions. Hansen and Rand (2006) assessed the causal relationship between FDIA and GDP for 31 developing countries. The results show bidirectional causality but also indicate that FDIA has a lasting impact on the economic growth, rather than the other way around. FDIA is thus attracted by the long-term prospects of the country and its policies and is therefore more stable than other capital investments (Albuquerque, 2000).

FDI inflows is often associated with increased international trade and therefore has an impact on the economics of the host economy (Stiglitz, 2000). Liu et al (2002) tested the existence of long-term relationships among economic growth, FDIA and trade in China. Using a co-integration framework with quarterly data from 1981 to 1997 for exports and imports of agriculture sector, FDIA and growth from 1981 to 1997, the research found the existence of bi-directional causal relationships of FDIA with growth and exports of agriculture sector. The results similar with research from Gerlach and Liu (2010). In addition, Borensztein, De Gregorio and Lee (1998), Balasubramanyam (2001) and Xu (2000) found that FDIA contributes more to POV reduction than domestic investment does. Thus, this study proposed that AG and POV levels in OIC countries are significantly affected by FDIA.

3.5.2 Agriculture Growth

Economic growth reflects an economy's ability to produce goods and services by an outward shift of the economy of production possibilities. There are many measurements of economic growth, but the most famous is GDP. In addition, economic growth can be measured in nominal terms, which include inflation, or in real terms, which are adjusted for inflation. In addition, when comparing countries, the GDP or GNP per capita can be used to take population differences into account. In this study, data on GDP in current market prices and data on per capita GDP focusing on the agriculture sector was collected from the World Bank, the UNCTAD and the International Monetary Fund (IMF). The data on annual GDP growth rates in the agriculture sector (AG) was retrieved from World Bank publications, FAOSTAT database and economic surveys of OIC countries. Lunn (1983), Schneider and Frey (1985) and Culem (1988) claimed that FDI inflows are able to significantly affect a country's economic growth. In fact, a country with stable macroeconomic conditions can benefit from FDI inflows .

Moreover, Romer (1990) and Lucas (1988) concluded that FDI inflows are able to increase economic growth. Many researchers have agreed that growth is the single most important factor in reducing POV on a national level (Shanghai, 2004). Gallup et al. (1999) stated that "*growth is good for the poor*": the poor gain benefits from economic growth. However, according to Globerman (1979), FDI inflows has a positive impact on the economic growth of developing countries, but other studies found opposite results. According to Haveman and Schwabish (2000), there is a negative relationship between economic growth and poverty rates. Indeed, Haveman and Schwabish (2000) claimed that POV has a negative impact on

GDP and a positive impact on unemployment rate. As AG increases, this leads to an increase in the number of jobs, which in turn leads to a decrease in POV (Lin, Thirtle & Wiggins, 2001; Soumaré & Gohou, 2009). Sectorial growth is a key factor in increasing FDI inflows and reducing POV. Thus, as AG increases, FDIA increases and hence POV decreases.

3.5.3 Poverty

Poverty (POV) is a complex phenomenon. It is usually defined in relation to income and often measured in terms of GDP per capita. Extreme POV is often specified as an income of less than USD1 per person per day in terms of purchasing power parity (PPP). Some researchers define POV as the lowest income quintile in a referenced population. In this study, the POV headcount ratio at the national POV line was used to measure the POV level. Nelson and Pack (1999) and Kakwani (2000) agree that the positive effects of FDI inflows tend to outweigh the negative effects, resulting in economic growth and POV reduction. Furthermore, Roemer and Gugerty (1997) suggest that, on average, the poor do benefit from economic growth. An increase in GDP per capita strongly correlates with increasing the average incomes of the poor. Hung (2005) investigated the impact of FDI inflows on growth and POV reduction by regression analysis using panel data from 1992 to 2002 across 12 provinces and cities of Vietnam. FDI inflows was found to have direct and indirect effects on growth and POV reduction. The higher the POV level, the less FDI inflows can be attracted. In other words, for this research there is a negative correlation between POV and FDIA.

3.5.4 Trade Openness

Degree of trade openness is calculated as the sum of exports and imports divided by GDP. This ratio of trade to GDP provides a measure of the degree of economic openness. The endogenous growth theory pioneered by Romer (1990) and Lucas (1988) has provided persuasive evidence for the proposition that openness, trade, exports and imports positively affect growth in a country (Edwards 1998). Romer (1990), Grossman and Helpman (1990), Barro and Sala-i-Martin (2004), Dollar and Kraay (2002), Harrion et al. (2000), Yanikkaya (2003) and Edwards (1992, 1998) argue that a trade regime that is more open to the rest of the world leads to a greater ability to absorb technological progress that stimulates economic growth.

Trade openness, which is usually measured as exports plus imports over GDP, is correlated with trade, imports and exports. Grossman and Helpman (1990) and Rodrik (1992) pointed out that trade can potentially create both growth-accelerating and growth decelerating forces. The degree of trade openness is an indicator that reflects the ease of entering the market. A higher degree of trade openness is often associated with greater market discipline and additional channel for the goods and services produced by domestic firms. Trade openness is a key factor in reducing poverty. In this case, Trade openness of agriculture sector (TOA) leads to better domestic technology, more-efficient production and improved AG, leading to FDIA increases and thus POV reduction.

3.5.5 Human Capital

Human capital is a proxy of the percentage of participation in higher education. Higher education follows secondary education and aims at laying the foundations for lifelong learning and human development by offering more subject or skill oriented instruction by more specialized teachers. Human capital enhances the productivity of physical capital and labour. The accumulation of human capital has both internal effects (effects on an individual's own productivity) and external effects (effects on factors of production) (Lucas, 1988). In endogenous growth theory, human capital has been recognized as an essential determinant of economic growth. Mankiw et al. (1992), Barro and Sala-i-Martin (2004) and Benhabib and Spiegel (1994) stressed the importance of human capital to growth in both developed and developing countries. Easterlin (1981) and Benhabib and Spiegel (1994) pointed out that human capital is a factor affecting productivity growth, as suggested by endogenous growth theory.

The present study used school enrolment as a proxy for human capital. It has been commonly proven that highly educated and skilled workers enhance the absolute value of GDP. Thus, the variable of high education is anticipated to have a positive and significant impact on economic growth. Furthermore, a higher level of education in a country attracts more investors; therefore, it indirectly contributes to economic growth. Thus, when the human capital of agriculture sector (HCA) in a country increases, it leads to increased growth in agriculture sectors which improves living standards, increases FDIA and decreases POV.

3.5.6 Market Size

Market size is defined as the level of development of a market, usually measured by per capita GDP. A rapidly growing market size provides better opportunities for making profit than those growing slowly or not at all (Lim, 1983), and an impressive rate of market size will be taken as a favourable signal by foreign investors when making investment decisions (Asiebu, 2003; Erdal & Tatoglu, 2002). GDP can be used to capture the influence of economic performance (Obwona, 2003), so the annual agriculture value added share of real GDP (constant USD) is used as a measure of how attractive the market is. Generally speaking, the larger the agriculture market size (MSA), the more FDI inflows it attracts. Moreover, the perception by multinational corporations (MNC) of market size is more closely correlated to the share of market GDP. In this study, the agriculture per capita share of GDP was used as a proxy for MSA, which is an important determinant of FDI inflows. FDIA increases AG and can reduce the POV levels in OIC countries.

3.5.7 Unemployment Rate

Many researchers have agreed that unemployment rate (UR) is a key determinant of POV and economic growth. Minsky (1968) summarizes that the alleviation of POV can be done through the accomplishment and sustaining of full employment. Indeed, a recent study on investment showed that FDI inflows might directly increase the employment rate and training of the labour force, resulting in POV reduction in the host country (Nguyen, 2003). According to Asiedu's (2004, FDI inflows in developing countries provided 26 million direct and 41.6 million indirect jobs in 1997. Thus, UR was used to understand the relationship between POV and AG.

3.6 Methods of Analysis

The study used a quantitative research design. Time-series cross-sectional (TSCS) data was employed to determine the impact of FDIA on AG and POV in selected OIC countries. A TSCS research design is considered excellent (Lempert, 1966). TSCS research designs have a number of distinct advantages, such as the potential to identify causal relationships. Furthermore, Stimson (1985) stated that the TSCS framework is one of the best models for the study of causality. This study used panel data regression analysis to describe, measure and analyse the relationships of FDIA with AG and POV in selected OIC countries during the period 2000–2015. The logic behind selecting this period was to collect the most recent available data. Panel data models can generally be divided into two types: dynamic and static panel models, where dynamic models contain a lagged dependent variable. In both static and dynamic specifications, estimations of panel data are checked using random-effects model (REM) and fixed-effects model (FEM) estimators. The study calculated both short-term and long-term estimates using the equations. The long-term estimated were calculated using the pooled-ordinary least squares (POLS), FEM and REM models, while the short-term model used the generalized method of moments (GMM) estimator, as developed by Hansen (1982) and put forward by Verbeek (2004). The panel data method refers to the information group comprising different perceptions in every testing unit. These are created through the pooling time arrangement perceptions over a cross-sectional assortment of units, such as nations, states, areas, organisations, families and individuals. A few of the advantages and restrictions of utilizing panel data were recorded by Hsiao (1986). The clear advantages include having a bigger information set with less collinearity and more variability between the factors than in regular cross-sectional or time-series-based data.

Furthermore, Marques (2010) said that the use of panel data brings several benefits, such as greater variability of data, a larger quantity of information and greater degrees of freedom, as well as greater efficiency in the estimation. Marques also pointed out that the main advantage of using panel data is that it can measure the effects generated separately due to the existing differences between each observation in each cross-section, as well as being possible to evaluate the evolution. Another benefit of panel data is its capacity to maintain heterogeneity. These unobserved singular particular not controlling for impacts prompts inclination in the subsequent assessments. Panel data makes it easier to recognize and appraise impacts that are basically not noticeable in unadulterated cross-sectional or time-series data. Specifically, broad information sets are more suitable to research complex phenomena. The restrictions of panel data include issues with patterns, information accumulation and the information administration of the panel observations (Kasprzyk, 1989). Another issue is the distortions because of estimation mistakes. Estimation mistakes might emerge as a result of faulty reactions due to overly vague enquiries, memory mistakes, purposeful twisting of reactions, wrong sources, the miss recording of reactions and questioner impacts. Using panel data in an economic study provides big benefits over using customary cross-sectional or time-series data (Hsiao, 1986).

The panel data had the form:

$$x_{it}$$

$$i = 1 \quad t = 1$$

where i is the number of cross-sectional units measured and t is the time measurement. The normal panel data model is composed as $y_{it} = \alpha + \beta x_{it} + u_{it}$. Various perceptions may be gathered using this exact structure. The two main models are the REM and the FEM. Panel data assumptions are utilized in research to capture the dynamic conduct of these parameters and to give more-productive assumptions and data on these parameters. Panel data methods are utilized due to their benefits in utilizing all the data accessible, which are not perceivable in unadulterated cross-sectional or time-series data (Baltagi, 2008). Hsiao (1986) and Baltagi (2008) contended that panel data maintains heterogeneity, which decreases the danger of acquiring one-sided results, and gives a large amount of information, which improves the flexibility and variability of the findings.

3.6.1 Static Panel Models

According to Greene (2007), there are many different models that can be used for panel data. The three most widely used applications of panel data are the POLS, FEM and REM. A fixed variable can have different values and is not necessarily invariant across groups. In addition, this statistical model is usually used in regression analysis, assuming that the independent variable is fixed. Unlike the REM model, the FEM produces standard errors. Ranjan and Agrawal (2011) said that the FEM treats the constant as group section that specific; for example, it allows different constants for each group section. The FEM estimator is also called the least square dummy variable (LSDV) estimator because it includes a dummy variable for each group. According to Cameron and Trivedi (2005), the FEM is more complex, especially at the individual level. The individual level refers to firms, government agencies and countries. In contrast, Greene (2007) used dummies with cross-sectional data; the econometric

model was estimated by using a panel data approach. Econometric analysis with either unbalanced or balanced panel data provides meaningful empirical research even in cases where the data is limited in terms of restricted timeframes or missing data. The FEM and REM are the main estimation methods for panel data.

In like manner, the REM is assumed to be measured with measurement error and is intended to generalize a certain probability distribution. The number of values in the study was small compared to the values of the variables. This model also indicated that an independent variable had REM and could be used if the level of the independent variable was small in value. However, using this model probably produced larger standard errors, making the model less powerful. Under this model, the intercepts for each cross-sectional unit are assumed to arise from a common intercept α, which is the same for all cross-sectional units and over time, plus a random variable ε_i, which varies across cross-sectional units but is constant over time. ε_i measures the random deviation of each entity's intercept term from the global intercept term α. According to Ranjan and Agrawal (2011), the REM is an alternative method of estimation that handles the constants for each section as random parameters, rather than FEM.

Tsangarides (2001) indicated that the FEM controls individual specific effects, while the REM solves the endogeneity problem by instrumenting potentially endogenous variables. In the present study, the slope coefficients were assumed to be constant for all countries in the FEM. Further, the intercept did not vary over time in the FEM, as it was expected to fluctuate across individual countries, so there was heterogeneity (Hsiao, 1986). Unlike in the REM, with the FEM, all the time-invariant differences (e.g. area) between individual countries were omitted.

Therefore, the FEM can be presented as follows:

FDIA Model :

$$LogFDIA_{it} = Log\ A + \alpha_1\ LogTOA_{it} + \alpha_2\ LogMSA_{it} + \beta_1\ LogPOV_{it} + \beta_2\ LogUR_{it} + \beta_3\ LogHCA_{it} + \gamma\ LogAG_{it} + \alpha_i + \mu_{it} \quad [3.13]$$

AG Model :

$$LogAG_{it} = Log\ A + \alpha_1\ LogTOA_{it} + \alpha_2\ LogMSA_{it} + \beta_1\ LogPOV_{it} + \beta_2\ LogUR_{it} + \beta_3\ LogHCA_{it} + \gamma\ LogFDIA_{it} + \alpha_i + \mu_{it} \quad [3.14]$$

POV Model :

$$LogPOV_{it} = Log\ A + \alpha_1\ LogTOA_{it} + \alpha_2\ LogMSA_{it} + \beta_1\ LogAG_{it} + \beta_2\ LogUR_{it} + \beta_3\ LogHCA_{it} + \gamma\ LogFDIA_{it} + \alpha_i + \mu_{it} \quad [3.15]$$

where $FDIA_{it}$ represents FDI inflows in agriculture, t is the time of observation and i is the cross-sectional unit. The intercept α_i takes into account the heterogeneity influence from unobserved variables; μ_{it} is the error term. However, while using the FEM, tests were needed to check whether FEM should indeed be included in the model. To do this, the standard *F*-test was used to check the FEM against the simple constant POLS method.

Under the REM, the individual FEM of variations across countries are assumed to be uncorrelated with the explanatory variables and to be random. The slope coefficients are assumed to be correlated for all cross-sectional units; the intercept is a random variable: $\alpha = \alpha_i + \varepsilon_i$. α is the mean value for the intercepts of all countries and ε_i is a random error term that reflects the individual differences in the intercept values of the countries. The REM is helpful when the variations across countries affect the dependent variable because time-invariant variables are included in the model.

Therefore, the REM can be presented in Equation [3.16], Equation[3.17] and Equation[3.18].

FDIA Model :

$$LogFDIA_{it} = Log\ A + \alpha_1\ LogTOA_{it} + \alpha_2\ LogMSA_{it} + \beta_1\ LogPOV_{it} + \beta_2\ LogUR_{it} + \beta_3\ LogHCA_{it} + \gamma\ LogAG_{it} + \alpha + \mu_{it} + \varepsilon_i \quad [3.16]$$

AG Model :

$$LogAG_{it} = Log\ A + \alpha_1\ LogTOA_{it} + \alpha_2\ LogMSA_{it} + \beta_1\ LogPOV_{it} + \beta_2\ LogUR_{it} + \beta_3\ LogHCA_{it} + \gamma\ LogFDIA_{it} + \alpha + \mu_{it} + \varepsilon_i \quad [3.17]$$

POV Model :

$$LogPOV_{it} = Log\ A + \alpha_1\ LogTOA_{it} + \alpha_2\ LogMSA_{it} + \beta_1\ LogAG_{it} + \beta_2\ LogUR_{it} + \beta_3\ LogHCA_{it} + \gamma\ LogFDIA_{it} + \alpha + \mu_{it} + \varepsilon_i \quad [3.18]$$

The estimation parameters is to be consistent and efficient by taking a good decision between REM or FEM before doing further to any discussion of the empirical results. Hence, the Hausman test was applied to decide on the REM or FEM, as it provides estimates on the consistency and efficiency of coefficients. The Hausman test estimates that the coefficients of the REM are the same as the FEM coefficients. If prob > chi^2 is more than 0.05, it indicates that the results are not significant, and the REM will be appropriate. In contrast, if prob > chi^2 is less than 0.05, it indicates that the results are significant, and the FEM will be appropriate.

Sridharan et al. (2009) explained that REM needs a lot of each country with different in its intercept term. This is one disadvantage of REM: it must be assumes on the distribution of the random component. Besides, the REM's estimates will be biased and inconsistent if the unobserved group-specific effects are correlated with the explanatory variable. Overall, in

panel data analysis, it is assumed that the FEM will work well when it has a different error term for each country and when there is balanced panel data.

3.6.2 Dynamic Panel Model

GMM is an estimation method that uses a lagged dependent variable and is the most commonly used in dynamic models with panel data. The GMM solves the endogeneity problem of the equations by using a set of instrumental variables. Normally, the particular dependent variables are very dependent on past realizations of themselves. A new lagged dependent variable is needed to ensure persistence if the static panel model has high autocorrelated residuals. The results of parameter estimates can be biased if the lagged dependent variable correlates with any of the other explanatory variables or has been wrongly omitted. According to Baltagi (2008), it is possible to take into account the time effect if the researcher uses panel data, and it is possible to control individual heterogeneity, which is captured by country-specific REM or FEM components and leads to biased results when ignored in time-series or cross-sectional estimations.

To estimate the results of the effect of FDIA on AG and POV in selected OIC countries, the study applied long-term (static) and short-term (dynamic) panel models. The long-term model assumed that the previous period's FDIA, AG and POV reduction did not affect the present period's FDIA, AG and POV reduction. Therefore, there was no persistence (no lagged dependent explanatory variables) in the model. The short-term model assumed that the previous period's FDIA, AG and POV reduction, through the lagged dependent explanatory variable, influenced the present period's FDIA, AG and POV. Thus, the short-term model assumed persistence due to incomplete adjustment in the FDIA, AG and POV reduction

process. For instance, in the short term, OICs can use the previous period's FDIA, AG and POV reduction to protect the present period's conditions, hence requiring partial adjustment in the short-term model. In order to control for the endogeneity issue, the GMM estimator was used by transforming the equation into the short-term model:

FDIA Model :

$$LogFDIA_{i,t} = \alpha_0 + LogFDIA_{i,t-1} + \alpha_1\, LogTOA_{i,t} + \alpha_2\, LogMSA_{i,t} + \beta_1\, LogPOV_{i,t} + \beta_2\, LogUR_{i,t} + \beta_3\, LogHCA_{i,t} + \gamma\, LogAG_{i,t} + \alpha_{i,t} + \mu_{i,t} \quad [3.19]$$

AG Model :

$$LogAG_{i,t} = \alpha_0 + LogAG_{i,t-1} + \alpha_1\, LogTOA_{i,t} + \alpha_2\, LogMSA_{i,t} + \beta_1\, LogPOV_{i,t} + \beta_2\, LogUR_{i,t} + \beta_3\, LogHCA_{i,t} + \gamma\, LogFDIA_{i,t} + \alpha_{i,t} + \mu_{i,t} \quad [3.20]$$

POV Model :

$$LogPOV_{i,t} = \alpha_0 + LogPOV_{i,t-1} + \alpha_1\, LogTOA_{i,t} + \alpha_2\, LogMSA_{i,t} + \beta_1\, LogAG_{i,t} + \beta_2\, LogUR_{i,t} + \beta_3\, LogHCA_{i,t} + \gamma\, LogFDIA_{i,t} + \alpha_{i,t} + \mu_{i,t} \quad [3.21]$$

In this Equation [3.19], Equation[3.20] and Equation[3.21], the error terms are associated with the lagged dependant variables, $LogFDIA_{i,t-1}$,$LogAG_{i,t-1}$ and $LogPOV_{i,t-1}$, which makes using the panel POLS estimator with the REM and FEM impractical. Under this model, the intercepts α captures the country-specific effects and μ is the error term. The first differentiator in the GMM equations above (1c, 2c and 3c), as introduced by Arellano and Bond (1995), solves this problem by eliminating country-specific effects. There are econometric reasons to apply the GMM estimator (Blundell & Bond, 1998, Blundell et al., 2000, Arellano & Bover, 1995) in analysis. First, the dynamic nature is only captured by the GMM estimator without the bias and inconsistency problems that are inevitable in traditional

pooled or FEM, also known as within-group POLS estimations (Nickell, 1981; Baltagi, 2008; Blundell et al., 2000). Next, with the help of the GMM estimator, researchers may consider further explanatory variables in a regression without worrying about the problem of endogeneity.

According to Arellano and Bond (1995), the GMM estimator provides a convenient framework for obtaining asymptotically efficient estimators in this context. The GMM estimator is designed for datasets that have many panels and few periods and gives consistent estimates under the assumption that there is no autocorrelation in the idiosyncratic errors and that the explanatory variables are weakly exogenous. The identifying assumption that there is no serial correlation in the idiosyncratic errors can also be validated by testing for no second-order serial correlation in the first-differenced residuals. Negative first-order serial correlation is expected in the first-differenced residuals if the idiosyncratic errors are serially uncorrelated, while positive serial correlation is expected at the residual level (Bond & Windmeijer, 2002).

The bias caused by the decrease of data variation in the first-differenced residuals (a problem that highly persistent series are especially susceptible to) is corrected by getting the level values of variables back to the regressions in the GMM estimation. Hence, the precision of coefficients will be improved through the removal of the bias caused by weakened instruments. The inconsistency problem is introduced by the lagged dependent variable as an independent variable in regressions and the high persistency problem is associated with the GMM estimator.

In this study, all regression results were derived from the two-step GMM estimation, with Windmeijer corrections. The validity of the instruments was detected using the Hansen test. The potential problem of over-identification caused by the proliferation of instruments (also known as 'the bias of too many instruments') was tackled using the latest regression technique developed by Roodman (2009). Robustness checks were conducted by using a smaller dataset that excluded data that could contain relatively extreme values in the first or last few periods. In short, a conservative approach was adopted in setting up the defaults of econometrics previous theory. Next, the general objective of this research was to examine the relationships among FDIA, AG and POV. Consequently, dynamic panel data models were employed in simultaneous equations, where the lagged levels of FDIA, AG and POV were taken into consideration with the GMM estimator.

The simultaneous-equation model used the following three equations:

$$LogFDIA_{i,t} = \xi_0 LogFDIA_{i,t-1} + \xi LogPOV_{i,t} + \xi LogAG_{i,t} + \mu_{i,t} \quad [3.22]$$

$$LogAG_{i,t} = \psi_0 LogAG_{i,t-1} + \varphi LogPOV_{i,t} + \varphi LogFDIA_{i,t} + \mu_{i,t} \quad [3.23]$$

$$LogPOV_{i,t} = \alpha_0 LogPOV_{i,t-1} + +\alpha LogAG_{i,t} + \alpha Log\ FDIA_{i,t} + \mu_{i,t} \quad [3.24]$$

This study used a set of instrumental variables to solve the endogeneity problem of the regressors and later transformed the production function into regression equations to simultaneously treat FDIA, AG and POV as endogenous. The main intentions behind the above-mentioned panel-data-based analysis of FDIA, AG and POV were as follows: (i) this study intended to simultaneously examine the relationships among FDIA, AG and POV for a

panel of 31 countries by using the GMM estimator over the period 2000–2015. Specifically, this study utilized three-equation structural modelling; and (ii) this study use panel unit root approaches. This study used a dynamic simultaneous-equation model, which followed the growth model framework, ensuring that there was a strong theoretical foundation for the empirical analysis. The growth model is usually augmented by the traditional determinants of growth, but in this study the growth model was augmented by FDIA, AG and POV variables. This study also examined the proposed relationship for three different types of countries based on income level: high, middle and low income OIC countries. The classification of countries into sub-panels based on income level was crucial in terms of homogenizing the countries with similar characteristics. This disaggregated panel data analysis allowed the results to be compared and contrasted by income level.

3.6.3 Panel Unit Root Test

The panel unit root test are conducted to detect if there have any unit root and to ensure that the data are stationary. In this study, the GMM estimation framework was employed. The GMM estimation framework was developed for strictly stationary data. Thus, it is necessary to investigate the integration order of the panel series. In stationary time series, shocks will be temporary and over time their effects will be eliminated as the series revert to their long run mean values. On the other hand, non-stationarity series will contain permanent components. In fact, most of the economic variables show a trend and therefore in most cases they are non-stationary. These non-stationary time series can easily lead the regression results to incorrect or spurious conclusions. Thus, a key way to test for non-stationarity is to test for the existence of unit root.

There are various tests for testing the unit root in a dataset ranging from the Im, Pesaran, and Shin (IPS) test (Im et al., 2003), Levin-Lin-Chu (LLC) test (Levin, Lin & Chu, 2002), Breitung test (Breitung,2001), Fisher-type tests that employ the Augment Dickey-Fuller (ADF) and the Phillips-Perron (PP) tests (Maddala & Wu, 1999; & Choi, 2001), and Hadri tests (Hadri, 2000). In this study, the tests developed by Levin, Lin & Chu (LLC) Test, Im, Pesaran and Shin (IPS) Test and Augmented Dickey-Fuller (ADF) was used.

According to the Levin, Lin and Chu (2002) stated that the panel based unit root test allows for individual specific intercepts and time trends. Moreover, the error variance and the pattern of higher order serial correlation are also permitted to vary freely across individuals. Levin, Lin and Chu (2002) indicates that the purposed test statistics have interesting mixture of the asymptotic properties of stationary panel data and the asymptotic propertied of unit root test statistic for a single time series data. In contrast to the non-standard distributions of unit root test statistics for a single time series, the panel test statistic have limiting normal distributions as in the case for stationary panel data. In addition, Im, Pesaran and Shin (2003) proposed a test for the presence of unit roots in panels that combines information from the time series dimension and the cross section dimension. Im, Pesaran and Shin (2003) also indicated that fewer time observations are required for the test to have power. IPS test has been use to analyze long-run relationships in panel data and IPS test has resulted superior test. Lastly, it has become well-known that the traditional Augmented Dickey-Fuller (ADF) tests in order to check the unit root of the variables. The Augmented Dickey-Fuller (ADF) test produced a negative number, the more negative it is, the stronger the rejecctions of the hypothesis that there is a unit root at some level of confindence.

3.6.4 Diagnostic Checking for Static Panel Models

To calculate the reliability of the static panel models, several estimation diagnostic tests were implemented. The POLS, FEM and REM were evaluated using the Hausman test, LM test and *F*-statistic test.

3.6.4.1 The *F*-Statistic Test

The *F*-statistic test is a post-estimation diagnostic test used to test whether the coefficients of independent variables in explaining the variance are mutually significant in the dependent variables in the FEM and REM. The test shows whether at least one of the coefficients is zero. In contrast, if the independent variables are significant in explaining the variance in the dependent variables, the null hypothesis will be rejected.

3.6.4.2 The Breusch–Pagan Lagrangian Multiplier (LM) Test

The BP-LM test helps the researcher to decide between REM regression and simple POLS regression. The null hypothesis is accepted if the variance across entities is zero (i.e. if there is no significant difference across the entities, for example no panel effect). Moreover, the test shows whether to reject or accept the null hypothesis and whether the effects are appropriate or not. The LM test can be interpreted as a Wald test of the distance from zero of the first derivative vector of the log likelihood of the unrestricted model evaluated at the restricted maximum likelihood estimates. It also tests the parametric restrictions of the model.

3.6.4.3 The Hausman Test

The Hausman test is also called the 'Durbin–Wu–Hausman test' and the 'Wu–Hausman test'. The Hausman test is used to test the efficiency of variables, where the variables are constant under the null hypothesis. The Hausman test was applied in this study to check the efficiency

of the variables. According to Stock and Watson (2003), the covariance of the estimator is zero between an efficient variable and the difference of an ineffective and effective variable. It is considered appropriate to apply REM when the *p*-value of a variable is insignificant (prob > chi^2 is more than 0.05). In contrast, FEM is applied if the *p*-value is significant (prob > chi^2 is less than 0.05). Ranjan and Agrawal (2011) stated that the test evaluates the significance of an estimator versus an alternative estimator. It helps in evaluating if a statistical model corresponds to the data. It compares FEM and REM under the null hypothesis that the individual effects are uncorrelated with the other regressions in the model. If correlated (H0 is rejected), a REM produces biased estimators, violating one of the Gauss–Markov assumptions, so a FEM is preferred.

3.6.5 Diagnostic Tests for Dynamic Panel Models

Before calculating estimation results, three conditions should be satisfied to ascertain the quality of the dynamic panel data using the GMM estimator: (i) the absence of second-order correlation; (ii) the validity of the instruments; and (iii) the model's fit with the data. This involved performing the Arrelano and Bond autocorrelation test, the Sargan test and the Wald test.

3.6.5.1 Autocorrelation of Residuals (the Arellano–Bond Test)

GMM estimators are expected to have first-order autocorrelation; the absence of second-order autocorrelation is a crucial requirement for the GMM estimator to be consistent. Certain lags are invalid instruments and must be removed from the framework if autocorrelation is present. A test in the disturbance term for serial correlation was developed by Arellano and Bond (1995). This study calculated the results for both first- and second-order autocorrelation.

3.6.5.2 Validity of Instruments (Sargan Test)

For the GMM estimator to be valid, instruments must be exogenous. Otherwise, the moment conditions will not be satisfied. A test for the validity of the over-identifying restrictions called the 'Sargan test' was employed in this study. The Sargan test is also known as the 'Hansen test for over-identifying restrictions' (Hansen, 1982). The null hypothesis for this test is that all the instruments are valid. The null hypothesis should not be rejected in order to proceed with the GMM estimation.

3.6.5.3 Goodness of Fit (the Wald Test)

A Wald test is used to test the goodness of fit of a model with the data. The null hypothesis of this test is that the set of coefficients of the model is simultaneously equal to zero. If the null hypothesis cannot be rejected, the variables of the GMM model do not predict the dependent variable well. The Wald test uses the chi-square value in testing this hypothesis.

3.7 Conclusion

Summarizing this chapter, it has provided a justified framework of how FDIA affects POV and AG. Specifically, the model specification and the methods used to examine the impact of FDIA of OIC countries have been explained. This study used the static panel data analysis and then chose the most appropriate model between POLS, REM and FEM, based on the results of the BP-LM and Hausman tests. Next, the system GMM estimation was conducted to determine the existence of the relationships between the variables of interest and confirmed the results from the static panel. Essentially, this study used panel data with various specification models developed from previous literature in order to find the empirical results to fill the research gap, which will be further discussed in the next chapter.

CHAPTER FOUR

RESULT AND DISCUSSION

4.1 Introduction

This chapter is devoted to the analysis and discussion of the results. Firstly, this chapter explains the various preliminary data analysis in addition to an explanation for the observed data normality. Next, this chapter discusses the correlation analysis and the Variance Inflation Factor (VIF) test results, respectively. Results are presented in this chapter deliberate the estimation results for low, middle and high income economies of OIC countries. In addition, this chapter employs robustness check using appropriate methods for panel data that provide more accurate results in the estimation results. Finally, the summary results on the three-way linkage interrelationship between FDIA, AG and POV were presented.

4.2 Preliminary Data Analysis

The sample consists of 31 selected OIC countries, eight high income OIC economies, 11 middle income OIC economies and 12 low income OIC economies for the period of 2000-2015. Table 4.1 portrays the number of minimum, mean, median, standard deviation, skewness and kurtosis of the dependent and independent variables used in this study. There are three models with different dependent variables. The first model is FDIA model, AG model is a second model (AG as a dependent variable) and the third model is POV model (POV as a dependent variable).

4.2.1 Descriptive Statistics

Table 4.1 provides information on the dispersion of the FDIA over the sampled period in the form of min, mean, median and standard deviation, the distribution of FDIA among middle income economies exhibited a higher level of dispersion compared to low and high income economies.

Table 4.1
Descriptive Statistics of Sub-OIC Member Countries, 2000-2015

Income Level	Variables	Min	Mean	Median	Standard Deviation	Skewness	Kurtosis
High Income	FDIA	221.342	276.900	305.883	21.631	0.683	0.803
	AG	12.090	35.633	59.619	15.341	0.424	0.319
	POV	0.522	1.734	2.738	0.797	-0.173	-0.097
	UR	0.000	0.156	0.167	0.211	-0.175	-0.123
	MSA	9.031	16.771	22.878	3.859	-0.666	-0.481
	OTA	30.324	89.326	188.325	45.234	-0.689	-0.490
	HCA	0.199	0.148	0.157	0.306	-0.124	-0.527
Middle Income	FDIA	718.621	1,599.688	3,008.764	70.829	0.801	1.025
	AG	10.827	14.893	18.772	1.466	0.413	0.309
	POV	1.422	2.694	3.332	0.457	-0.177	-0.937
	UR	0.001	0.045	0.056	0.101	-0.164	-0.112
	MSA	3.533	9.012	22.978	3.964	0.522	0.440
	OTA	66.324	75.026	81.305	4.234	0.588	-0.479
	HCA	0.081	0.037	0.046	0.225	0.235	0.126
Low Income	FDIA	400.063	436.338	486.987	19.573	0.244	1.567
	AG	11.542	13.430	18.134	1.538	0.475	0.313
	POV	2.729	3.534	4.030	0.353	-0.162	-0.133
	UR	0.002	0.267	0.279	0.322	-0.186	-0.134
	MSA	0.907	4.075	15.008	4.234	-0.311	-0.222
	OTA	41.522	52.926	72.815	7.133	0.473	-0.368
	HCA	0.202	0.298	0.301	0.412	0.357	0.238

In contrast, reading from Table 4.1, it can be seen that min, mean, median and standard deviation for AG among low income economies exhibited slightly higher level than middle and high income economies. Similarly, the highest min, mean, median and standard deviation for POV also among low income OIC economies. Therefore, the descriptive statistics results provide the sub-samples have exhibited different interpretations. By this finding, it can be concluded that the FDIA, AG and POV are on average higher in low and middle income countries than in the high income economies.

Regarding the skewness and kurtosis test, the tests of data integrity show that most variables are evenly distributed with skewness coefficients close to zero. Besides, Table 4.1 also indicates there is no highly skewed variables have the skewness is less than -1 or greater than 1. Nevertheless, the sample data for all variables of high income OIC economies are fairly symmetrical with the skewness is between -0.5 and 0.5. The skewness results for the FDIA, MSA and TOA are moderately skewed in low and middle income OIC economies where the data are shows between -1 and – 0.5 and between 0.5 and 1. Thus, the components are neither negatively nor positively skewed compared to the normal distribution. Lastly, the kurtosis coefficients for most variables have values less than three, indicative of no positive excess kurtosis. Therefore, based on the statistics, all variables in this study are normally distributed.

4.2.2 Correlation Analysis

Table 4.2 reports the Pearson pairwise correlation coefficient for all variables under consideration for the sub-samples of low, middle and high income OIC economies. The variables of primary interest in this study are FDIA, AG and POV. Generally, although the correlation coefficients are low but all of them are statistically significant at five percent level of significance in all sub-OIC economies.

Table 4.2
Correlation Analysis of the Variables

Income Level	Variables	FDIA	AG	POV	UR	MSA	TOA	HCA
High Income	FDIA	1.000						
	AG	0.711*	1.000					
	POV	-0.898*	-0.768*	1.000				
	UR	-0.411*	-0.114*	0.069*	1.000			
	MSA	0.324*	0.230*	-0.113*	-0.402*	1.000		
	TOA	0.657*	0.589*	-0.715*	-0.043*	0.073*	1.000	
	HCA	0.226*	0.177*	-0.095*	-0.147*	0.282*	0.338*	1.000
Middle Income	FDIA	1.000						
	AG	0.216*	1.000					
	POV	-0.115*	0.343*	1.000				
	UR	-0.325*	0.195*	0.309*	1.000			
	MSA	0.093*	0.114*	-0.108*	-0.170*	1.000		
	TOA	0.114*	-0.108*	-0.170*	-0.195*	-0.301*	1.000	
	HCA	0.216*	-0.142*	-0.416*	-0.129*	0.115*	0.085*	1.000
Low Income	FDIA	1.000						
	AG	0.084*	1.000					
	POV	-0.093*	-0.141*	1.000				
	UR	-0.320*	-0.221*	0.221*	1.000			
	MSA	0.163*	0.236*	-0.108*	-0.095*	1.000		
	TOA	0.617*	0.117*	-0.112*	-0.108*	0.142*	1.000	
	HCA	0.051*	0.163*	-0.236*	-0.093*	-0.019*	0.036*	1.000

* indicates significance of the variables at five percent levels.

The correlation values indicate FDIA is significantly correlated with the AG and POV. Similarly, the second dependent variable, AG is significantly correlated with the FDIA and POV. The third dependent variable, POV is statistically significant with FDIA and AG. Table 4.2 contains correlation coefficient for all the independent variables used. The FDIA and AG variables have the highest correlation coefficient of 71.1 percent in high income OIC economies, 0.216 percent of the correlation coefficient for the group of middle income and 0.084 percent for high income OIC economies countries. The implication of this findings is that the degree of association between FDIA and AG is stronger among low income compared to the middle income and high income OIC economies countries. In addition, there is a strong and significant negative correlation coefficient of -0.898 percent between FDIA and POV especially in low income OIC economies. This indicates that the low income OIC economies will gain more benefit from the reduction of POV to associate with the FDIA. Regarding the sign of the correlation coefficient between POV and AG, which have a strong negative correlation coefficient of -0.768 percent for low income OIC economies, these findings have the implications that problems regarding POV and AG are critical among low income OIC countries. However, this finding cannot be relied upon in drawing the conclusion because the results cannot provide a robust result as it only merely measures the correlation coefficient between two variables.

4.2.3 Variance Inflation Factor Test

To ensure that there is no multicollinearity problem in this study, this thesis performs the VIF test (VIF). Table 4.3 reports the VIF for the relationship between the independent and dependent variables.

Table 4.3
The Results of Variance Inflation Factor Test

Income Level	Variables	FDIA Model	AG Model	POV Model
High Income	FDIA	-	1.13	1.13
	AG	1.17	-	1.17
	POV	1.12	1.12	-
	UR	1.11	1.11	1.11
	MSA	1.09	1.09	1.09
	TOA	1.02	1.02	1.02
	HCA	1.12	1.12	1.12
Middle Income	FDIA	-	1.23	1.23
	AG	1.05	-	1.05
	POV	1.15	1.15	-
	UR	1.04	1.04	1.04
	MSA	1.16	1.16	1.16
	TOA	1.01	1.01	1.01
	HCA	1.02	1.02	1.02
Low Income	FDIA	-	1.04	1.04
	AG	1.10	-	1.10
	POV	1.03	1.03	-
	UR	1.11	1.11	1.11
	MSA	1.08	1.08	1.08
	TOA	1.02	1.02	1.02
	HCA	1.03	1.03	1.03

The VIF test suggests that there is no multicollinearity problem as the VIFs of the regression are below 10. This confirms that there is a less collinearity problem in a panel data compared to time series and cross sectional data (Hsiao, 1986). All the associated values are less than 10, again indicating that multicollinearity may not be a concern.

4.2.4 Panel Unit Root Test

Table 4.4 reports the panel unit root test for all variables. The results of the Levin, Lin & Chu (LLC), Im, Pesaran and Shin (IPS), Augmented Dickey Fuller (ADF) tests indicated that all series are stationary at the five percent significant level and the same tests indicate that there are no unit roots in the first differences of all the variables. It is common to test the stationarity of variables in the first place before estimating the regression of an equation as the presence of unit root leads to spurious results. The results of panel unit root test are presented in Table 4.4.

Table 4.4
Levin, Lin & Chu (LLC) Test, Im, Pesaran and Shin (IPS) Test and Augmented Dickey Fuller (ADF) Test

	Levin, Lin & Chu (LLC) Test		**Im, Pesaran and Shin (IPS) Test**		**Augmented Dickey Fuller (ADF) Test**	
Variables	**Level**	**First Difference**	**Level**	**First Difference**	**Level**	**First Difference**
FDIA	-4.017*	-10.951*	-4.784*	-12.922*	-2.485*	-5.557*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)
AG	-7.142*	-7.101*	-3.069*	-6.989*	-2.209*	-3.422*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)	(0.000)
POV	-7.511*	-8.879*	-6.289*	-6.837*	-6.928*	-7.477*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
UR	-4.126*	-9.910*	-6.988*	-6.076*	-3.605*	-3.671*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MSA	-3.655*	-5.686*	-4.784*	-12.922*	-1.041*	-2.282*
	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
HCA	-1.339*	-1.765*	-3.068*	-6.837*	- 2.426*	-3.935*
	(0.013)	(0.044)	(0.000)	(0.000)	(0.000)	(0.000)
TOA	-3.400*	-3.349*	-6.289*	-6.076*	-2.415*	-3.041*
	(0.000)	(0.003)	(0.000)	(0.000)	(0.000)	(0.000)

Note: The coefficients and standard errors (in parentheses). * indicates significance of the variables at five percent levels.

Unit root test results prove that this series are stationary series and involve no unit root problem. This research used the LLC, IPS and ADF tests to find the unit roots in time series. The results show that all the variables are stationary at level and stationary at first difference. As a results, these results no need to test for the cointegration among variables. As mentioned in previous chapter, the GMM estimation framework was developed for strictly stationary data. Thus, this research can proceed with the GMM estimation framework.

4.3 The Role of Agriculture Growth and Poverty to aiding FDI Inflows in Agriculture Inflows amongst Sub-OIC Countries

This section discusses the empirical findings with regards to analysis the role of AG and POV towards increasing the FDIA amongst sub-OIC countries. To test the first objectives were estimated using the FDIA model. This section is organized as follows. Section 4.2.1 explains the various variables impact on FDIA using POLS, REM and FEM for static panel data and Generalized Method of Moments (GMM) for dynamic panel data. The empirical findings from the first research objective are presented in Sections 4.2.1 and 4.2.2 that deliberate the estimation results for high income, middle income and low income countries. Section 4.2.2.1 contains the robustness check for dynamic panel data used in Section 4.2.2.

4.3.1 The Static Panel Data Estimation Results for FDIA Model

This section presented the findings based on the first objectives of this study by using static panel data analysis. Overall, the AG variable are showed directly correlated to the FDIA and the coefficient is statistically significant in all panel data analysis methods. This suggests that higher AG does send positive signals to prospective foreign investors in the

agriculture sector. This observation is in line with the prediction of Borensztein et al. (1998), Licai et al. (2010), and Li and Liu (2005). Furthermore, Table 4.4 has also reported that the coefficients for the POV variable are negative and significantly at the five percent level for all panel data analysis methods and in all sub-OIC countries. The results are consistent with the findings of Bruno and Easterly (1998), Ang (2008) Menyah and Rufael (2010), Sharma (2010) and Omri (2013). This implies that reduces POV leads to having more FDIA.

Table 4.5
POLS, FEM and REM Estimation for FDIA Model

Variables	**Low Income**			**Middle Income**			**High Income**		
	POLS	**FEM**	**REM**	**POLS**	**FEM**	**REM**	**POLS**	**FEM**	**REM**
AG	0.015*	0.079*	0.0625*	0.004*	0.068*	0.062*	0.004*	0.086*	0.058*
	(0.001)	(0.002)	(0.002)	(0.001)	(0.005)	(0.002)	(0.001)	(0.002)	(0.001)
POV	-0.433*	-0.314*	-0.344*	-0.481*	-0.425*	-0.344*	-0.481*	-0.300*	-0.331*
	(0.001)	(0.003)	(0.002)	(0.002)	(0.008)	(0.002)	(0.002)	(0.002)	(0.002)
UR	-0.562*	-0.541*	-0.550*	-0.527*	-0.401*	-0.554*	-0.528*	-0.578*	-0.572*
	(0.002)	(0.006)	(0.004)	(0.003)	(0.011)	(0.004)	(0.003)	(0.005)	(0.003)
MSA	0.151*	0.233*	0.227*	0.220*	0.254*	0.219*	0.215*	0.218*	0.206*
	(0.054)	(0.032)	(0.033)	(0.068)	(0.018)	(0.036)	(0.077)	(0.027)	(0.026)
TOA	0.453*	0.256*	0.029	0.529*	0.132*	0.138	0.529*	0.081*	0.269*
	(0.012)	(0.018)	(0.023)	(0.014)	(0.056)	(0.653)	(0.014)	(0.023)	(0.015)
HCA	0.059*	0.016*	0.020*	0.025*	1.679*	0.015	1.840*	-0.020*	0.000
	(0.005)	(0.003)	(0.003)	(0.006)	(0.124)	(0.545)	(0.230)	(0.003)	(0.002)
R-Square	0.938	0.189	-	0.706	0.149	-	0.763	-	-
F-Statistic		0.000*			0.000*			0.000*	
BP-LM			0.000*			0.000*			0.000*
Hausman Test		0.000*			0.000*			0.000*	
No. of Observations	120	120	120	110	110	110	80	80	80

Note: This table presents the results from the static panel data estimations using STATA. The coefficients and standard errors (in parentheses). * indicates significance of the variables at five percent levels.

The analysis in Table 4.5 shows that the *F*-statistic is greater than the critical value at five percent level of significance. Hence, the FEM is equal to zero and at five percent level of significance. Thus the option of specifying the model as a POLS model over the FEM specification and at five percent level of significance. The Breusch and Pagan Lagrangian Multiplier (BP-LM) test statistic is greater than the critical value at five percent level of significance indicates that the variables are jointly significant in explaining the variations in FDIA in the REM specification. In this case, the cross sections are heterogeneous is significant at five percent level, thus the REM specification is preferred over POLS.

A comparison of the post estimation diagnostics between the FEM and REM specification reveals that the conclusions are comparable. The Hausman test statistics to discriminate between the specifications are shown in table 4.5. Table 4.5 shows that Hausman test statistics have a corresponding *p*-value of 0.000 and the regressors and individual heterogeneity are strictly exogenous is at five percent level of significance. Thus the FEM specification is preferred over REM specification. Therefore, for the FEM should be interpreted. Table 4.5 provides FEM estimations results that highlight the FDIA model in sub-OIC countries.

The FEM estimation determined that AG, MSA, TOA, and HCA had a positive effect on FDIA. The explanatory variables which had a negative impact were POV and UR. The interesting fact was that all the variables did offer the expected outcomes except for HCA in OIC high income economies. From column Table 4.5, it can be seen that AG has increased as a result increased of FDIA in the all sub-OIC member countries. This result is statistically significant at the five percent significance level. Estimations results of low income OIC

economies, which indicates a one percent increase in AG to a 0.079 percent increase in the FDIA. Similarly, one percent increase in AG to a 0.068 percent increase in the FDIA for middle income OIC economies. The results also stated statistically significant at the five percent significance level for high income OIC economies where indicates that one percent increase in AG to a 0.086 percent increase in the FDIA. This implies that AG has led to increases in FDIA in the selected OIC countries. This result is consistent with the findings of Licai et al., (2010), those studies found that AG leads to increasing the performance of FDI inflow to China's agriculture.

Table 4.5 shows that POV reduction led to increase in FDIA in the all sub-OIC member countries statistically at five percent level of significance, especially for middle income economies. This result is parallel to the previous results from Bekhet and Othman (2011) and Lee (2013) research. The previous study revealed that evidence about POV influenced on FDI inflows. In terms of middle income OIC economies, it found that a one percent decrease in POV will lead to increase in the FDIA by a 0.425 percent. Low and high income OIC countries report the results of a one percent decrease in POV will lead to increase in the FDIA by a 0.314 percent and 0.300 percent. The implementation of POV policy has increased the value of FDIA by 0.425 percent (middle income), 0.314 percent (low income) and 0.300 percent (high income) in sub-OIC member countries.

4.3.2 The Dynamic Panel Data Estimation Results for FDIA Model

The results estimated by the static model could be biased due to the possibility of endogeneity in the explanatory variables. It also has been argued that the FEM and REM estimators may be inconsistent and biased in a dynamic panel data model (Antoniou et al. 2006), particularly where *N* is large and *T* is fixed. Furthermore, the instrumental variable technique does not take into account all the available moment conditions. Given these arguments, the Arellano and Bond (1995) Two-Step System GMM procedure is used to resolve this problem. Hence, Table 4.6 contains results of the Two-Step System GMM estimations for low, middle and high income OIC economies.

The results of the GMM estimator provided evidence of the positive influence of AG, MSA, TOA, HCA and lagged FDIA had a positive effect on FDIA. AG and MSA were the factors that had the most influence on FDIA especially in the OIC low and medium income economies countries. The negative coefficients were for POV and UR. In Table 4.6, the AG coefficient is highly significant at five percent level for low, medium and high sub-OIC economies countries. These results are consistent with previous research (e.g. Suleman & Naiya ,2009 & Sridharan et al. ,2009) that results revealed not only economic growth can be influenced on FDI inflows, it also a bi-directional causal relationship between growth and FDI inflows for Brazil, Russia and South Africa. The relationship between AG and FDIA are still consider highly significant, with respect to the other independent variables associates closely to agriculture sectors, such as the POV, MSA, TOA and HCA, all are significant with the FDIA. In all of the regions, the coefficient of the lagged FDIA is positive and significant at 5 percent. This implies that, the level of FDIA in the previous year has a direct influence on current year's FDIA levels.

Table 4.6
System GMM Estimation Results for FDIA Model

Variables	Low Income	Middle Income	High Income
Constant	8.779*	1.161*	7.727*
	(1.367)	(0.191)	(1.367)
TOA	-0.735*	0.792*	2.873*
	(0.131)	(0.115)	(1.251)
UR	-0.335*	-0.621*	-0.022*
	(0.075)	(0.111)	(0.009)
MSA	0.796*	0.762*	0.075*
	(0.374)	(0.081)	(0.026)
HCA	0.233*	0.771*	0.145*
	(0.032)	(0.112)	(0.056)
POV	-0.133*	-0.032*	-1.882*
	(0.035)	(0.001)	(0.682)
AG	0.669*	1.963*	0.618*
	(0.007)	(0.231)	(0.311)
Lagged FDIA	0.780*	0.308*	0.217*
	(0.008)	(0.018)	(0.003)
Wald test	0.000*	0.000*	0.000*
Sargan test	0.217	1.000	1.000
Arrelano-Bond test for AR(1)	0.039*	0.034*	0.004*
Arrelano-Bond test for AR(2)	0.157	0.477	0.155
N	120	110	80

Note: This table presents the results from the two-step System Generalized Method of Moments estimations using STATA. The coefficients and standard errors (in parentheses). The Wald, Sargan and Arellano-Bond tests are the post-estimation test to check the appropriateness of the model (*p*-value). * indicates significance of the variables at five percent levels.

From Table 4.7, the System GMM is significant (Wald test) and consistent as there is no second order serial correlation and the instruments introduced in the model are valid (Sargan test). Finally, the Wald test also indicates that the three models well fit the data. Hence, this study can proceed to estimate the model using GMM dynamic panel regression. Serial correlation in panel data models biases the standard errors and leads to less efficient results. Therefore, this study reports serial correlation in order Arellano and Bond test for first order autocorrelation (AR(1)) and serial correlation in order Arellano and Bond test for second

order autocorrelation (AR(2)) which require identifying serial correlation in the idiosyncratic error term in the panel data model. Table 4.7 reports AR(1) and AR(2) serial correlation for all FDIA proxies used in this study. The AR(1) and AR(2) for OIC low income countries with 0.039 and 0.157 specifies first order of AR(1) are significant where the *p*-values are below 0.05 (p=0.039<0.05) but second order of AR(2) are insignificant where the *p*-values are greater than 0.05 (p=0.157>0.05). Therefore, this study rejects second order serial correlation of FDIA regression.

Table 4.7
The Wald, Sargan and Arellano-Bond Tests for FDIA Model

Test	***p*-Value**		
	Low Income	**Middle Income**	**High Income**
Arrelano-Bond Test for AR(1)	0.039*	0.034*	0.004*
Arrelano-Bond Test for AR(2)	0.157 no autocorrelation	0.477 no autocorrelation	0.155 no autocorrelation
Sargan Test	0.216 Valid	1.000 Valid	1.000 Valid
Wald Test	0.000 Significant	0.000 Significant	0.000 Significant

Notes:* indicates significance of the variables at five percent levels

In Table 4.7, column for OIC middle income reports AR(1) as 0.034 and AR(2) as 0.477. There is no serial correlation existing in this regression for second order because greater than 0.05. A third proxy of OIC high income economies regression result is reported in Table 4.7, shows AR(1) as 0.004 and AR(2) as 0.155. Consequently, serial correlation for second order does not exist in this regression. In sum, there is no second order autocorrelation in the original error of all three sub-OIC proxies as desired.

4.3.2.1 Robustness Check

This study offers robustness tests to illustrate that the next results are robust. To concern that the results of this study may be driven by the effect of agriculture variables and focusing on the main objectives of this study that want to see the interrelationship between FDIA, AG and POV. Therefore, the agriculture variables namely the agriculture market size, agriculture human capital and agriculture human capital are excluded from the models. Again, all the models satisfy the system GMM estimator conditions as discussed under Table 4.6 whereby there is no second order autocorrelation, the instruments used are valid and the models well fit the data. Tables 4.8 show the estimation results of the equation excluding the agriculture factors from the model. These results obtained are qualitatively similar to the main results in Tables 4.8.

Table 4.8
Robustness Checks of FDIA Model

Variables	**Low Income**	**Middle Income**	**High Income**
Constant	8.779*	1.160*	7.727*
	(1.367)	(0.192)	(1.367)
UR	-0.335*	-0.623*	-0.022*
	(0.075)	(0.114)	(0.009)
AG	0.669*	1.961*	0.618*
	(0.007)	(0.232)	(0.311)
POV	-0.133*	-0.033*	-1.882*
	(0.035)	(0.001)	(0.682)
Lagged FDIA	0.558*	0.186*	0.184*
	(0.006)	(0.016)	(0.003)
Wald test	0.000*	0.000*	0.000*
Sargan test	0.218	1.000	1.000
Arrelano-Bond test for AR(1)	0.039*	0.034*	0.004*
Arrelano-Bond test for AR(2)	0.157	0.477	0.155
N	120	110	80

Note: The coefficients and standard errors (in parentheses). The Wald, Sargan and Arellano-Bond tests are the post-estimation test to check the appropriateness of the model (*p*-value). * indicates significance of the variables at five percent levels.

The results of the system GMM confirmed that POV and AG had a significant influence on FDIA. POV was the factor that had the most influence on FDIA in all panel sub-OIC countries. The AG is most significant influence on FDIA in low and medium income economies countries compare with OIC high income economies countries.

4.4 The Effects of FDI Inflows in Agriculture and Poverty on Agriculture Growth in Sub-OIC Countries

This section presents results the impact of FDIA and POV on AG for three regressions for each three different sub-OIC Countries: result of low income economies, middle income and high income economies countries. The correlation analysis in Table 4.2 reported that there is a strong and significant correlation at one percent level between FDIA and POV with AG for all panel data analysis methods. As a result, to control the sensitivity of FDIA and POV on the estimated AG, the study interacted with other control variables. A series of other control variables are also included in this study. The control variables are UR, MSA, TOA, HCA and time dummies to control for macroeconomic effects.

4.4.1 The Static Panel Data Estimation Results for AG Model

To test the second objectives, the AG model were estimated. The AG model specification consisted of the POLS, FEM and REM. A comparison of the post estimation diagnostics between the POLS, FEM and REM specification reveals that the conclusions are comparable. The estimates are shown in table 4.9. Based on the estimation diagnostics and theory, only the FEM specification results should be interpreted respectively.

Table 4.9

POLS, FEM and REM Estimation for AG Model

Variables	Low Income			Middle Income			High Income		
	POLS	**FEM**	**REM**	**POLS**	**FEM**	**REM**	**POLS**	**FEM**	**REM**
FDIA	0.019*	0.087*	0.049*	0.017*	0.062*	0.041*	0.022*	0.088*	0.056*
	(0.002)	(0.004)	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)	(0.004)	(0.003)
POV	-0.687*	-0.494*	-0.513*	-0.706*	-0.166*	-0.517*	-0.311*	-0.495*	-0.535*
	(0.004)	(0.005)	(0.007)	(0.005)	(0.004)	(0.003)	(0.003)	(0.005)	(0.004)
UR	-0.211*	-0.416*	-0.366*	-0.205*	-0.678*	-0.451*	-0.673*	-0.416*	-0.411*
	(0.005)	(0.009)	(0.008)	(0.007)	(0.011)	(0.005)	(0.005)	(0.009)	(0.007)
MSA	0.581	0.168	0.273	1.169	0.241*	-6.499*	0.217*	-6.510*	-6.671*
	(0.830)	(1.577)	(0.578)	(1.016)	(0.034)	(1.571)	(0.071)	(1.297)	(1.671)
TOA	0.438*	0.058*	0.303*	0.345*	-0.033	0.211*	0.644*	0.057*	0.200*
	(0.044)	(0.027)	(0.059)	(0.051)	(0.033)	(0.018)	(0.023)	(0.029)	(0.022)
HCA	-2.476	1.710*	-0.033*	-1.862	1.032*	0.031*	0.032*	0.669*	0.041*
	(1.623)	(0.316)	(0.005)	(1.892)	(0.256)	(0.004)	(0.011)	(0.238)	(0.004)
R-Square	0.237	0.179	-	0.715	0.158	-	0.741	0	-
F-Statistic		0.000*			0.000*			0.000*	
BP-LM			0.000*			0.000*			0.000*
Hausman Test		0.000*			0.000*			0.000*	
No. of Observations	120	120	120	110	110	110	80	80	80

Note: The coefficients and standard errors (in parentheses). * indicates significance of the variables at five percent levels.

The FDIA variable is directly correlated to the AG, the coefficient is statistically significant at all panel data analysis methods. This observation lends support to the theory that countries with high inflows of FDIA have an added value advantage and hence this increases the countries' agriculture sector growth. This relationship supports the findings of De Gregorio (2005), Balasubramanyam (2001) and Xu (2000), among others. Table 4.9 also reported that the coefficient for the POV variable is negative and significant at the five percent level for all panel data analysis methods and in all sub-OIC countries. This observation is in line with the prediction of Lee (2013) that FDI inflows contributes more to GDP growth than domestic investment. These results confirm the findings of Soumaré and Gohou (2009) for investigating the FDI inflows impact on growth empirically by using econometric models on panel data across African countries.

Table 4.9 also shows that the option of specifying the model as a FEM over the POLS specification is significant at five percent level. *F*-statistic is greater than the critical value at one percent level of significance. Next, the REM specification is preferred over POLS the results of AG model on the REM model when the findings are shown in Table 4.9. Table 4.9 reports that the BP-LM test statistic is greater than the critical value at five percent level of significance and concludes that the cross sections are heterogeneous at five percent level of significance. Lastly, the FEM specification is preferred over REM specification as presented in Table 4.9. The Hausman test statistics shown in Table 4.9 have a corresponding *p*-value of 0.000. Therefore, the regressors and individual heterogeneity are strictly exogenous at five percent level of significance.

From the results of the FEM estimation for AG regions in Table 4.9, FDIA and POV confirmed to be influencing AG in all sub-OIC countries. In the OIC low income economies, the empirical results of FEM indicated coefficient of FDIA is statistically significant at five percent level. The coefficient of FDIA is 0.087 which is indicates that FDIA influences AG positively in the model. The positive relationship between FDIA and AG means that the implementation of FDIA policy has improved their AG by 0.087 percent. This remark lends support to the theory that countries with high inflows of FDIA have an added value advantage and hence this increases the countries' AG. This findings in line with the results of Lin, Thirtle and Wiggins (2001), Li and Liu (2005), Licai et al., (2010), Gerlach and Liu (2010) and among others for investigate the FDI inflows impact on economic growth empirically by using econometric models on panel data.

Meanwhile, the Table 4.9 results of FEM also indicated that the coefficient of POV is statistically significant at five percent level. This shows that there is negative relationship between POV and AG which mean the implementation of poverty reduction policy has improved agriculture growth of the low income OIC economies. The value of AG is increased by 0.494 percent. The results of this research is consistent with the study of Altinay and Karagol (2004) that carried out an empirical study on Turkey in 2004. The results find also that there is bi-directional causal relationship from POV to AG. This result is parallel to the results from Bekhet and Othman (2011) and Lee (2013).

The empirical results of FEM of the middle income OIC economies shows that coefficient of FDIA is statistically significant at five percent. This shows that there is positive relationship between FDIA and AG. The implementation of FDIA policy has increased the value of AG by 0.062 percent. The coefficient value of FDIA shows its value to AG after the implementation of FDIA policy. Once again, the results of the middle income OIC economies in line with the studies by Lin, Thirtle and Wiggins (2001), Li and Liu (2005), Licai et al., (2010) and Gerlach and Liu (2010 studies. Similarly, the coefficient of POV is negatively and statistically at one percent level of significant for OIC middle income OIC economies analysis. This result is confirm to the research from Altinay and Karagol (2004), Bekhet and Othman (2011) and Lee (2013) research.

In high income OIC economies cases, this provides the evidence that FDIA positively effects on AG at one percent significant level. Furthermore, this study also represent the similarity on Mills et al. (2006) and Khan and Sattar (2010) studies. In the FEM analysis, the results indicated a negative value of coefficient at 0.495 and significant at one percent level for POV. In sum, the FDIA policy should implement in order to increase the AG and the POV reduction policy to enhance the AG. Generally, from this analysis, the FDIA was positively correlated with AG. The investigation into the effects of POV offered the following conclusion: reduction of POV level can increased AG. The study suggests that FDIA and POV was contributing very much to AG.

The outcome for MSA and HCA offered mixed results. MSA increased AG in the low and middle income economies countries and had an insignificant results in high income economies. The results provided evidence of the importance market size of agriculture sector used as a proxy for the food deficit level of the population. It makes sense that a sufficient food positively impacts the AG. According to Root and Ahmed (1979) and Bhattacharya et al. (1996), these authors claimed that prospects of market potential was increased by a growing market and economies of scale would be generated by a large market size. Furthermore the results obtained for high income economies contradict the economies theory. It seems that MSA is not an important factor for high income economies countries.

4.4.2 The Dynamic Panel Data Estimation Results for AG Model

Table 4.10 shows the result of the System GMM estimations on the impact of FDIA and POV on AG in sub-OIC countries dynamic panel data. The primary independent variables of interest are the FDIA and POV. In Table 4.10, the coefficient for the level variable of interest, FDIA is aimed at capturing the AG under different sub-OIC. The coefficient is 1.612 and this indicates that it is significant at the five percent level. Next variable of interest is the POV, it to identify whether the POV reduction is adequate to cover for the increase in AG.

Table 4.10
System GMM Estimation Results for AG Model

Variables	Low Income	Middle Income	High Income
Constant	-89.986*	7.674*	21.969
	(14.323)	(0.877)	(274.255)
TOA	0.197*	0.249*	0.376
	(0.017)	(0.104)	(0.027)
UR	-14.482*	-0.256*	-17.359
	(1.931)	(0.071)	(26.121)
MSA	36.511*	-0.7467*	245.002
	(5.551)	(0.305)	(311.761)
HCA	-6.119*	-0.003*	0.002
	(3.776)	(0.001)	(0.246)
POV	-9.387*	-0.616*	-0.122*
	(1.119)	(0.084)	(0.01)
FDIA	1.612*	2.270*	0.620*
	(9.944)	(0.32)	(0.11)
Lagged AG	0.803*	0.360*	0.582*
	(0.127)	(0.110)	(0.155)
Wald test	0.000*	0.000*	0.000*
Sargan test	0.773	1.000	1.000
Arrelano-Bond test for AR(1)	0.016*	0.046*	0.037*
Arrelano-Bond test for AR(2)	0.464	0.260	0.119
N	120	110	80

Note: This table presents the results from the two-step System Generalized Method of Moments estimations using STATA. The coefficients and standard errors (in parentheses). The Wald, Sargan and Arellano-Bond tests are the post-estimation test to check the appropriateness of the model (*p*-value). * indicates significance of the variables at five percent levels.

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The coefficient of POV is significant at five percent level for the all sub-OIC countries. The POV coefficient is -9.387 and is statistically significant at five percent level for low income economies countries and the middle and high income economies is significant at five percent level with a negative coefficient (-0.616 and -0.122). Generally, these results support the previous static panel data findings that found the POV has a negative significant relationship with the AG and FDIA has a positive significant relationship with the AG.

The first control variable, the UR controls for AG. The coefficient for UR shows a negative and significant relation with AG in low and middle income economies countries but insignificant relations in high income economies countries. This indicates that the low UR can increase the AG except for high income economies. The coefficient for the next control variable which is MSA is statistically significant at five percent level for low and middle income and insignificant for high income economies countries. The other two control variables, TOA and HCA is significant in low and middle income models revealing that the variables are crucial in low and middle income countries rather than in the high income economies countries. Lastly, the coefficient of lagged agriculture growth implies some degree of persistence in agriculture growth in the all sub-OIC countries. Thus, current year's agriculture growth levels depend on that of previous year's levels.

Table 4.11
The Wald, Sargan and Arellano-Bond Tests for AG Model

Test	***p*-Value**		
	Low Income	**Middle Income**	**High Income**
Arrelano-Bond Test for AR(1)	0.016*	0.046*	0.037*
Arrelano-Bond Test for AR(2)	0.464	0.260	0.119
	no autocorrelation	no autocorrelation	no autocorrelation
Sargan Test	0.773	1.000	1.000
	Valid	Valid	Valid
Wald Test	0.000	0.000	0.000
	Significant	Significant	Significant

Notes:* indicates significance of the variables at five percent levels

For the system GMM to be valid, instruments must be exogenous. All the instruments are valid under the Sargan test as presented in Table 4.10. The Sargan test of overidentifying restrictions is valid for all regressions. The associated *p*-value is 0.772 for low income economies and 1.000 for the middle and high income economies models respectively. This suggests that the instruments used for the lagged variables are valid. Table 4.11 also reports the significance levels of AR(1) and AR(2) for both models. AR(1) is significant at the five percent level, but AR(2) is insignificant for all the columns. Hence, there is no second order autocorrelation. The estimated model fits the panel data reasonably well, having fairly stable coefficients, while the Wald test indicates fine goodness of fit since the overall test statistic shows that all coefficients are equal to zero. Hence, the GMM requirement is satisfied.

4.4.2.1 Robustness Check

To confirm the main results, a robustness check is performed by running the same set of regressions for a smaller data set over period of 16 years. Using a significantly reduced control variables does not fundamentally alter the results. In order to test the robustness of the results, FEM regressions as a robustness test for the results with the GMM system method was estimated, at least for the sign of the coefficients and report the results in Table 4.12.

Table 4.12
Robustness Checks of AG Model

Variables	**Low Income**	**Middle Income**	**High Income**
Constant	-4.869*	-145.317*	316.336*
	(20.278)	(50.375)	(179.946)
UR	-13.014*	-0.480*	-0.242
	(1.657)	(0.110)	(0.263)
FDIA	1.612*	2.271*	0.622*
	(9.944)	(0.320)	(0.113)
POV	-9.387*	-0.616*	-0.123*
	(1.119)	(0.084)	(0.013)
Lagged AG	0.570*	0.138*	0.360*
	(0.115)	(0.100)	(0.112)
Wald test	0.000*	0.000*	0.000*
Sargan test	0.773	1.000	1.000
Arrelano-Bond test for AR(1)	0.016*	0.046*	0.037*
Arrelano-Bond test for AR(2)	0.464	0.260	0.119
N	120	110	80

Note: This table presents the results from the two-step System Generalized Method of Moments estimations using STATA. The coefficients and standard errors (in parentheses). The Wald, Sargan and Arellano-Bond tests are the post-estimation test to check the appropriateness of the model (*p*-value). * indicates significance of the variables at five percent levels.

Table 4.12 shows that the significance and the relative magnitude of influence of all variables of interest are preserved. Therefore, while controlling the others variables, the FDIA and POV remains the most important and play a significant role in determining AG. Using FEM regressions does not fundamentally change the picture from the previous diagnostics test.

4.5 The Effects of FDI Inflows in Agriculture and Agriculture Growth on Poverty In Sub-OIC Countries

This section discussed the effects of FDIA and AG on POV in three sub-OIC countries using static and dynamic panel data research design. This study has applied the POV as dependent variable for entire models. Sections 4.4.1 presented the empirical examination techniques results using static panel data analysis method. Next, Section 4.4.2 presents the findings on the dynamic panel data to test endogeneity, heteroscedasticity and autocorrelation in the explanatory variables.

4.5.1 The Static Panel Data Estimation Results for POV Model

A provincial panel data from 2000 to 2015 and static panel model (POLS, REM and FEM) are used to estimate the FDIA and AG as determinant of POV. After conduct several test such as *F*-statistic, Hausman and BP-LM test, FEM is considered the most appropriate model to apply in this study rather than REM and POLS model. Table 4.13 presents regression results from the static AG panel data estimations. The results for the POLS, FEM and REM regression are reported for comparison purposes with respect to other models.

Table 4.13, the results pointed out that the FEM was selected over REM by the Hausman test. The summary of the estimation techniques results reveals the following information about the data. Firstly, the estimated coefficient for FDIA are negative in the entire panel data methods of analysis which are significant at five percent respectively. The next important variable based on this findings is AG which suggest a negative relationship exhibited between the two variables and significant at five percent significant level. On the other hand, the coefficient of UR is found to carry a positive sign in all of the models and

found to be statistically significant at five percent significant level. Consistently, all the findings support the previous economic theory.

Table 4.13
POLS, FEM and REM estimation for POV Model

Variables	Low Income			Middle Income			High Income		
	POLS	**FEM**	**REM**	**POLS**	**FEM**	**REM**	**POLS**	**FEM**	**REM**
FDIA	-0.003*	-0.079*	-0.056*	-0.003*	-0.069*	-0.065*	-0.039*	-0.061*	-0.056*
	(0.001)	(0.002)	(0.003)	(0.001)	(0.005)	(0.002)	(0.002)	(0.003)	(0.003)
GA	-0.594*	-0.314*	-0.535*	-0.633*	-0.425*	-0.199*	-0.276*	-0.166*	-0.194*
	(0.002)	(0.003)	(0.004)	(0.003)	(0.008)	(0.002)	(0.002)	(0.004)	(0.003)
UR	0.430*	0.545*	0.411*	0.388*	0.401*	0.689*	0.688*	0.677*	0.688*
	(0.004)	(0.006)	(0.007)	(0.005)	(0.011)	(0.005)	(0.004)	(0.011)	(0.007)
MSA	-4.547	-0.259*	-6.671*	-6.922	-0.132*	-0.192*	-0.099*	-0.249*	0.236*
	(3.583)	(0.034)	(1.671)	(4.515)	(0.056)	(0.026)	(0.052)	(0.032)	(0.032)
OTA	-0.931*	-8.360*	-0.200*	-0.358*	-6.615*	-0.269*	-0.488*	-2.597*	-0.246*
	(0.099)	(0.833)	(0.022)	(0.016)	(1.755)	(0.023)	(0.018)	(0.299)	(0.028)
HCA	-1.672*	-10.081*	-0.041*	0.049*	7.308*	-0.001	0.076*	-1.331*	-0.025*
	(0.221)	(1.141)	(0.004)	(0.008)	(2.097)	(0.004)	(0.009)	(0.343)	(0.005)
R-Square	0.334	0.126	-	0.851	0.122	-	0.744	0	-
F-Statistic		0.000*			0.000*			0.000*	
BP-LM			0.000*			0.000*			0.000*
Hausman Test		0.000*			0.000*			0.000*	
No. of Observations	120	120	120	110	110	110	80	80	80

Note: The coefficients and standard errors (in parentheses). * indicates significance of the variables at five percent levels.

Based on Table 4.13, the BP-LM test statistic shows greater than the critical value at five percent level of significance. Therefore, the variables are jointly significant in explaining the variations in FDIA in the REM specification, because the REM specification is preferred over POLS. A comparison of the post estimation diagnostics between the FEM and REM specification reveals that the conclusions are comparable. For instance when POLS specification is compared with the estimated models it's rejected in both instances. The Hausman test statistics to discriminate between the specifications are shown in Table 4.13. The Hausman test statistics have a corresponding *p*-value of 0.000. As a result, the FEM specification is preferred over REM specification. Hence, once again the FEM should be interpreted. Results of FEM estimations for POV model are presented in Table 4.13.

Table 4.13 presents the results on the percentage of the FDIA to improved POV level. The results show that POV levels in the sub-OIC economies countries reduced as a result of increase in FDIA. An increase in FDIA by one percent has led to a decrease in the percentage of the POV by 0.314 percent in low income, 0.425 percent in middle income and 0.166 percent in high income OIC economies. The result is statistically significant at the five percent significance level. This implies that, there has been an improvement in terms of real economic benefit and living conditions of the poor in OIC as result increase of FDIA. FDIA has also led to improvement in economic provisioning of the poor in OIC. This study also represent the similarity on Anwar and Sun (2011) and Pervez and Rizvi (2014) studies, which found the relationship between FDIA and POV focusing on agriculture sector.

In addition, Pervez and Rizvi (2014) also evaluates the relationship between AG and POV. The study showed there is negative significant relationship between AG and POV. Likewise, this research also found a negative and five percent significant level of relationship between AG and POV for all sub-OIC economies countries. The AG is the most influenced on POV in the low income OIC economies, it found that a one percent increase in AG will lead to decrease in the POV by a 0.079 percent. Middle and high income OIC countries reports the results of one percent increase in AG will lead to decrease in the POV by a 0.069 percent and 0.061 percent. Thus, the implementation of FDIA and AG policy has reduced the value of POV level in all sub-OIC member countries.

4.5.2 The Dynamic Panel Data Estimation Results for POV Model

In order to control the endogeneity effect of POV variables, this study mainly employed a dynamic panel of system GMM estimator to find out the relationship between FDIA variables, AG and POV rather than rely only on static panel data. The results reveal that all the core estimates (for FDIA and AG proxies) are in line with expectations, negatively contribute to POV.

Table 4.14
System GMM Estimation Results for POV Model

Variables	Low Income	Middle Income	High Income
Constant	-7.308*	-0.688*	-0.099*
	(2.097)	(0.007)	(0.052)
TOA	-0.106*	-0.471*	0.122
	(0.002)	(0.133)	(0.089)
UR	0.484*	13.684*	0.677*
	(0.089)	(4.359)	(0.011)
MSA	-0.478*	-0.132*	-0.249*
	(0.074)	(0.056)	(0.032)
HCA	-0.252*	-0.113	-0.210
	(0.049)	(0.112)	(0.242)
AG	-0.314*	-0.425*	-0.166*
	(0.003)	(0.008)	(0.004)
FDIA	-0.079*	-0.069*	-0.061*
	(0.002)	(0.005)	(0.003)
Lagged POV	0.886*	0.445*	0.228*
	(0.012)	(0.044)	(0.012)
Wald test	0.000*	0.000*	0.000*
Sargan test	0.667	1.000	0.631
Arrelano-Bond test for AR(1)	0.006*	0.001*	0.048*
Arrelano-Bond test for AR(2)	0.787	0.819	0.395
N	120	110	80

Note: The coefficients and standard errors (in parentheses). The Wald, Sargan and Arellano-Bond tests are the post-estimation test to check the appropriateness of the model (*p*-value). * indicates significance of the variables at five percent levels.

The system GMM estimator produces a significant change of the magnitude of the others variable coefficients, especially for OIC low income economies countries. Results from low, middle and high income OIC economies corroborate that this model performs convincingly: signs and magnitudes of the coefficients seem to be theoretically reasonable and significant. According to the expectations based on the previous empirical research, FDIA and AG proxies are negative and significant. Similarly, the significance of the UR coefficient is supported by the majority of the empirical studies on POV. A positive and significant coefficient of the UR implies that devaluation of income causes a reduction for POV in all panel sub-OIC countries. In contrast to the results obtained for HCA is negative and not significant for middle and high income OIC economies

countries. The coefficients of the lagged poverty in all panel sub-OIC countries are positive which implies that, the level of poverty in the previous year has a direct influence on current year's poverty levels. In general, the findings of this study reveal that OIC receipts affect POV reduction and, consequently, give support to the POV reduction objectives in sub-OIC.

Consequently, the results of system GMM estimator of Arellano and Bond are presented in Table 4.15. The tests of autocorrelation in the residuals indicate that there is a significant first-order serial correlation but an insignificant second order serial in the first differences in the residuals in all sub-OIC columns. The system GMM estimator suggests that there is an absence of serial correlation in the error terms. The specification Sargan tests show that there are no problems with the validity of instruments used for all equations. The Wald statistic reports a joint significance of independent variables. Hence, this study can proceed to estimate the model using GMM dynamic panel regression and results should be interpreted.

Table 4.15
The Wald, Sargan and Arellano-Bond tests for POV Model

Test	***p*-Value**		
	Low Income	**Middle Income**	**High Income**
Arrelano-Bond Test for AR(1)	0.006*	0.001*	0.048*
Arrelano-Bond Test for AR(2)	0.787	0.819	0.395
	no autocorrelation	no autocorrelation	no autocorrelation
Sargan Test	0.667	1.000	0.631
	Valid	Valid	Valid
Wald Test	0.000	0.000	0.000
	Significant	Significant	Significant

Notes:* indicates significance of the variables at five percent levels

This method allows estimating ceteris paribus effects of POV reduction in the presence of endogeneity, similar to any other proper instrument usage. Initially, Arellano and Bond test confirms that this model specification is good since no serial correlation at the second order when *p*-values are greater than 0.05. Moreover, the Sargan test of overidentifying restrictions for the System GMM estimation techniques is satisfied. The Sargan test shows that overidentifying issues (p=0.000) which are estimating more appropriate with two-step GMM. Now Sargan test shows p-value greater than 0.05 (p=0.667 for low income, p=1.000 for middle income and p=0.667 for high income) confirming that no problems with this instruments. The specification Wald tests show that there are no problems with the validity of instruments used for POV model equations.

4.5.1 Robustness Check

Generally, the results obtained are similar to the main results in Table 4.14 is the estimation results for the equation excluding agriculture factors. In this section, the POV reduction sensitivity in the FDIA assessment method is first investigated. The thesis offers an alternative measure to investigate the effectiveness of the FDIA policy by estimating the POV level reduction. The FDIA is found to be significantly inadequate in the POV reduction assessment method. Therefore, the results are robust to conclude that the FDIA in sub-OIC income economies countries is effective in reduce the POV problem. The results of sixteenth year average data are robust and consistent with annual data set for all control variables.

Table 4.16
Robustness checks for POV Model

Variables	**Low Income**	**Middle Income**	**High Income**
Constant	-0.279*	-7.414*	-0.099*
	(0.172)	(0.959)	(0.051)
UR	0.484*	13.684*	0.677*
	(0.089)	(4.359)	(0.010)
AG	-0.314*	-0.425*	-0.166*
	(0.003)	(0.008)	(0.004)
FDIA	-0.079*	-0.069*	-0.061*
	(0.002)	(0.005)	(0.003)
Lagged POV	0.444*	0.112*	0.194*
	(0.006)	(0.010)	(0.013)
Wald test	0.000*	0.000*	0.000*
Sargan test	0.667	1.000	0.631
Arrelano-Bond test for AR(1)	0.006*	0.001*	0.048*
Arrelano-Bond test for AR(2)	0.787	0.819	0.395
N	120	110	80

Note: The coefficients and standard errors (in parentheses). The Wald, Sargan and Arellano-Bond tests are the post-estimation test to check the appropriateness of the model (*p*-value). * indicates significance of the variables at five percent levels.

Additionally, the coefficient of UR show remains positive and statistically significant similarity to the main results. The overall findings, for both static as well as dynamic estimations, show that POV of sub-OIC countries is essentially very sensitive to the level of FDIA and AG rate. Accordingly, policymakers should take into account these phenomena in order to build sound economic policies to sustain economic development, especially in the agriculture sector.

4.6 The Three-Way Linkage Interrelationship Between FDI Inflows in Agriculture, Agriculture Growth and Poverty

These sections investigate the last objective of this study the three-way linkage between FDIA, AG and POV reduction for sub-OIC countries by using the system GMM estimator. To examine the relationship between FDIA, AG and POV using panel data, this research test for the stationarity in the FDIA, AG, POV, UR, MSA,TOA and HCA series to test whether or not unit root exists in the data. The results from panel unit root test show that all the variables are stationary at level and stationary at first difference. Thus, this research can proceed with the dynamic simultaneous equation model with panel data. Furthermore, this study uses a dynamic simultaneous equation model with panel data, which follows the spirit of the conventional 'growth model' framework. This approach ensures that there is a strong theoretical foundation for the empirical analysis (Sharma, 2010). Finally, this study uses a dynamic simultaneous equation model with panel data of three sub-OIC countries, which allows to derive short-run elasticities. Specifically, this study utilizes three structural equations models that allow one to simultaneously examine the impact of (i) FDIA and AG on POV, (ii) FDIA and POV on AG, and (iii) POV and AG on FDIA. Up till now, none of the empirical studies found have focused to investigate the nexus between FDIA, AG and POV reduction via the simultaneous equations model. The thesis brief simultaneous test results for the global panel (all sub-OIC) is carried out in Table 4.17.

Table 4.17

Regression Results of The Simultaneous Equations FDIA, AG and POV for Global Panel Sub-OIC countries

Variables	**FDIA**	**AG**	**POV**
Constant	0.375*	0.202*	-0.268*
	(0.029)	(0.056)	(0.011)
FDIA		0.197*	-0.277*
		(0.016)	(0.038)
AG	0.241*		-0.446*
	(0.018)		(0.001)
POV	-0.227*	-0.364*	
	(0.009)	(0.028)	
UR	-0.161*	-0.207*	0.201*
	(0.034)	(0.055)	(0.016)
MSA	0.581	0.168	-0.273
	(0.830)	(1.577)	(0.578)
TOA	0.622	0.178	-0.321
	(0.920)	(1.662)	(0.666)
HCA	0.001	0.662*	-0.159*
	(0.981)	(0.059)	(0.048)
Lagged Dependent	0.518*	0.268*	0.145*
	(0.101)	(0.128)	(0.066)
p-value of Arellano-Bond test for AR(1)	0.014	0.011	0.020
p-value of Arellano-Bond test for AR(2)	0.275	0.171	0.324
Nb. Obs.	310	310	310

Notes:* indicates significance of the variables at five percent levels

Table 4.17 have summarized the results concerning the three-ways linkages between FDIA, AG and POV reduction for the global panels. After checking the form in which variables would enter the empirical modeling, the system GMM estimator was used to find the three-ways linkages between FDIA, AG and POV for all panels. Each panel contains three different models; FDIA model, AG model and POV model. These models present the estimated coefficients, diagnostic tests of the AR(2) test.

First, Table 4.17 have found that the effect of AG on FDIA is positive and statistically significant in the two panels. This suggests that higher AG does send positive signals to prospective FDIA sector. This confirms the results showed by Borensztein et al. (1998), Licai et al.(2010), and Li and Liu (2005). It has also found that the impact of POV reduction on FDIA in the three panels of countries is positive and statistically significant. This implies that an increase in POV reduction tends to more FDI inflows (Anwar & Sun, 2011). The results are also consistent with the findings of Bruno and Easterly (1998), Jenkins (2002), Ang (2008), Menyah and Rufael (2010), Sharma (2010) and Omri (2013).

Secondly, AG is found to have a statistically significant effect on FDIA and on POV in the two panels. This implies that the FDIA and POV demand are more closely related to the AG. This is consistent with the findings of Borensztein et al. (1998), Ayanwale (2007) and Goss et al. (2007) which suggest that FDI inflows has a statistically significant influence on economic growth. Consistent with this view that AG leads to greater FDIA is the likelihood that POV reduction should be positively affected by increases in AG.

Third, POV reduction has a statistically significant effect on FDIA. This indicates that an FDIA decrease in POV level tends to promote FDI inflows (Menyah & Rufael, 2010). Since POV reduction is an important ingredient for AG, strong FDIA policies are required to attain sustained economic growth. This result is consistent with the findings of Pervez and Rizvi (2014), Sharma (2010), Omri (2013) and Jenkins (2002). It has also found that POV reduction has a significant impact on AG. This pattern result is similar to the findings of Mills et al. (2006) and Khan and Sattar (2010). This implies that a greater of POV reduction increases the demand of agriculture

sector accompanied by the FDIA which lead to a rapid improvement in the efficient use of agriculture resources and thus resulted in a reduction of AG issues. The results show that there is a bi-directional causal relationship between AG and FDIA in the global panels of OIC countries. This confirms that, in overall terms, an increase in the inflows of FDIA increases AG which attracts further FDIA into these countries. This result is in line with a study from Gujarati and Porter (2009) and Ruxanda and Muraru (2010).

In overall, the results for global panels reveal that there is a bi-directional causal relationship between FDIA and POV for the global panel. This result is similar to the findings of Barrios (2000) and Sasidharan and Ramanathan (2007) found that FDIA is a determinant factor of the POV in these OIC countries, and, therefore, a high level of FDIA leads to a decreased level of POV rate. Indeed, there is a bi-directional causal relationship from AG to POV for the sub-OIC countries consistent with the finding of Kraay (2006) for developing countries. The results find also that there is bi-directional causal relationship from POV to AG. This result is similar to the findings of Ravallion and Datt (2002) and Soumaré and Gohou (2009). Lastly, the coefficients of lagged dependent variable for the all models imply that, there is a positive relationship between previous and current year's dependent variable in all of the regions. This is an indication of some degree of persistence in these dependent variables measures.

Table 4.18

Regression Results of the Simultaneous Equations FDIA, AG and POV for Low Income Economies Sub-OIC Countries

Variables	**FDIA**	**AG**	**POV**
Constant	1.714*	2.132*	2.522**
	(0.127)	(0.087)	(1.028)
FDIA		1.752*	-0.279*
		(0.417)	(0.102)
AG	0.014*		-2.401*
	(0.005)		(0.023)
POV	-0.017*	-0.307*	
	(0.008)	(0.171)	
UR	-3.271*	-2.957*	0.900
	(1.176)	(1.146)	(0.951)
MSA	0.036	1.792*	-0.012
	(0.654)	(0.005)	(0.21)
TOA	0.006	0.008	-0.078
	(0.743)	(0.422)	(0.111)
HCA	0.001	2.661*	-2.312*
	(0.932)	(0.022)	(0.168)
Lagged Dependent	0.623*	0.075*	1.726*
	(0.121)	(0.012)	(1.160)
p-value of Arellano-Bond test for AR(1)	0.046	0.017	0.011
p-value of Arellano-Bond test for AR(2)	0.979	0.069	0.193
Nb. Obs.	120	120	120

Notes:* indicates significance of the variables at five percent levels

For the low income OIC economies panel, the findings in Table 4.18 reveal that there is a bi-directional causal relationship between FDIA and AG; there is bi-directional causal relationship from FDIA to POV and from POV to AG. In FDIA model, the AG has a significant positive effect on FDIA at the five percent level. The magnitude of 0.014 implies that a one percent increase in AG increases FDIA by around 0.014 percent. The findings reveal also that MSA, TOA, and HCA have insignificant effects on FDIA. UR has negatives and significant effects on FDIA. Lastly, POV has a negative significant effect on FDIA at five percent level.

In Table 4.18, the results for AG model found that FDIA and POV have a statistically significant effect (at the five percent level) on AG. The magnitude of 1.752 and -0.307 implies that a one percent increase in FDIA and POV increases and decreased the AG of the low income OIC by around 1.752 percent and -0.307 percent, respectively. MSA and HCA of agriculture sectors have a positive and statistically significant impact on AG at five percent significant level. UR has a negative impact on AG, whereas TOA has an insignificant impact.

In the POV model, the FDIA and AG have negative significant effects at the five percent level on POV reduction. The magnitude of -0.279 and -0.023 implies that a one percent increase in FDIA decreases POV level by around 0.279 percent and increase in AG rate decreases POV level by 0.023. However, UR, MSA and TOA have insignificant impacts on POV, while HCA has significant.

In the meantime, Table 4.19 results for the middle income panel. The findings reveal that there is a bi-directional causal relationship between FDIA and AG, and between FDIA and POV, there is also bi-directional causal relationship from AG to POV as in Table 4.18. It follows that the results are consistent with recent studies on this research by Ryoo and Smith (2007).

In FDIA model, the AG and POV both have statistically significant effects at the five percent significant level on FDIA. Coming to the significances of the lagged dependent variables statistically significant at 5 percent level that implies the past level of lagged dependent variables (FDI inflows in agriculture, agriculture growth and poverty) affects positively the current lagged dependent variables. The magnitude of 0.686 and -3.020 implies that a one percent increase in AG and one percent decrease in POV rate increases the FDIA of the middle income OIC countries

by 0.686 percent and 3.020, respectively. MSA and TOA have a positive and statistically significant effect on FDIA. HCA has a positive and statistically insignificant effect on FDIA, while the impact of UR is found to be negative and statistically insignificant.

Table 4.19

Regression Results of The Simultaneous Equations FDIA, AG and POV for Middle Income Economies Sub-OIC countries

Variables	**FDIA**	**AG**	**POV**
Constant	0.364*	0.217*	-0.398*
	(0.028)	(0.046)	(0.034)
FDIA		55.491*	-1.752*
		(2.840)	(0.305)
AG	0.686*		-0.089*
	(0.058)		(0.021)
POV	-3.020*	-1.941*	
	(0.009)	(0.004)	
UR	-0.000	-0.052	0.255*
	(0.530)	(1.213)	(0.072)
MSA	0.185*	2.401*	-0.005
	(0.056)	(0.002)	(0.091)
TOA	0.161*	0.006	-0.411
	(0.034)	(0.921)	(1.082)
HCA	0.115	0.034	-0.046
	(0.341)	(0.621)	(0.852)
Lagged Dependent	0.484*	0.181*	0.067*
	(0.008)	(0.008)	(0.001)
p-value of Arellano-Bond test for AR(1)	0.009	0.001	0.004
p-value of Arellano-Bond test for AR(2)	0.307	0.275	0.637
Nb. Obs.	110	110	110

Notes:* indicates significance of the variables at five percent levels

In AG model of middle income OIC economies, the FDIA has a significant positive effect (at the five percent level) on AG. The magnitude of 55.5 implies that a one percent increase in FDIA increases AG by 55.5 percent. POV has a significant effect on AG at five percent significant level. The findings reveal also that MSA has significant effects on AG rate. TOA and HCA have insignificant positive impacts on AG, whereas the UR has a negative and insignificant impact on AG.

In Table 4.19, based on the POV model, both FDIA and AG have negative and significant impacts on POV reduction at the five percent levels, respectively. The magnitude of -1.752 and -0.089 implies that a one percent increase in FDIA and AG decreases POV reduction by 1.752 percent and 0.089 percent, respectively. There are also positive and statistically significant impacts of UR on POV, while other variables have a negative and insignificant effect on POV.

Regarding the high income OIC economies results, the findings in Table 4.20 reveal that there are bi-directional causal relationships between FDIA, AG and POV. In FDIA model, the POV and UR have negative and statistically significant at the five percent level effects on FDIA. The impact of the one period lagged values of FDIA, AG and POV on the dependent variables is still positive and significant at five percent level. In addition, the magnitude of -3.662 and -0.650 implies that one percent decreased in the POV level increases the FDIA of the high income OIC economies countries by 3.662 percent and one percent decreased in the UR increases the FDIA by 0.650 percent, respectively. AG is also a statistically significant determinant of FDIA, while MSA, TOA and HCA remain statistically insignificant.

Table 4.20

Regression results of the simultaneous equations FDIA Model, AG Model and POV Model for High Income Economies Sub-OIC countries

Variables	**FDIA**	**AG**	**POV**
Constant	0.191*	75.927*	36.227*
	(0.006)	(4.292)	(1.960)
FDIA		3.722*	-2.802*
		(1.064)	(0.329)
AG	1.681*		-1.720*
	(0.264)		(0.109)
POV	-3.662*	-0.111*	
	(0.008)	(0.022)	
UR	-0.650*	-0.002	0.003
	(0.003)	(0.593)	(0.832)
MSA	0.001	0.001	-0.058
	(1.042)	(1.280)	(0.951)
TOA	0.003	1.972*	-1.321
	(0.261)	(0.011)	(1.612)
HCA	0.001	0.001	-0.542
	(0.882)	(0.322)	(7.709)
Lagged Dependent	0.522*	0.419*	0.158*
	(0.013)	(0.031)	(0.073)
p-value of Arellano-Bond test for AR(1)	0.034	0.045	0.017
p-value of Arellano-Bond test for AR(2)	0.219	0.349	0.069
Nb. Obs.	80	80	80

Notes:* indicates significance of the variables at five percent levels

In AG model, the effects of FDIA and POV on AG are statistically significant at the five percent levels, respectively. The magnitude of 1.064 and -0.111 implies that a one percent increase in FDIA and one percent decrease in POV increases the AG of the high income countries by around 1.064 percent (FDIA) and 0.111 percent (POV). TOA is also statistically significant determinants of AG at five percent of a significant level, while UR, MSA and HCA remain statistically insignificant for high income OIC countries.

Finally, in POV model, the effects of FDIA and AG on POV are statistically negatively and significant at the five percent level. The magnitude of -2.802 and -1.720 implies that a one percent increase in FDIA and AG decreases the POV of the high income OIC countries by 2.802 percent and 1.720 percent respectively. This means that an increase in FDIA and AG tends to more POV reductions (Hung, 2005 & Soumaré & Gohou, 2009). On the other hand, other variables are remains statistically insignificant on POV.

4.7 Conclusion

This section summarizes the findings for the research objectives. The first objective is to investigate the role of AG and POV to aiding FDIA amongst sub-OIC countries. To accomplish the second objective, the AG model was used; the findings are summarized in Table 4.21. The third objectives of this study are to examine the impact of FDIA and AG on POV levels of sub-OIC countries. Lastly, Table 4.24 summarizes the findings relating to the relationships among FDIA, AG and POV reduction for the 31 selected OIC countries according to income level for the period 2000–2015. To achieve these four main objectives of this study, data were evaluated by using several steps developed in Chapter 3. The main findings are as follows.

4.7.1 The FDIA Model in OIC Countries

Unlike previous studies, this study not only captured the degree of the links of FDI inflows, economic growth and POV but also inspected the relationship between overall FDIA with AG and POV specifically. The findings show that the effectiveness of FDIA in promoting AG and reducing POV is debatable. The results merely demonstrate that the FDIA in high income OIC economies needs to be modified further to reduce POV by planning an effective FDIA system through policymaking and attracting more foreign investors. AG and MSA

were the factors that had the most influence on FDIA, especially in the OIC low and medium income OIC economies. In contrast, the negative and significant coefficients were POV and UR. Lastly, the other independent agriculture sector variables, such as MSA, TOA and HCA, were all significant and were confirmed as determinants of FDIA in all of the selected OIC countries.

Most of the existing literature has focused on FDI inflows. These studies include those of Suleman and Naiya (2009), Zhuang (2008), Masron and Abdullah (2010), Goswami and Haider (2014), Kok and Ersoy (2009), Nunes et al. (2006) and Rogmans and Ebbers (2013). This research differs from earlier studies by focusing on the agriculture sector, compared to the manufacturing sector or general determinants of FDI inflows. For example, Gerlach and Liu (2010) and Tondl and Fornero (2010) focused on total FDI inflows's positive contribution to agriculture production, not specifically on FDIA. Correspondingly, Hallam (2011) explained that technology transfers will increase production, employment rates and domestic productivity and will reduce domestic prices, possibly benefitting the agriculture sector. From the perspective of the OIC countries' agriculture sectors, this study was ground breaking in investigating the role of AG and POV to aiding FDIA.

This study was also novel in employing a two-step estimation method using a dynamic GMM estimator to explore the role of AG and POV to aiding FDIA, instead of using only a static panel data estimator. Additionally, the investing selection is highly fragmented based on most of the previous theory. To achieve a better understanding, this study took the first empirical step to synthesize the theoretical links among FDIA, AG and POV reduction.

The findings make three key contributions to the existing academic knowledge. First, identifying the important of FDIA was crucial, as capital limitations have slowed down the FDIA in most of OIC countries. Understanding the role played by FDIA is vital for potential investors and OIC countries to make effective decisions and aid the performance of FDIA. Second, the use of AG and POV as independent variables made this study unique. Understanding the roles played by AG and POV reduction in enhancing FDIA may therefore help in increasing FDIA. The outcomes of this study could also contribute to a new policy framework for OIC countries and for investors to make choices on alternative investments in agriculture sectors.

Finally, the investigated agriculture factors raise policy-related questions concerning the agriculture sector. In determining OIC countries' FDI inflows policies, the roles played by agriculture factors such as MSA, TOA and HCA are crucial. Policy suggestions are offered in the following sections by pointing out several unresolved problems. Table 4.21 summarizes the findings for the first objective of this research.

Table 4.21

Summary of FDIA Model Results

Variables (Expected Signs)	Analysis	Result		
		Low Income	**Middle Income**	**High Income**
FDIA (+ve) and AG (+ve)	Static Panel Data	Accept $p<0.05$ significantly (+ve) correlated	Accept $p<0.05$ significantly (+ve) correlated	Accept $p<0.05$ significantly (+ve) correlated
	Dynamic Panel Data	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated
FDIA (+ve) and POV (-ve)	Static Panel Data	Accept $p<0.05$ significantly (-ve) correlated	Accept $p<0.05$ significantly (-ve) correlated	Accept $p<0.05$ significantly (-ve) correlated
	Dynamic Panel Data	Accept $t>1.96$ significantly (-ve) correlated	Accept $t>1.96$ significantly (-ve) correlated	Accept $t>1.96$ significantly (-ve) correlated
FDIA (+ve) and UR (-ve)	Static Panel Data	Accept $p<0.05$ significantly (+ve) correlated	Accept $p<0.05$ significantly (+ve) correlated	Accept $p<0.05$ significantly (+ve) correlated
	Dynamic Panel Data	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated
FDIA (+ve) and MSA (+ve)	Static Panel Data	Accept $p<0.05$ significantly (+ve) correlated	Accept $p<0.05$ significantly (+ve) correlated	Accept $p<0.05$ significantly (+ve) correlated
	Dynamic Panel Data	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated
FDIA (+ve) and TOA	Static Panel Data	Accept $p<0.05$ significantly (+ve) correlated	Insignificant	Accept $p<0.05$ significantly (+ve) correlated
	Dynamic Panel Data	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated
FDIA (+ve) and HCA (+ve)	Static Panel Data	Accept $p<0.05$ significantly (+ve) correlated	Insignificant	Accept $p<0.05$ significantly (+ve) correlated
	Dynamic Panel Data	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated

4.7.2 The AG Model in OIC Countries

The agriculture sector has long been ignored as a main factor influencing countries' development. Improvements in the agriculture sector are vital to enhancing food security and providing employment opportunities. In this model, the results provide new empirical findings on the AG of OIC countries due to FDIA. There also provide new insights on the influence of POV reduction on AG. The effects of FDIA and POV on AG were in line with expectations. Generally, the findings from this model were similar to the finding of previous studies that AG can be achieved if FDIA increases, which reduces the POV level. The coefficient of FDIA as the variable of interest in the AG model was significant at the five percent level.

The next variable of interest was POV. The POV coefficient was significant at the five percent level. Overall, these result reports that the POV rate has a negative relationship with AG. However, the values of some variables for high income economies were insignificant, even though all the relationships between the dependent and independent variables were significant. The values of TOA and HCA were significant for the low and middle income economies but not the high income economies. The result for the high income economies fails to support previous economic theories associated with AG.

The AG model contributes to the prior literature and to policy. Firstly, it captures the bigger issues related to FDIA and POV that affect AG, especially among the poor. Previous studies were limited to examining the one-way causal links between FDI inflows and economic growth and between economic growth and POV. Secondly, it provides useful information to

policymakers and regulators on any assessments of AG. All OIC economies require greater POV reduction to increase their AG. However, Gruen and Klasen (2008) found that to reduce POV, the GDP of agriculture must be improved in rural areas. To the researcher's knowledge, no study has been conducted to explore the impact of POV reduction on AG.

The uniqueness of this study also lies in its methodology, which employed static and dynamic panel data estimators. Agriculture performance differs across OIC sub-regions due to complications such as different agriculture land types, natural resources (e.g. water), modern agriculture infrastructures and agro-ecological conditions. Thus, this study differed by conducting analysis separately for different OIC country sub-categories based on income level. Table 4.22 sum up the findings for the second objective of this research.

Table 4.22

Summary of AG Model Results

Variables (Expected Signs)	Analysis	Result		
		Low Income	**Middle Income**	**High Income**
AG (+ve) and FDIA (+ve)	Static Panel Data	Accept $p<0.05$ significantly (+ve) correlated	Accept $p<0.05$ significantly (+ve) correlated	Accept $p<0.05$ significantly (+ve) correlated
	Dynamic Panel Data	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated
AG (+ve) and POV (-ve)	Static Panel Data	Accept $p<0.05$ significantly (-ve) correlated	Accept $p<0.05$ significantly (-ve) correlated	Accept $p<0.05$ significantly (-ve) correlated
	Dynamic Panel Data	Accept $t>1.96$ significantly (-ve) correlated	Accept $t>1.96$ significantly (-ve) correlated	Accept $t>1.96$ significantly (-ve) correlated
AG (+ve) and UR (-ve)	Static Panel Data	Accept $p<0.05$ significantly (+ve) correlated	Accept $p<0.05$ significantly (+ve) correlated	Accept $p<0.05$ significantly (+ve) correlated
	Dynamic Panel Data	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated	Insignificant
AG (+ve) and MSA (+ve)	Static Panel Data	Accept $p<0.05$ significantly (+ve) correlated	Accept $p<0.05$ significantly (+ve) correlated	Insignificant
	Dynamic Panel Data	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated	Insignificant
AG (+ve) and TOA (+ve)	Static Panel Data	Accept $p<0.05$ significantly (+ve) correlated	Accept $p<0.05$ significantly (+ve) correlated	Accept $p<0.05$ significantly (+ve) correlated
	Dynamic Panel Data	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated	Insignificant
AG (+ve) and HCA (+ve)	Static Panel Data	Insignificant	Accept $p<0.05$ significantly (+ve) correlated	Insignificant
	Dynamic Panel Data	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated	Insignificant

4.7.3 The POV Model in OIC Countries

The POV model was used to investigate the objectives regarding the effects of FDIA and AG on POV reduction in OIC countries. It reports that FDIA and AG had significant negative impacts on the POV level. Using a similar procedure to before, the POV model is summarized in Table 4.23. It is suggested that OIC economies with high AG and FDIA could reduce the POV levels. Previous findings consistent with these results include those of Nguyen (2003), who found that if FDI inflows increases, it is possible to see employment growth and a reduction in the number of people living below the POV line due to the improvement of the labour force and safety nets and the increase in demand for labour. The findings of this model therefore make an important contribution to the existing literature and address the third objective of this study.

Although TOA and HCA do not have significant relationships with POV in high income economies, there are vital in low and middle income economies. This research also found that location effects matter. The nature of TOA and HCA might influence location choices. Further research and specific ranging data collection are desired to better understand the influences of these factors on POV reduction. In general, this results found that FDIA and AG are significant in POV reduction, which suggests the need for policies in OIC countries to encourage higher FDI inflows to support the agriculture sectors and thus diminish POV.

Table 4.23

Summary of POV Model Results

Variables (Expected Signs)	Analysis	Result		
		Low Income	**Middle Income**	**High Income**
POV (-ve) and FDIA (+ve)	Static Panel Data	Accept $p<0.05$ significantly (-ve) correlated	Accept $p<0.05$ significantly (-ve) correlated	Accept $p<0.05$ significantly (-ve) correlated
	Dynamic Panel Data	Accept $t>1.96$ significantly (-ve) correlated	Accept $t>1.96$ significantly (-ve) correlated	Accept $t>1.96$ significantly (-ve) correlated
POV (-ve) and AG (+ve)	Static Panel Data	Accept $p<0.05$ significantly (-ve) correlated	Accept $p<0.05$ significantly (-ve) correlated	Accept $p<0.05$ significantly (-ve) correlated
	Dynamic Panel Data	Accept $t>1.96$ significantly (-ve) correlated	Accept $t>1.96$ significantly (-ve) correlated	Accept $t>1.96$ significantly (-ve) correlated
POV (-ve) and UR (-ve)	Static Panel Data	Accept $p<0.05$ significantly (+ve) correlated	Accept $p<0.05$ significantly (+ve) correlated	Accept $p<0.05$ significantly (+ve) correlated
	Dynamic Panel Data	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated	Accept $t>1.96$ significantly (+ve) correlated
POV (-ve) and MSA (+ve)	Static Panel Data	Accept $p<0.05$ significantly (-ve) correlated	Insignificant	Accept $p<0.05$ significantly (-ve) correlated
	Dynamic Panel Data	Accept $t>1.96$ significantly (-ve) correlated	Accept $t>1.96$ significantly (-ve) correlated	Accept $t>1.96$ significantly (-ve) correlated
POV (-ve) and TOA (+ve)	Static Panel Data	Insignificant	Insignificant	Insignificant
	Dynamic Panel Data	Accept $t>1.96$ significantly (-ve) correlated	Accept $t>1.96$ significantly (-ve) correlated	Insignificant
POV (-ve) and HCA (+ve)	Static Panel Data	Insignificant	Insignificant	Insignificant
	Dynamic Panel Data	Accept $t>1.96$ significantly (-ve) correlated	Insignificant	Insignificant

4.7.4 The Relationships Among FDIA, AG and POV

The last objective was to discover the relationships among FDIA, AG and POV. Contrasting with previous studies, this study not only examined the magnitude of the association between FDIA and POV but also investigated the relationship between FDIA and AG. Previously, Soumaré and Gohou (2009) empirically investigated the impact of FDI inflows on economic growth and POV reduction by using econometric models with panel data across African countries. Soumaré and Gohou (2009) examined the contribution of FDI inflows to POV reduction in Africa and any possible differences in this contribution across regions of Africa. The study concluded that there was bi-directional causality between FDI inflows and the log of GDP per capita; therefore, FDI inflows reduced POV and increased people's welfare. While the amount of literature on FDIA, AG and POV using panel data and for singular countries has increased in the last few years, no research has identified the relationships among FDIA, Ag and POV together using a growth framework and a simultaneous equation model.

Table 4.24

Summary of the Simultaneous Equation Model

Panel	Variables (Expected Signs)	FDIA Model	AG Model	POV Model	Result
Global	FDIA (+ve) and AG (+ve)	Accept *t>1.96* significantly (+ve) correlated	Accept *t>1.96* significantly (+ve) correlated	-	bi-directional
	FDIA (+ve) and POV (-ve)	Accept *t>1.96* significantly (-ve) correlated	-	Accept *t>1.96* significantly (-ve) correlated	bi-directional
	AG (+ve) and POV (-ve)	-	Accept *t>1.96* significantly (-ve) correlated	Accept *t>1.96* significantly (-ve) correlated	bi-directional
Low Income	FDIA (+ve) and AG (+ve)	Accept *t>1.96* significantly (+ve) correlated	Accept *t>1.96* significantly (+ve) correlated	-	bi-directional
	FDIA (+ve) and POV (-ve)	Accept *t>1.96* significantly (-ve) correlated	-	Accept *t>1.96* significantly (-ve) correlated	bi-directional
	AG (+ve) and POV (-ve)	-	Accept *t>1.96* significantly (-ve) correlated	Accept *t>1.96* significantly (-ve) correlated	bi-directional
Middle Income	FDIA (+ve) and AG (+ve)	Accept *t>1.96* significantly (+ve) correlated	Accept *t>1.96* significantly (+ve) correlated	-	bi-directional
	FDIA (+ve) and POV (-ve)	Accept *t>1.96* significantly (-ve) correlated	-	Accept *t>1.96* significantly (-ve) correlated	bi-directional
	AG (+ve) and POV (-ve)	-	Accept *t>1.96* significantly (-ve) correlated	Accept *t>1.96* significantly (-ve) correlated	bi-directional
High Income	FDIA (+ve) and AG (+ve)	Accept *t>1.96* significantly (+ve) correlated	Accept *t>1.96* significantly (+ve) correlated	-	bi-directional
	FDIA (+ve) and POV (-ve)	Accept *t>1.96* significantly (-ve) correlated	-	Accept *t>1.96* significantly (-ve) correlated	bi-directional
	AG (+ve) and POV (-ve)	-	Accept *t>1.96* significantly (-ve) correlated	Accept *t>1.96* significantly (-ve) correlated	bi-directional

The results show that FDIA has bidirectional causal relationships with AG and POV for the low, medium and high income OIC economies, as well as for the global panel. These findings are in parallel with the findings of Jenkins (2002),Mahadevan and Adjaye (2007), Ang (2008) , Apergis and Payne (2009) and Omri (2013). Consequently, this concludes that FDIA is a determinant of POV in these OIC countries; therefore, a high level of FDIA will decrease POV. Moreover, the results show that AG and POV have a significant bi-directional causal relationship for all the OIC countries. This finding is similar to those of Altinay and Karagol (2004), Bekhet and Othman (2011) and Lee (2013).

CHAPTER FIVE

CONCLUSIONS

5.1 Introduction

This chapter summarizes the conclusions of this thesis by explaining the emerging policy implications and the main findings of this research. Until now, many policy and theory studies on FDI inflows, economic growth and poverty have presented arguments, but few have theoretically and empirically explored FDIA. Therefore, this thesis is the first response and attempt to provide an understanding of the relationships among FDIA, AG and POV. To address these issues, this research utilized data on selected OIC countries from a combination of databases, making theoretical predictions while concentrating on the research phenomenon. In spite of the data limitations highlighted in Chapter 4, this research makes a significant contribution to the work of investors and academics on FDIA, AG and POV. First, it made use of data on FDIA over a longer period of time compared to any other studies in this area. Next, this research solved the endogeneity problem that has generally been ignored by the existing literature by employing rigorous static and dynamic panel data analysis. This was essential in formulating questions and recognizing the gaps that needed addressing. Lastly, this study distinguished directions for further research in this area and framed appropriate policy implications based on the emerging findings.

5.2 Summary of the Main Findings

Consequent to panel data comparison analysis, the major findings are summarized. The first objective was to analyze the role of agriculture growth and poverty towards increasing the FDI inflows in agriculture amongst sub-OIC countries. The findings from the FEM and the GMM estimator on FDIA model shows that AG has increased as a result increased of FDIA in the all

sub-OIC member countries. This result is statistically significant at the five percent significance level. Findings results of low income OIC economies, which indicates a one percent increase in AG to a 0.079 percent increase in the FDIA. In middle income OIC economies, one percent increase in AG to a 0.068 percent increase in the FDIA. The results also stated statistically significant at the five percent significance level for high income OIC economies where indicates that one percent increase in AG to a 0.086 percent increase in the FDIA. The results merely demonstrate that the FDIA in each of income OIC economies needs to be modified further to reduce POV by planning an effective FDIA system through policymaking and attracting more foreign investors. Correspondingly, the POV reduction led to increases in FDIA in the all sub-OIC member countries statistically at five percent level of significance for FEM and the GMM estimator on FDIA model, especially for middle income economies. The implementation of poverty reduction policy has increased the value of FDIA by 0.425 percent (middle income), 0.314 percent (low income) and 0.300 percent (high income) in sub-OIC member countries.

To point out, from AG model analysis, the FDIA was positively correlated with AG. The effects of FDIA and POV on AG were in line with expectations. From the results of the FEM and the GMM estimation for AG model, FDIA and POV confirmed to be influencing AG in all sub-OIC countries. Important to realize, this result captures the bigger issues related to FDIA and POV that affect AG, especially among the poor and it provides useful information to policymakers and regulators on any assessments of AG. In the OIC low, middle and high income economies, the empirical results of FEM and GMM indicated the coefficient of FDIA is statistically significant at five percent level. The coefficient value of FDIA shows its value to AG after the implementation of FDIA inflows policy. The positive relationship between FDIA and AG means that the

implementation of FDIA inflows policy has improved their AG by 0.087 percent for low income and 0.062 percent middle income. In POV point of view, the POV coefficient is significant at five percent level for the all sub-OIC countries. The POV coefficient is -9.387 and is statistically significant at five percent level for low income economies countries. The middle and high income economies are significant at five percent level with a negative coefficient (-0.616 and -0.122). Generally, these results support the previous static panel data findings that found the POV has a negative significant relationship with the AG and FDIA has a positive significant relationship with the AG. In sum, this results found that FDIA and AG are significant in POV reduction, which suggests the need for policies in OIC countries to encourage higher FDI inflows to support the agriculture sectors and thus diminish POV.

Results from low, middle and high income OIC economies corroborate that POV model performs convincingly: signs and magnitudes of the coefficients seem to be theoretically reasonable and significant. Firstly, the estimated coefficient for FDIA is negative with POV in the entire panel data methods of analysis (POLS, REM, FEM and GMM) which are significant at five percent respectively. The results indicate that POV levels in the sub-OIC economies countries reduced as a result of the increase in FDIA. The next important variable based on this findings is AG which suggest a negative relationship exhibited between the two variables and significant at five percent significant level. An increase in FDIA by one percent has led to a decrease in the percentage of the poverty by 0.314 percent in low income, 0.425 percent in middle income and 0.166 percent in high income OIC economies. This implies that there has been an improvement in terms of real economic benefit and living conditions of the poor in OIC as result increase of FDI inflows in the agriculture sector. Similarly, this research also found a negative and five percent significant level

of relationship between AG and POV for all sub-OIC economies countries. The AG is most influenced on POV in the low income OIC economies, it found that a one percent increase in AG will lead to decrease in the POV by a 0.079 percent. Middle and high income OIC countries report the results of one percent increase in AG will lead to decrease in the POV by a 0.069 percent and 0.061 percent. Thus, the implementation of FDI inflows in agriculture and agriculture growth policy has reduced the value of poverty level in all sub-OIC member countries especially for low and middle income economies countries.

The last objective was to discover the three-way relationship among FDIA, AG, and POV. The system GMM estimator was used to find the three-ways linkages between FDIA, AG and POV. Each panel contains three different models; FDIA model, AG model and POV model. The results show that FDIA has bi-directional causal relationships with AG and POV for the low, medium and high income OIC economies, as well as for the global panel. This suggests that higher AG does send positive signals to prospective FDIA sector. Secondly, AG is found to have a statistically significant effect on FDIA and on POV in the two panels. This implies that the FDIA and POV demand are more closely related to the AG. Consistent with this view that AG leads to greater FDIA is the likelihood that POV reduction should be positively affected by increases in AG. Similarly, POV reduction has a statistically significant effect on FDIA, this concludes that FDIA is a determinant of POV in these OIC countries; therefore, a high level of FDIA will decrease POV. Moreover, the results show that AG and POV have a significant bi-directional causal relationship for all the OIC countries. Since POV reduction is an important ingredient for AG, strong FDIA policies are required to attain sustained economic growth. This implies that a greater of POV reduction increases the demand of agriculture sector accompanied by the FDIA which lead

to a rapid improvement in the efficient use of agriculture resources and thus resulted in a reduction of AG issues. This confirms that, in overall terms, an increase in the inflows of FDIA increases AG which attracts further FDIA into these countries. In overall, the results of all panels reveal that there is the bi-directional causal relationship between FDIA and POV for the all sub-OIC panel. Lastly, the results also found that there is bi-directional causal relationship from POV to AG.

5.3 Contributions of the Thesis

This thesis contributes new policy recommendations, methodological approaches and knowledge. As mentioned, as capital limitations have slowed down the growth of FDIA in OIC countries, understanding the important determinants of FDIA is crucial to both potential investors and OIC countries' policymakers. Previous studies in this field have mostly been based on manufacturing data, with little research examining the agriculture sector. Despite most of the literature investigating the impact of overall FDI inflows on economic growth and poverty, there is a shortage of research empirically investigating the impacts of FDIA on AG and POV reduction. Previous studies on inward FDIA have not included these determinants. Indeed, the inclusion of AG and POV as independent variables in examining FDIA made this study unique.

Additionally, this thesis explores FDIA, POV and AG specifically among poor countries. Previous studies were limited to examining the one-way causal links between FDI inflows and GDP and between GDP and POV. The agriculture sector has long been ignored as a main factor of development and POV reduction. Moreover, the thesis provides new evidence on POV reduction, introducing POV as an alternative independent variable for FDIA and AG. The thesis provides empirical evidence that FDIA and AG increase significantly with a reduction in POV.

Another important contribution of this study is its methodology, which employed static and dynamic panel data estimators to provide more-precise outcomes from the FDIA model, the AG model and the POV model. The dynamic panel methodology is less biased compared to other approaches; however, recently, only one empirical study has used the dynamic model for FDI inflows. To the best of the researcher's knowledge, the dynamic panel model has not yet been applied to FDIA, AG, POV, UR and agriculture factors together in one model. The methodology also applied simultaneous equations and was thus unique in examining FDIA, AG and POV based on simultaneous equations. While previous studies have used simultaneous equations to estimate overall FDI inflows's impact on economic growth and POV, there has been no specific focus on the agriculture sector. Along these lines, this study expands the robustness of the results by considering relevant variables of agriculture in the sample. In fact, this study's analysis was performed on three different sub-groups according to income level, while previous studies have been limited to singular country surveys.

5.4 Policy Implications

The outcomes of Chapter 4 suggest several policy recommendations for attracting FDIA, whether targeting AG or POV reduction. Finally, agriculture factors raise policy-relevant questions regarding the agriculture sectors. The results of the research would allow OIC regulators and policymakers to determine whether their policies on FDIA are effective in reducing POV and supporting AG, owing to the critical roles played by agriculture factors such as MSA, TOA and HCA in transmitting the effects of OIC countries' FDI inflows policies. The findings of this research are thus vital to investors, OIC countries' regulators and MNCs in making decisions on alternative investments in the agriculture sector.

5.4.1 A Policy Framework for FDI Inflows in Agriculture, Agriculture Growth and Poverty

In line with the facts stated in Chapter 1, the significance of agriculture to national economies differs extensively. Overall, the relationship between economic growth and AG is generally more important for low income economies (COMCEC, 2013). Previous research on OIC high income economies found that having higher worker incomes increases the demand for manufactured food products compared to agriculture foods (COMCEC, 2013). Besides, according to Suleman and Naiya (2009), when an economy grows, the share of GDP of the agriculture sector declines, the number of people employed in the agriculture sector declines and the outcomes from the agriculture sector turned to the development of manufacturing. Extensive research has been carried out on the manufacturing sectors in different countries. The growth of the manufacturing sectors is faster than that of the agriculture sectors. Previous studies' results indicate that consumers purchase more manufactured goods and services when their incomes grow. Hence, the significant findings from chapter 4 provide a critical urgent matter regarding of new policy on agriculture sector rather than manufacturing sector that will help increase in FDIA and decrease in POV.

The agriculture sector is very important to development and economic growth, particularly as it supplies inputs to other industries. With greater input demand from other industries, the growth of the AG will indirectly increase. According to FAO (2014) data, in 2012, there were 1.6 billion people living in OIC countries, with 66 percent engaged in agriculture activities, especially the people living in rural areas. In 2012, the agriculture population of the OIC countries reached 568 million, which was 35 percent of the total population of the countries. The institutional structure should give careful consideration to straightforwardness,

acknowledgment of private property, securing modern and intellectual property rights, freedom of agreement, corporate control and risk, private and public business models, long-term environmental policies and tax reform arrangements. For example, according to Al-Shayaa et al. (2012), Saudi Arabia's government has developed a plan for agriculture to ensure food security. The policy of the government enables farmers to enhance agriculture production and productivity.

5.4.1.1 FDI Inflows in Agriculture and Agriculture Growth

The findings of the FDIA model affirm the results of Li and Liu (2005), Borensztein et al. (1998), Kinoshita and Lu (2006), Xu (2000) and Alfaro et al. (2004). The significance of this thesis affirms that FDI inflows into selected OIC countries have brought about economic growth and that FDI inflows ought to be encouraged in high risk regions or in sectors (e.g. agriculture) where FDI inflows is constrained. Most policymakers have been encouraging FDI inflows as a strategy to support national development and regional and international economies.

The objectives in this study that AG motivates FDIA was affirmed, particularly in low and middle income OIC nations. The principle behind this is that FDIA is useful for the agriculture sector's growth and advancement. Thus, OIC nations should be extremely dynamic in seeking new strategies and policies to encourage FDIA. Such strategies could include supporting FDIA and AG via trade liberalization, better-quality human capital, technological advancement, financial market advancement, infrastructure improvement and better quality organizations. Moreover, the OIC region must keep on pursuing regional initiatives through

cross-border trade exchanges and ventures between nations. This would pull in more FDIA and thus help AG. Overall, the research found that AG draws in FDIA, so OIC nations need to give careful consideration to new policies and strategies concentrated on the general role and nature of AG as a crucial determinant of FDIA.

5.4.1.2 FDI Inflows in Agriculture and Poverty

The results of this study widely support the argument that FDIA is a key component of POV reduction. The POV model shows a significant and negative statistical relationship between POV and FDIA. This indicates that across many OIC countries, the amount of FDIA that the country has received over time is a good indicator of the percentage of people who are living in poverty, measured by the POV headcount ratio at the national POV line. Thus, the answer to the third research question is that there is a link between FDIA and POV reduction. This finding mirrors the way in which labour intensive industries can lessen POV quickly. Thus, the OIC governments' policy approaches ought to advance and urge FDIA to achieve the OIC Ten-Year Program of Action (TYPOA).

Compared to other regions, the OIC countries have a competitive advantage in labour intensive production. Hence, the OIC governments ought to encourage more FDI inflows in labour intensive industries, such as agriculture. The strategies to achieve this could incorporate giving tax incentives and instructional classes to individuals, particularly at the territory level where individuals are not well educated associated with HCA and POV issues. Consequently, a strategy to improve human capital can improve a nation's worldwide economic integration and can promote the inflows of FDIA. Moreover, the parts of the income from FDIA that are gathered through tax income, rental and trade activities ought to be utilized to advance AG,

improve public well-being and invest in infrastructure. These are acknowledged to have significant and constructive outcomes on the reduction of POV. Moreover, cooperating with foreign organizations on social welfare could lessen the burden on the government.

5.4.1.3 Agriculture Growth and Poverty Reduction

To support AG and POV reduction, there are some conceivable policy strategies that the governments of OIC countries ought to pursue. The structure portrayed in Chapter 3 can support policy development by exhibiting whether certain factors of AG or specific policy strategies and institutional settings correspond with POV reduction. The research framework empowers experts to find out whether specific policies and organizations are positively or negatively connected with POV reducing patterns of development. The outcomes produced by this framework can help to inform policymakers of the proper changes needed to create conditions helpful to the development of both the quantity and quality of jobs in the agriculture sector. For example, inflexible or expensive hiring and terminating regulations have been recognized as an impediment to job development of agriculture sector in Chile, India, Mexico and Zambia, among others (World Bank, 2007). Regardless, in most developing nations, it has been identified with the firmness of public sector compensation (see, for example, the examination of Uruguay, the Caribbean, and Tunisia), while restricting least wages are additionally thought increase the POV together with lowering the agriculture sector productivity growth.

In response to the institutional difficulties of job creation, country level policies regularly prescribe measures to bring down the expenses of doing business and to present more adaptable labour market regulations. Approaches to reducing wage rigidity frequently propose improving public sector remuneration policies or increasing the employment of regularly excluded groups, for example youngsters. In low income nations, public projects might be the most achievable policy reaction. These projects are self-focusing and can be actualized regardless of the possibility that levels of casualness are high. Labour intensive public works programmes can have a long lasting effect on the employment infrastructure by discharging restricting limitations to development (Radwan, 1995).

To support job creation following trade liberalization, the national guidance should prescribe a correlative agenda, including upgrades to customs, ports and other basic infrastructure; regulatory reforms; development; and education. New policies are needed to support employment in the agriculture sector, incorporating investments in infrastructure to reinforce the links among agriculture, off-cultivate opportunities and urban markets. For illustration, the Ukraine government has proposed policies to incentivize farms to make use of local input supply services, and the government of Sierra Leone has focused on helping dynamic agro-business, agro-preparing and fisheries sectors as a method to reinforce non-farm employment opportunities, widen the AG plus reduce the POV. Overall, whatever the AG sector, policies should support dynamic areas while advancing links through supply chain incorporation, keeping in mind the end goal to fortify interest for workers.

5.4.2 Supporting the Development of Agriculture Market Size

Through enhancing their agriculture market sizes, OIC countries could address issues such as food security, limited agribusiness sources, environmental impacts and agriculture ineffectiveness. According to Goswami and Haider, (2014), market size is an economic determinant of FDI inflows that is important to firms such as MNCs. Market size is measured by GDP, per capita income or the size of the middle class and is very important to FDI inflows and economic growth. This is because it provides the potential for local sales (which provide greater profitability than export sales) and local sourcing. Organizations administering agriculture such as FAO investments and land residency are vital factors for AG at the domestic policy level. However, the government are frequently deficient in guaranteeing agriculture improvement, particularly regarding enforcement.

The governments of developing countries and their local institutions can acquire helpful guidance from some of the global guidelines that have been established recently. Specifically, following three years of consultation with governments, associations and organizations, in May 2012, the Committee on World Food Security established the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests with Regards to National Food Security (VGGT). The VGGT was established to give direction to and enhance the management of tenure of land, fisheries and forests with the overall objective of accomplishing food security for all countries. Another global instrument is the FAO Voluntary Guidelines on the Right to Food. In light of the above, OIC governments need to investigate their current national agriculture policies and strategies focusing on their MSA

with a view to enhancing food security, expanding agriculture sources and aligning with the UN Sustainable Development Goals and the OIC TYPOA (2016–2025).

5.4.3 Fostering Intra-OIC Cooperation Involving IDB Member Countries

Notwithstanding guaranteeing an empowering situation, governments should find a way to improve the cooperation of neighbourhood landholders and ranchers in the plan and usage of the speculation ventures. Keeping in mind the end goal to exploit the opportunities offered by FDIA while limiting its risks, national governments ought to guarantee that the strategies, laws and directions regarding land residency and agriculture ventures are reliable and strong enough to avoid escape clauses and logical inconsistencies. There is a requirement for a rational and far reaching policy strategy on agribusiness investment, uniting scattered arrangements from various approaches and laws. Cooperation with related areas (e.g. water management) ought to be improved so that the national political and institutional system supports agriculture advancement.

Moreover, measures should be taken to reinforce the institutional ability to screen and uphold existing arrangements and controls. This would require going beyond generic counsel necessities, effectively consisting of new policy regulations. The exact necessities and criteria ought to be set for significant natural and social effect evaluations. Effective appraisal ought to be directed with wide interest from concerned partners. Commonly, enhancing the strategy (particularly on FDIA, AG and POV) will expand the positive financial and economic effects at both regional and national levels.

Following various international deals that have been done to enable foreign investment and capital flows, IDB member countries' governmental policies in relation to FDI inflows have become more relaxed over time with 220 of the 244 changes to regulations around the world related to increased liberalization. However, there are many agreements signed by IDB member countries with non IDB member countries, so in the interests of encouraging intra-investment, most IDB countries should be concentrating on establishing a legal structure to maximize investment opportunities. In 2004, African and Asian IDB member countries continued to work together on a regional level to promote FDI inflows. Such arrangements aim to boost investment and forge stronger cooperation between organizations, and their implementation is expected to offer a solid foundation for establishing the necessary legal system to ensure investment. Unfortunately, until now there are not many regulations and policies on FDIA and AG, and the study would have been more interesting if it had included regulations relating to FDIA together with AG.

It should also be mentioned that the IDB has established bilateral cooperation initiatives, as the Memorandum of Understanding (MOU) demonstrates, it has helped to implement a range of different projects and it has been cooperating with Arabian member countries. This is why policymakers in middle and low income countries need a strategy to invest more heavily in agriculture infrastructure, encourage research and development in agriculture sectors and focus their energy on attracting foreign investment to address growth in those sectors. Therefore, it may make sense to integrate foreign capital in an effort to alleviate climate change while strengthening AG and reducing POV. It is also advisable that these countries' governments consider FDIA when creating FDI inflows policies, as these factors have been proven to influence POV and AG.

One of the IDB's primary goals is to promote private sector development in member countries through financing and other activities. For instance, the Islamic Corporation for the Insurance of Investment and Export Credit (ICIEC) and the Islamic Corporation for the Development of the Private Sector (ICD) were formed to support the private sector's activities. The total number of policies that were in operation in 2014 was 72, while ICIEC's insurance commitments amounted to around USD451 million. Such approaches, however, have failed to address FDIA, AG and POV issues. As a result, a real effort is being made to increase resource mobilization to adapt to member countries' needs in their agriculture sector.

Regional economic groupings of the IDB's member countries have always been significant potential contributors in helping to promote economic cooperation among its member countries, so the Bank has willingly worked with these organizations in a number of ways. By seeking to cooperate at the level of the regional groupings where its members participate, the IDB has tried to utilize the size and strength of both existing and potential markets for the long-term benefit of the countries that have common membership with the organizations in question.

5.5 Limitations and Future Research

The main limitations of this study and the directions for future research are discussed in the following sections. The limitations do not diminish the important findings of this study, which provide guidelines for future research. Overall, the topics of FDIA, AG and POV provide plentiful opportunities for further study. Ideally, such research should emphasize measures to promote FDIA, AG and POV reduction to mitigate economic problems.

5.5.1 Limitations

This study suffered from several limitations; for instance, this study only employed the FDIA, AG and POV measures as replacements of the measures used in other sectors. The use of agriculture sector measures significantly limited the sample size. The global agriculture sector's value added was relatively small (4.5 percent) in 2014 and was the lowest among the three major sectors in terms of share of global GDP (SESRIC, 2016). Moreover, the researcher needed to preserve the wealth of agriculture sector data that was contained within in this study. Thus, other sectors were not considered in this study.

Additionally, this research only focused on the links between of FDIA, AG and POV. The FDIA, AG and POV can impact other economic variables in many ways. Other important economic variables include UR, exchange rates, etc. Therefore, other economic variables and other categories of variables could be tested in future research. For example, halal status could be used as a determinant of FDIA, AG and POV and as an indication of investors' confidence levels.

Lastly, this thesis's sampling frame was narrowed to selected OIC countries. Nevertheless, it provides an in-depth understanding of the issues with FDIA, AG and POV sectors of selected OIC countries and assesses whether FDIA is sensitive to AG. Based on the literature, it is noted that most of the OIC African countries have high POV issues. Thus, the availability of data for these countries might have altered the results of this study. Hence, all OIC countries should be considered in future studies.

5.5.2 Future Research

Over time, detailed related research might be done to match and contrast the framework's determinants of FDIA, AG and POV. Firstly, this study differentiated and explained the FDI inflows, economic growth and POV implications from the perspective of the agriculture sector. The generalizability of this study is limited to the agriculture sector, so it could be expanded by using a sample from another sector.

Secondly, other economic variables and other categories of variables could be tested in future research. For example, further research is needed to measure the efficiency of the agriculture sector in instilling investors with confidence. Investors' confidence is essential for FDI inflows, economic growth and POV reduction. In addition, halal status as a new determinant of FDIA should be tested in future research, as it is an important issue for OIC countries.

Thirdly, future studies might extend the framework to examine other OIC countries and other regions. Limited data was available on the unselected OIC countries and other regions, so the governments of these countries should provide the important data needed for future research.

Finally, it has to be acknowledged that the limitations listed above do not devalue the importance of the research findings that provide direction for future research. Looking ahead, the topic of FDIA, AG and POV certainly offers abundant opportunities for future research.

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