

# Globalisation – Poverty Reduction Nexus: The Case of the ASEAN

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## **Abstract**

The paper aims to examine the globalization-poverty reduction nexus in ASEAN countries. The Human Development Index (HDI) and Gross Domestic Product per capita (PGDP) are two key variables that measure welfare or poverty reduction. These variables used to explain the impact of globalization on welfare which are foreign direct investment (FDI) inflows and international trade. The models also use time dummy to capture the influence of the global financial crisis during the 2008-2009 period. The paper finds that FDI inflows have a strong positive and significant effect on poverty reduction, whereas the impact of international trade on welfare is lower compared to inward FDI. The results also indicate that the effect of inward FDI on welfare is greater in poorer countries than that for wealthier countries. From the findings of this paper, three policy recommendations are made for ASEAN countries. First, these countries should encourage more FDI from abroad to develop the economy due to its benefits to welfare. Furthermore, trade policy also needs to be promoted so that ASEAN countries can acquire gains from trade in order to benefit from welfare improvement even the impact of international trade on welfare is lower than that of inward FDI. Finally, ASEAN countries should promote the implementation of some economic and investment agreements, and the extension of economic integration so that each nation is able to stimulate FDI inflows and the degree of openness so as to achieve welfare improvement.

**Keywords:** ASEAN, globalization, FDI, international trade, poverty reduction, welfare.

## 1. Introduction

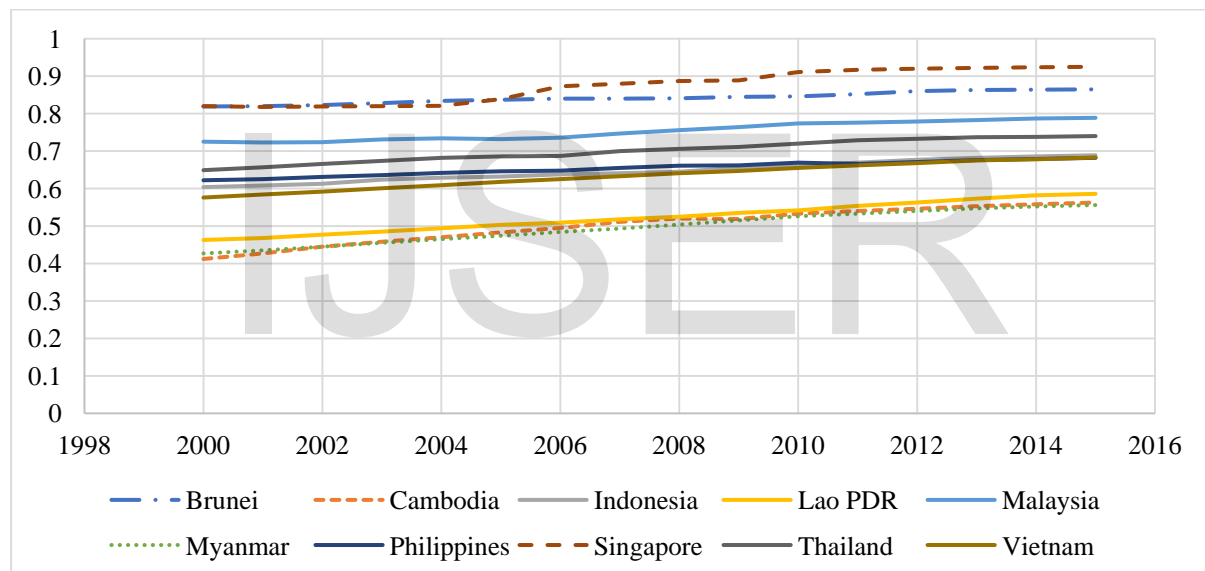
The modern world economy and society have been rapidly globalizing in recent decades due to social and economic integration. After increasing process of economic integration since the 1990s, international political economy and international relations have taken into account a major question of how does globalization affects the poor and increases welfare improvement (Nissanke and Thorbecke 2008). From time to time, many countries have formed regional as well as global associations in order to benefit from globalization. For example, the Association of Southeast Asian Nations (ASEAN) was established on 8<sup>th</sup> August 1967 in Bangkok, Thailand and 10 countries are members of the association including Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. The main purposes of the ASEAN are set out in the ASEAN Declaration including accelerating economic growth, promoting regional peace and stability, collaborating, providing assistance to each other, and other purposes (ASEAN, 2017). At the present time, the key characteristics of the 2003 ASEAN Economic Community Declaration had been reached by 2015 and obtained some achievements of the declaration of the 2000 Millennium Development Goals (MDGs). These achievements have necessarily contributed to human and economic development as well as poverty reduction. The ASEAN formation has been a sign of increasing globalization throughout the region over the last five decades. Each member country not only has established a profound collaboration within the association but also has broadened economic and cultural integration with other countries around the world in order to develop its economy (Uttama 2015).

Globalization has become inevitable and played important roles in the global economy. On the one hand, by participating in globalization, each country has opportunities to approach international markets by exporting and importing its products, acquire advanced technology transfer by FDI and other benefits. FDI, for example, has significantly contributed to economic development and most countries would attract more FDI from overseas in order to sustain economic growth and macroeconomic stability. Likewise, the significant increase in FDI inflows has resulted from some empirical factors including increasing openness to trade and improved business environment. The increase of inward FDI plays an important role in reducing poverty in the ASEAN countries (Uttama 2017). On the other hand, globalization has created winners and losers at numerous levels and also causes some negative effects such as increasing inequality and global warming (Nissanke and Thorbecke 2008).

Over recent decades, real GDP per capita and HDI which are indicators to measure human development have been improving in both developed and developing countries. These

improvements seem to result in better welfare due to increasing HDI and GDP per capita. For instance, welfare improvement has been achieved considerably in most countries in terms of increasing HDI in the ASEAN. Figure 1 presents the improvement of HDI in the ASEAN countries over the period from 2000 to 2015. As can be seen clearly from the graph, HDI has gradually increased in 10 countries. Singapore and Brunei are the two richest countries and remain on the top with the highest HDI in the region over the period. In contrast, the three countries with the lowest HDI are Myanmar, Cambodia, and Lao PDR. All member countries not only interact with each other in order to achieve the ASEAN's goals, they also have a social-economic relationship with other countries outside of the ASEAN as well as other economic associations. According to The United Nations Development Program (UNDP 2017), the improvement of HDI in the ASEAN has been increasing over the period as can be seen in the following diagram.

Figure 1: HDI in the ASEAN countries from 2000-2015.



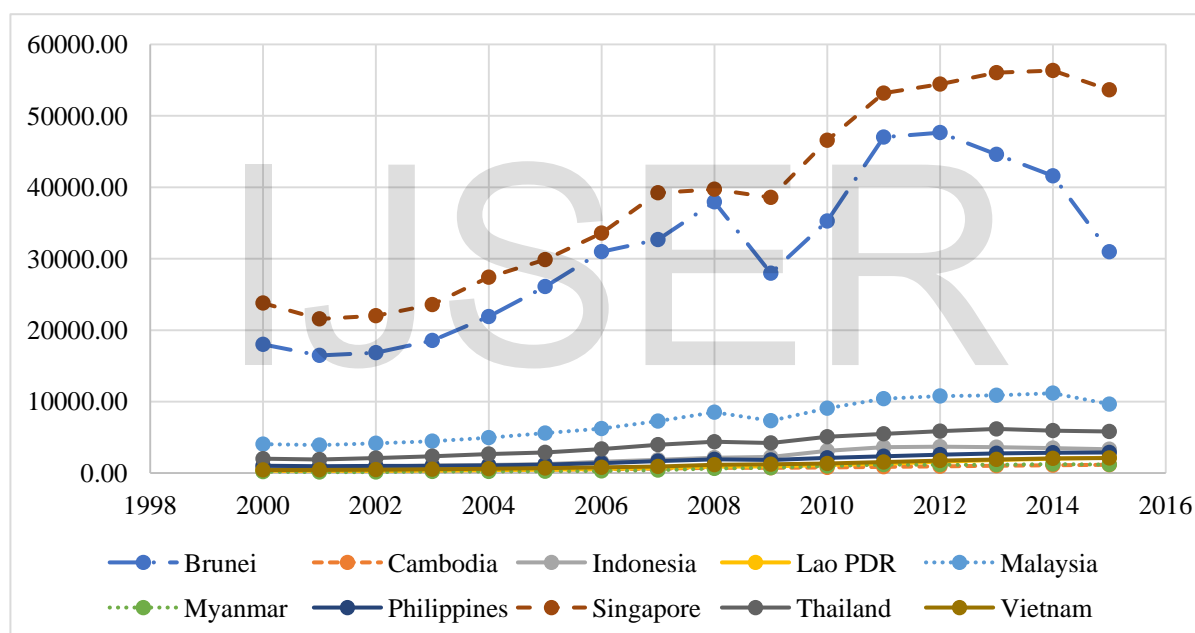
Source: UNDP (2017).

Many countries around the world remain to be a developing country relative to low income. This is due to several reasons such as the inefficient use of factor endowments, or a large technological gap compared to developed economies. In addition, the number of people living under the poverty line of \$1 a day is more than one-sixth of the world population, and half of developing countries live on less than \$2 a day (Harrison 2007, cited in MacDonald & Majeed 2010). However, there has been a significant achievement in poverty reduction in developing countries, especially in ASEAN where economic integration has become widespread and necessary recently. Taken GDP per capita in some countries as examples, there was a substantial increase in GDP per capita from USD 98 in 1990 to USD 2,111 in

2015 in Vietnam, and from USD 585 to more than USD 3,336 in Indonesia, from USD 203 to nearly USD 2,159 in Lao PDR (World Bank, 2017).

Figure 2 shows that GDP per capita was gradually increased from 2000 to 2015 in most ASEAN countries, but it fluctuated in the period from 2007 to 2010 with the advent of the global financial crisis in 2008. The two countries like Singapore and Brunei, with the highest HDI, also have the highest GDP per capita in the region. GDP per capita in these two countries considerably rose, in Singapore, for instance, from more than USD 23,792 in 2000 to over USD 53,629 in 2015 and from around USD 18,000 to approximately USD 31,000 in 2015 in Brunei. According to the World Bank's classification of income level, most nations of the ASEAN are still classified as being of lower middle income, except for Singapore and Brunei which belong to the high-income country group.

Figure 2: GDP per capita in the ASEAN countries from 2000-2015



Source: WB (2017).

Although most ASEAN countries remain to have low GDP per capita, the rate of people living in poverty had considerably decreased over the last two decades. For instance, according to the General Statistics Office of Vietnam (2017), Vietnam's poverty rate had rapidly declined from 58.1% in 1993 to 7% in 2015. More people have access to the higher standard of living and other facilities such as infrastructure, education, healthcare, and sanitation.

Economic integration is an important motivation in attracting FDI from abroad as well as to gain access to international markets. For instance, FDI brings into host countries some fundamental benefits in terms of capital formation, technology transfer, production know-

how, management methods, marketing skills, information and so on. These factors should bring several impacts into a host countries' economy which might lead to poverty reduction. In other words, welfare improvement has significantly resulted from globalization related to international trade and FDI. Because of the achievements as discussed, it is necessary to investigate the contribution of globalization to the improvement of welfare in Southeast Asian countries. This research paper will examine the globalization-poverty reduction nexus by measuring the effects of international trade and FDI inflows on welfare in ASEAN over the 2000-2015 period. The result of this paper will respond to two research questions: (1) What is the impact of globalization in terms of FDI inflows and international trade on poverty reduction in the ASEAN? (2) Does globalization affect welfare in poorer and richer countries in the ASEAN differently?

To answer two research questions above, it is necessary to review some literature that many researchers have studied the topic in recent years. Moreover, to response the questions quantitatively, a panel data model using data related to globalization on the 10 ASEAN countries from 2000 to 2015 will be estimated. Based on the efficient results of regressions, the globalization-poverty reduction nexus in the ASEAN will be interpreted and discussed, and policy recommendations also are introduced in order to promote the welfare improvement resulted from globalization.

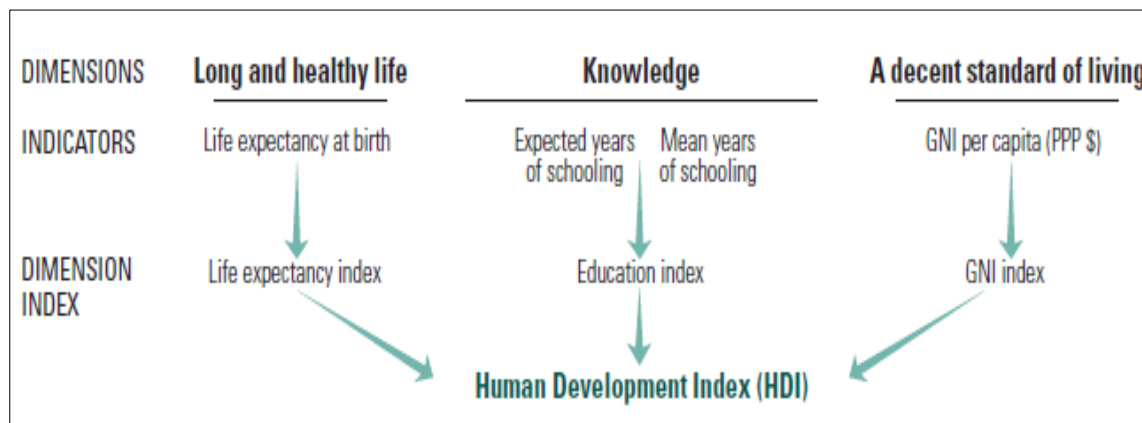
This paper will be organized as follow. First of all, section 2 will overview the relationship between globalization and poverty reduction, particularly the effects of international trade and FDI inflows on poverty reduction. Section 3 will present the methodology and data of this paper. Some findings of the globalization-poverty reduction nexus, the effects of inward FDI and international trade on welfare in ASEAN will be discussed in section 4. Finally, some significant points and policy implications are concluded in the conclusion.

## **2. Literature review**

### ***The Human Development Index (HDI)***

The United Nations Development Program's (UNDP) HDI is a development index which is used to emphasize that individuals and their capabilities would be the ultimate criteria to assess a country's social and economic development based on three dimensions of human development consisting of a long and healthy life, knowledge, and a decent standard of living (UNDP 2017).

Figure 3: Human Development Index by UNDP



Source: UNDP (2017).

In recent decades, the HDI has been an almost accepted indicator to measure human development and this index has been readily available for all countries. Thus, the HDI has become an appropriate index to evaluate a country's welfare, which could sufficiently reflect human development and standard of living as well as people's capabilities to access and improve social welfare. Another indicator which is also to measure the standard of living as well as the economic growth is GDP per capita. These two indicators have been broadly used in many studies in order to assess poverty reduction as well as the improvement of welfare.

#### ***The measure of welfare improvement using HDI and GDP per capita***

Many studies have used HDI and GDP per capita to measure welfare improvement in a country or across countries. For example, Gohou and Soumaré (2012) employed HDI and real per capita GDP as two indicators to measure impacts of inward FDI on welfare and its regional differences in Africa. Using a panel data regression analysis, the authors argued that FDI inflows have strong impacts on welfare improvement in Africa as a whole, and concludes that FDI inflows result in a higher influence on poverty reduction in low-income countries than richer nations. Muhammad et al. (2010) also examined whether FDI and international trade would be effective tools to sustain economic stability and development. This study applied HDI as a dependent variable to measure the effect of globalization in which economic and financial liberalization under the open economy. He concluded that inward FDI has a statistically significant effect on HDI, whereas the impact of real GDP on welfare is negative and insignificant due to income inequality in the case of Pakistan.

Figuroa (2014) investigates the impact of globalization on welfare improvement in developing countries in Central and South America. The author also applied HDI, per capita GDP, life expectancy, and public expenditure on education as dependent variables to measure human development. The HDI measures the human development as a whole, while per capita

GDP, life expectancy, and educational factor stand for each dimension of HDI created by the UNDP. The paper concluded that globalization has diverse impacts on welfare in the Central and Latin America developing countries. This implies that globalization can have both positive and negative relationship with human development, depending on the indicators used to measure each aspect of globalization.

### ***The relationship between globalization and poverty reduction***

Globalization refers to an increasing level of interdependence among countries around the world in terms of the exports and imports of commodities and services, labor and capital movement, cultural, political, and military alliances (Rabbanee et al., 2010). It is argued that globalization is a promoter of human development. Globalization also has a favorable impact on education by transforming illiterate people into productive human resources and improving awareness of the population. Improvement in education can lead to many social benefits such as enhancement of living standard, healthcare, and reduction in infant and child mortality rate. Furthermore, globalization can enable people to increase the quality of life through the consumption of various kinds of goods and services from abroad due to product availability including basic foods, pharmaceuticals, and clothing. Most countries can benefit from globalization in terms of international trade, which can utilize the comparative advantage of each country in order to increase growth and generate more employment and income (Rabbanee et al., 2010). However, globalization is also an inhibitor of human development. It is argued that trade liberalization requires participants to eliminate or reduce import tariffs, then leads to reductions in government revenue, therefore the government will need to increase other taxes so as to maintain budget balance. This will negatively affect the disposable incomes of citizens. In addition, globalization also has a negative impact on agriculture due to tough competition in which developing countries might find it difficult to sell their agricultural products in international markets (Rabbanee et al., 2010).

Sapkota (2011) investigates the effects of globalization on welfare in terms of human and gender development in addition to the impacts across world regions and income group countries using the annual panel data of 124 developing countries over the nine-year period from 1997 to 2006. The author uses the KFO index of globalization to measure the impacts of globalization including economic, social, and political globalization. This index covers all aspects which reflect the relationship between an economy with the rest of the world in terms of globalization. The paper applies HDI, GDP per capita, and the Human Poverty index as dependent variables to measure the improvement of welfare, while the KFO index of globalization is used as an explanatory variable. The study concludes that globalization not



only improves human and gender development but also significantly alleviate the level of poverty across developing countries.

In addition, Tsai (1994) claimed that domestic market size and trade balance resulted from globalization significantly contribute to economic growth besides to poverty reduction. The relationship between openness, growth, and poverty is also explored in a specific country, Taiwan. The paper examines how openness to trade which is the sum of the exports and imports to GDP ratio, economic growth, and the roles of government contribute to poverty reduction. There is no doubt that openness to international trade benefits the poor and helps to alleviate poverty in Taiwan. Nevertheless, FDI inflows have an insignificant impact on welfare improvement (Tsai, 2007). Another empirical finding also demonstrated that inward FDI and economic growth have a significant endogenous relationship in developing countries (Li & Liu, 2005).

The impact of globalization on welfare improvement across countries has been extensively studied. The role of globalization in increasing inequality and poverty reduction has been identified in economies with imperfect financial markets and it was argued that there has been a negative and statistically significant effect of globalization on poverty in countries where financial systems are relatively imperfect and developed (MacDonal & Majeed 2012). It is claimed that the globalization and poverty have a complex relationship, which could be non-linear and heterogeneous and relate to multifaceted channels. Globalization not only affects economic growth and poverty reduction but also creates the winners and losers through various channels which affect both vertical and horizontal inequality (Ravallion, 2004, cited in Nissanke & Thorbecke, 2008). Furthermore, globalization in terms of trade and technological openness, capital and labour mobility, and pro-poor institutions affects poverty reduction. The change in globalization could lead to welfare improvement even the findings are not conclusive (Nissanke & Thorbecke 2010, cited in Uttama 2015).

Figini and Santarelli (2006) employed a panel data model to investigate the relationship between globalization and welfare improvement in developing countries. The authors apply the degree of openness to trade, financial openness, and the role of government as proxies to measure the impacts of globalization on poverty reduction. Their findings argue that trade openness which is the sum of exports and imports to GDP ratio and public sector have a negative relationship with the level of poverty, whereas financial openness which is the net FDI inflows to gross capital formation ratio have positive effects on the absolute poverty. According to Neutel and Heshmati (2006), globalization leads to poverty reduction and lower level of income inequality using large sample data of 65 developing countries. The authors



use various globalization indices consisting of economic integration, personal contacts, connections of technologies, and political engagement to measure the effects of globalization on welfare across developing countries.

Another research had investigated the relationship between international trade and poverty alleviation and give recommendations on trade reforms. The trade reforms-poverty nexus is diverse and complex. Trade liberalization can affect the poor through the price and availability of goods and services. The finding suggests that trade reforms have a positive effect on poverty reduction through improving employment and income for the poor. As a result, it is important to provide assistance for the poor to participate in markets resulted from trade liberalization. For example, the provision of infrastructure, technical assistance, credit, and other types of training can allow the poor to benefit from market opportunities, macroeconomic stability, and economic growth (Bannister & Thugge, 2001; Fane, 2006).

Many studies have investigated the impact of economic integration on poverty reduction in Asia as well as the ASEAN countries in recent years. FDI has played an important role in economic development and improvement of social welfare. For instance, inward FDI resulted from economic integration has increased in this region for the last four decades and has led to economic expansion and development of regional production networks (Hew 2006). In addition, there is a positive significant relationship between inward FDI and poverty alleviation in terms of both individual and spatial aspects in the ASEAN. The positive significant relationship remains between poverty reduction and GDP growth, openness to trade, and foreign debt, whereas financial and infrastructure factors have a negative significant relationship with poverty reduction in the ASEAN. The results of the paper conclude that welfare improvement in Southeast Asian countries is driven by FDI inflows and economic integration (Uttama 2015).

### ***Benefits from globalization***

Participating in globalization can offer some benefits for each country to develop the economy. With the open economy, each country is able to expand the markets for domestic products through international trade and that country can import products that are not produced domestically (Gohou & Soumaré 2012). These benefits allow a country to exploit its comparative advantage in order to use physical, natural, and human capital more efficiently in the economy.

The impact of globalization on poverty reduction in developing countries has recently become a major concern for economists and policymakers. Some studies have identified the importance of international trade and FDI inflows resulted from economic integration in

developing economic growth and reducing poverty. It is argued that FDI inflows can contribute to the improvement of welfare through the social and economic side. Regarding the social side, inward FDI generates employment, improve managerial skills, and stimulate technological progress which can support the governments in achieving the poverty reduction goal. In terms of the economic side, recent studies suggest that human development resulted from FDI inflows increases human capital which is considered a principal contributor to economic growth (Gohou & Soumaré 2012).

To summarize what we discussed literature review of the globalization-poverty reduction nexus which has become a crucial issue of various studies. There is no doubt that globalization would have both positive and negative impact on welfare, but several studies conclude that globalization in terms of FDI inflows and international trade could significantly overcome poverty. It is also important to investigate the effect of globalization on welfare in a region like the ASEAN so that each country could benefit more from increasing economic integration. In the next part, methodology and data of this paper will be discussed so as to answer two research questions scientifically and statistically.

### **3. Methodology and data**

#### **3.1. Data**

Many studies apply panel data to investigate the effects of FDI inflows and trade on welfare in a region or continent such as Africa, Southeast Asia, Central and South America (Gohou & Soumaré 2012; Figueroa 2014; Uttama 2015). Likewise, this paper will apply a panel data of 10 countries in the ASEAN from the year 2000 to 2015. The data for FDI, trade, GDP, GDP per capita, official exchange rate, the number of the Internet users, and inflation are collected from the World Development Indicators (WDIs). The data on the number of enrolment to population ratio is compiled from The United Nations Educational, Scientific and Cultural Organization (UNESCO) database. The source of HDI data is from the Human Development Report of the UNDP. Also, some other data are collected from a particular country such as the data of the poverty rate from the General Statistics Office of Vietnam (GSO) in Vietnam. Due to the limitation of the data, this paper only assesses the globalization-poverty reduction nexus in the ASEAN over the period.

The literature has used various indicators to measure a country's welfare. International trade and FDI inflows have been widely used as proxies of globalization (Magdalena, 2014). In this paper, the models will find out the empirical contributions of FDI inflows and international trade to welfare improvement in the ASEAN by using some variables which relate to

international and domestic factors. Those factors resulted from globalization affect HDI and per capita GDP directly and indirectly. GDP per capita would capture the economic dimension of welfare as it is indicated in HDI constructed by the UNDP. This variable also captures the degree of economic development. There is no doubt that a greater degree of economic development would result in an improvement of welfare or higher poverty reduction in a country. However, welfare or poverty reduction not only depends on economic factors, but also depends on other dimensions such as health care, quality of education, and other factors as well. These factors could perfectly reflect all aspects of people's living conditions. Due to the limitation of data availability of poverty incidence in the ASEAN, the paper will employ HDI as an empirical variable to measure the welfare as well as poverty reduction. The model using HDI as a dependent variable will capture the direct effects of FDI and international trade on poverty reduction in the ASEAN. Apart from HDI indicator, FDI and international trade would indirectly affect welfare improvement through economic dimension by using GDP per capita as a dependent variable in the model. Therefore, two main variables which are FDI inflows and international trade will be used to reflect the globalization-poverty reduction nexus.

In addition, two linear models are specified using HDI and per capita GDP as the dependent variables. The models will contain both international and domestic factors capturing globalization all ASEAN's members. The international factors will be indicated by FDI inflows, the volume of exports and imports of commodities and services, and the official exchange rates. Domestic variables will be government expenditure, inflation, education, and individuals using the Internet. To be specific, the explanatory variables are the FDI inflows to GDP ratio, the sum of exports and imports to GDP ratio which stands for the degree of openness of a country, the official exchange rate, education which is the number of enrolment to population ratio, government expenditure, inflation, and the percentage of individuals using the Internet in total population. Moreover, the control variables in the models consist of the official exchange rate, education, government expenditure, inflation, and the Internet users. The models also use time dummy as a variable to capture the effect of the global financial crisis on welfare in the year 2008-2009. The time dummy variable will present the individual effect of crisis for the year 2008 and 2009. Also, the time trend is added to the models so as to investigate whether or not welfare improves over time. The description of the variables and sources of data are presented in the following table.

Table 1: The variables: description and source of data

| Variables | Description | Measurement | Source of data |
|-----------|-------------|-------------|----------------|
|-----------|-------------|-------------|----------------|

| <b>Welfare</b>           |   |                 |   |
|--------------------------|---|-----------------|---|
| <i>HDI</i>               | Human Development Index   | Unit            | The Human Development Report  |
| <i>PGDP</i>              | Gross domestic product per capita                                 | Current \$US    | The World Bank's World Development Indicators (WDIs)                          |
| <b>Globalization</b>     |   |                 |   |
| <i>FDIGDP</i>            | Inward foreign direct investment to GDP ratio                     | Unit            | WDIs  |
| <i>TRADE</i>             | Sum of total export and import of goods and services to GDP ratio | Unit            | WDIs  |
| <b>Control variables</b> |   |                 |   |
| <i>ER</i>                | Official exchange rate  | \$ Local/\$US   | WDIs  |
| <i>EDU</i>               | Number of enrolment to population ratio                           | Unit            | The United Nations Educational, Scientific and Cultural Organization database |
| <i>GOVEXP</i>            | Government expenditure  | % of GDP        | WDIs  |
| <i>INF</i>               | Inflation or GDP deflator   | Annual %        | WDIs  |
| <i>INTER</i>             | Individuals using the Internet                                    | % of population | WDIs  |
| <i>y2008</i>             | Time dummies 2008   | 1               |   |
| <i>y2009</i>             | Time dummies 2009   | 1               |   |
| <i>TimeTrend</i>         | The trend of time over the period                                 | From 1 to 16    |   |

Source: Author.

### 3.2. Model specification

There are two main techniques to run a regression using panel data including fixed effects and random effects model. The fixed effects model assumes that all unobserved factors such as location, religion, culture and so on affect the dependent variable do not change over time. In other words, the intercept which captures unobserved factors of the model will be different across sections in a panel data and fixed over time, but the coefficients of the explanatory variables change over time. Regarding the random effects model, this model assumes that the unobserved effect is uncorrelated with all explanatory variables (Wooldridge, 2012). In order to decide which technique is appropriate, a *Hausman test* is conducted to determine which model will be used in the paper, fixed effects model or random effects model. In the equations of the models, some variables will be in the logarithm form under regression to measure the elasticity that captures the effects of explanatory variables on independent variables.

To measure the effects of inward FDI and international trade on welfare through direct and indirect channels, two models are indicated as follow:

*Model 1: The impact of globalization on welfare*

$$\begin{aligned} Welfare_{it} = & a_1 + a_2FDIGDP_{it} + a_3TRADE_{it} + a_4FDIGDP_{it} * Dum2008 \\ & + a_5FDIGDP_{it} * Dum2009 + a_6TRADE_{it} * Dum2008 + a_7TRADE_{it} \\ & * Dum2009 + a_8 \sum Controlvar + u_{it} \end{aligned}$$

To further investigate the impact of globalization on welfare in terms of income level differences, it is necessary to consider the following regression equation:

*Model 2: The impact of globalization on welfare in terms of income group countries*

$$\begin{aligned} Welfare_{it} = & \beta_1 + \beta_2FDIGDP_{it} * Dum_{LMIC} + \beta_3TRADE_{it} * Dum_{LMIC} + \beta_4FDIGDP_{it} \\ & * Dum_{UMIC} + \beta_5TRADE_{it} * Dum_{UMIC} + \beta_3 \sum Controlvar + u_{it} \end{aligned}$$

The dummy variables depict the income level classified by the WB including lower-middle income country (*LMIC*), upper-middle income country (*UMIC*). According to the income level classification, Brunei and Singapore are high-income countries, so it is appropriate to group these two countries into the *UMIC* country. Moreover, there are no low-income countries in the ASEAN. The dummy variable for an income group will take the value of one when a country belongs to that income level and zero otherwise.

It is expected that globalization results in welfare improvements through the impacts of inward FDI and international trade. FDI inflows are expected to have positive effects on poverty reduction. FDI will bring into the host countries a package of capital, advanced technology, production know-how, management methods, and information. Therefore, inward FDI will produce some positive effects on the host countries' economy in promoting and improving the economic development and social welfare. International trade also a determinant of FDI inflows, that advantages to promote FDI inflows in a country. International trade is also expected to positively lead to an improvement of poverty reduction. A widely open economy is able to expand the markets for its production along with approach of various products from international markets to satisfy the demand of domestic consumers.

Control variables are included in the study of globalization-poverty reduction nexus because these variables have significant impacts on welfare. We expect government expenditure to improve welfare because fiscal policies will affect the economic performance, infrastructure system, education, and health which are reflected in HDI. In addition, the official exchange rate also is expected to have a positive impact on welfare. In terms of education, the higher the number of the population go to school, the more improvement in poverty reduction will be. Furthermore, inflation is a control variable to capture the macroeconomic stability.

Because high inflation increases the price of basic goods, it is expected that inflation will negatively affect welfare, and will deleteriously affect the poor due to increases in the cost of consumption. Another control variable is the number of the Internet users. This variable is a proxy for the development of the infrastructure system. A better infrastructure system will contribute to better living conditions, so this factor is expected to have a positive impact on poverty reduction. Moreover, the global financial crisis in the year 2008-2009 is also expected to have some negative effects on poverty reduction. This crisis was likely to deteriorate the flows of FDI and transactions in the international goods markets and therefore will negatively affect the poor or welfare improvement. Welfare improvement also is expected to increase over time from 2000 to 2016.

### **3.3. Diagnostic tests**

In econometric models, some problems of statistic results would be inevitable. The problems would cause the results of regressions to be biased, inconsistent, and inefficient. Thus, there would be a problem of *heteroskedasticity* over cross-sections in the panel data. An appropriate method will be applied to test for the problem is the modified *Wald test* for group-wise *heteroskedasticity* in the residuals of the fixed effects regression models. Moreover, there will be a presence of serial correlations in time series of the panel data. To test for the problem of autocorrelation in the fixed effects models, the *Wooldridge test* will be applied.

It is important to test for the problem of a *unit root* in the panel data. One way used to test the variables separately is the *Dickey-Fuller test*, but this method would not be appropriate in panel data with many variables. Another efficient method of testing for the presence of a unit root in a variable that varies over the cross-sections in the panel data is Levin, Lin, and Chu (2002) test (LLC). Instead of a number of panel unit root tests for many variables, *LLC test* will base on the panel unit root regression which is the panel analogue of the augmented *Dickey-Fuller* regression equation.

After testing for the problems of models with panel data, the models will be corrected by appropriate methods to obtain the unbiasedness, consistency, and efficiency of the estimates. Some methods would be appropriate to estimate the fixed effects models by OLS in which the *Newey-West robust method* and *robust standard errors* will be applied to account for heteroskedasticity and autocorrelation.

## **4. Empirical results and discussions**

The aim of this paper is to investigate the globalization-poverty reduction nexus in ASEAN in terms of the effects of inward FDI and international trade on welfare. The paper addresses two

research questions: (1) What is the impact of globalization in terms of FDI inflow and international trade on poverty reduction in ASEAN? (2) Does globalization affect welfare in poorer and richer countries in ASEAN differently?

#### 4.1. Descriptive statistics and testing

It is important to explore the data before analysing the results of fixed effects regression models. There are 160 observations in the panel data including the 16-year period of 10 countries in the ASEAN.

Table 2: Descriptive statistics of the variables

| <i>Variables</i> | <i>Observation</i> | <i>Mean</i> | <i>Standard Dev</i> | <i>Min</i> | <i>Max</i> |
|------------------|--------------------|-------------|---------------------|------------|------------|
| <i>HDI</i>       | 160                | 0.663       | 0.131               | 0.412      | 0.925      |
| <i>PGDP</i>      | 160                | 8,839.876   | 14,324.99           | 138.925    | 56,336.07  |
| <i>FDIGDP</i>    | 160                | 0.049       | 0.053               | 0.0006     | 0.265      |
| <i>TRADE</i>     | 160                | 1.279       | 0.976               | 0.002      | 4.416      |
| <i>ER</i>        | 160                | 4,068.06    | 5,886               | 1.25       | 21,697.57  |
| <i>GOVEXP</i>    | 160                | 11.645      | 5.411               | 3.46       | 29.4       |
| <i>INF</i>       | 160                | 6.051       | 7.547               | -22.091    | 41.51      |
| <i>INTER</i>     | 160                | 23.37       | 23.93               | 0.0002     | 82.103     |
| <i>EDU</i>       | 160                | 0.211       | 0.041               | 0.133      | 0.263      |

Source: Author estimation.

According to the description of the data presented in table 2, there is a larger gap between the *min* and *max* of *HDI* and *PGDP*, which are two dependent variables and the differences between these two variables can reflect a vast disparity in the standard of living and human development among all members over the 16-year period. Table 3 presents the correlation matrix for 10 countries from 2000 to 2015, which reflects the relationships between the variables.

As can be seen from the correlation matrix table, *HDI* is highly correlated with *PGDP* of 80 percent. These two variables are proxies of welfare and the relationship demonstrates that higher GDP per capita leads to higher standard of living and human development. As can be seen from the table the FDI inflow to GDP ratio (*FDIGDP*) and the degree of openness (*TRADE*) affect *HDI* and GDP per capita. Thus, it is expected that these two variables could be the main determinants of welfare development in ASEAN countries. We also observe that the number of the Internet users (*INTER*) is highly correlated with *HDI* and *PGDP* of 85 percent and 78 percent respectively. This indicates that more access to the Internet or improvement of infrastructure system may result in better welfare. Furthermore, *TRADE* and *FDIGDP* have a highly positive relationship at nearly 80 percent. It may be argued that



*TRADE* not only improves welfare but also is a determinant which attracts *FDI inflows* in a country.

Table 3: Correlation matrix for the ASEAN countries from 2000 to 2015

|               | <i>HDI</i> | <i>PGDP</i> | <i>FDIGDP</i> | <i>TRADE</i> | <i>ER</i> | <i>EDU</i> | <i>GOVEXP</i> | <i>INF</i> | <i>INTER</i> |
|---------------|------------|-------------|---------------|--------------|-----------|------------|---------------|------------|--------------|
| <i>HDI</i>    | 1.000      |             |               |              |           |            |               |            |              |
| <i>PGDP</i>   | 0.802      | 1.000       |               |              |           |            |               |            |              |
| <i>FDIGDP</i> | 0.412      | 0.604       | 1.000         |              |           |            |               |            |              |
| <i>TRADE</i>  | 0.643      | 0.639       | 0.796         | 1.000        |           |            |               |            |              |
| <i>ER</i>     | -0.326     | -0.364      | -0.089        | -0.164       | 1.000     |            |               |            |              |
| <i>EDU</i>    | -0.035     | -0.127      | -0.475        | -0.348       | -0.300    | 1.000      |               |            |              |
| <i>GOVEXP</i> | 0.374      | 0.326       | -0.176        | -0.159       | -0.558    | 0.129      | 1.000         |            |              |
| <i>INF</i>    | -0.334     | -0.235      | -0.189        | -0.329       | 0.226     | -0.113     | -0.115        | 1.000      |              |
| <i>INTER</i>  | 0.852      | 0.781       | 0.517         | 0.685        | -0.258    | -0.136     | 0.220         | -0.356     | 1.000        |

Source: Author estimation.

### ***Hausman test:***

In panel data regression, there are different methods to estimate the regression, particularly fixed effects and random effects method. In order to decide which method is appropriate to estimate the models in this paper, Hausman tests are conducted. The null hypothesis is the random effects estimator which is consistent and efficient. The alternative hypothesis is the fixed effects estimator which is still consistent, but not efficient due to misspecification of the structure of the covariance matrix. Formally the hypotheses are:

$H_0$ : Random effects estimator

$H_a$ : Fixed effects estimator

According to the Hausman tests, the p-values of 0.0000 in the test of *HDI* and 0.0000 in the test of *PGDP* indicate strong rejection of the null hypothesis. Therefore, the fixed effects model is appropriate to use to estimate the panel data models in this research. The fixed effects model allows the intercepts to vary over cross-sections, while the coefficients of explanatory variables (the slopes) will be assumed to be the same. In addition, fixed effects-linear models will be used and run by the method of Ordinary Least Squares (OLS).

### ***Testing for heteroskedasticity and autocorrelation:***

The problems of heteroskedasticity and autocorrelation are common in the econometric models. In panel data, these problems might appear in the regressions and lead to inefficient estimators. Due to these problems, the estimators are still unbiased but not efficient, and the OLS method computes standard errors using incorrect formulas. To test for the presence of

heteroskedasticity, the Modified *Wald test* for group-wise heteroskedasticity in the fixed effect regression model is applied. The *Wald tests* for the regressions of *HDI* and *PGDP*, p-values of the tests are strongly significant. These p-values indicate that there is a presence of heteroskedasticity in the regressions of the models. Similarly, the *Wooldridge test* for autocorrelation in panel data is used to investigate the problems in terms of time series in a section of panel data. The p-values of *0.0000* in the tests also state that there is a presence of autocorrelation in the regressions of the models. Therefore, it is necessary to correct the problems of heteroskedasticity and autocorrelation in order to obtain statistically significant results of regressions by using OLS standard error robust method and the *Newey-West standard error* to estimate the fixed effects models.

#### ***Testing for the unit root:***

It is important to test for the stationary of the variable *HDI*, *PGDP*, *FDIGDP*, and *TRADE*. One way to test whether or not there is an existence of a unit root in the data series of the variables is Levin, Lin, and Chu (2002) test (*LLC test*). The results of the test are in the following table:

Table 4: Levin, Lin, and Chu (2002) test for stationary

| <b><i>Variable</i></b> | <b><i>t statistics</i></b> | <b><i>p – value</i></b> |
|------------------------|----------------------------|-------------------------|
| <i>HDI</i>             | - 5.343                    | 0.0000                  |
| <i>logPGDP</i>         | - 3.639                    | 0.0001                  |
| <i>FDIGDP</i>          | -2.813                     | 0.0025                  |
| <i>logFDIGDP</i>       | - 2.823                    | 0.0024                  |
| <i>TRADE</i>           | -1.190                     | 0.1171                  |
| <i>logTRADE</i>        | -1.191                     | 0.1168                  |

Source: Author.

The results in table 3 reject the existence of *unit roots* for three variables *HDI*, *PGDP*, and *FDIGDP*. In other words, these variables are stationary. However, the variable *TRADE* contains a *unit root* in terms of both linear and logarithm form with a p-value of 0.1171 and 0.1168 respectively. The significance level of the *LLC test* on the *unit root* of variable *TRADE* is almost 10 percent, so the unit root of *TRADE* would not be a major problem in the time series of a short period of time. In the next part, the empirical results derived from robust regressions will be discussed in order to measure the effects of globalization on welfare in the ASEAN.

#### ***4.2. The impact of FDI inflow and international trade on welfare***

To examine the impact of globalization on welfare, the equation of *model 1* is applied to run the regressions. Table 5 gives the panel regression results to measure the effects of inward FDI and international trade on poverty reduction using *HDI* as the dependent variables for welfare. Column (1) and (2) present the effects of *FDIGDP* and *TRADE* on *HDI* with time trend as a control variable. The results show that the *FDI* to *GDP* ratio positively affects welfare at a significance level of 5 percent, and the impact of *TRADE* on welfare is also positive and significant at 5 percent level, but lower than that of *FDIGDP*. In columns (3) to (5), some control variables are added to the model including *government expenditure*, *inflation*, *exchange rate*, *education*, *the Internet users*, dummy, and time trend. The results indicate that *FDIGDP* has a positive effect on welfare and more statistically significant and greater than *TRADE* variable. Columns (6) and (7), the model is estimated for *FDIGDP* and *TRADE* separately. The results demonstrate the effect of *FDI inflows* on welfare remain greater than *TRADE* and significant at 1 percent level. It can be argued that *inward FDI* is a major determinant that can remarkably reduce poverty in the ASEAN, whereas international trade also has a positive significant effect, but the effect of trade on welfare is lower than *FDI*.

In the last two columns, the model is estimated by using the *Newey-West method* in terms of the impact of *FDIGDP* on welfare with the absence of *TRADE* and the impact of *TRADE* on welfare without *FDIGDP*. As can be seen from the columns (8) and (9), *FDIGDP* has a positive impact on welfare at 5 percent of significance level. Similarly, the effect of *TRADE* on *HDI* is significant at 1 percent level but much lower than *FDIGDP*. Therefore, *FDI inflows* become a significant factor contributing to economic development as well as welfare improvement in the ASEAN countries.

In terms of the effects of some control variables on welfare, the impact of *GOVEXP* is insignificant and negative in some cases. *INTER* plays an important role in economic development, but this factor has a negative impact on welfare in this model and statistically significant at 1 percent level. The impacts of the official exchange rate, education, and inflation on welfare are low and not statistically significant in this model even it is expected that *ER* and *EDU* would have a high impact on the improvement of welfare.

To capture the impact of the GFC during 2008-2009 on welfare, the dummy is added to the model for the years 2008 and 2009. The GFC could negatively affect the economies around the world. The poor would be affected due to increases in the price of basic goods and services. With the time dummy, the intercepts of the model will be different among the period without crisis and period including a shock of the financial crisis. As can be seen from table 5,

column (5) depicts the effect of *FDI inflows* and trade on poverty reduction in the case of controlling for all variables. The financial crisis has a negative effect on welfare in 2008 in terms of *FDIGDP* variable. The effect of trade on welfare during the crisis is positive. However, these impacts of inward *FDI* and trade on poverty reduction are insignificant. Interestingly, *HDI* or welfare improvement increases over the period at 1 percent significance level.

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Table 5: Panel regression results for the impact of globalization on HDI

| <i>HDI</i>           | (1)                 | (2)                 | (3)                 | (4)                 | (5)                   | (6)                   | (7)                   | (8)                  | (9)                   |
|----------------------|---------------------|---------------------|---------------------|---------------------|-----------------------|-----------------------|-----------------------|----------------------|-----------------------|
| <i>INTERCEPT</i>     | 0.600***<br>(0.006) | 0.575***<br>(0.012) | 0.574***<br>(0.012) | 0.56***<br>(0.015)  | 0.588***<br>(0.032)   | 0.591***<br>(0.031)   | 0.595***<br>(0.031)   | 0.421***<br>(0.064)  | 0.292***<br>(0.071)   |
| <i>FDIGDP</i>        | 0.134**<br>(0.059)  |                     | 0.134**<br>(0.05)   | 0.136**<br>(0.049)  | 0.111***<br>(0.028)   | 0.115***<br>(0.033)   |                       | 0.271**<br>(0.138)   |                       |
| <i>FDIy2008</i>      | 0.105<br>(0.082)    |                     | -0.024<br>(0.083)   | -0.069<br>(0.123)   | -0.092<br>(0.078)     | 0.082<br>(0.077)      |                       | 0.205<br>(0.249)     |                       |
| <i>FDIy2009</i>      | 0.083**<br>(0.034)  |                     | 0.05<br>(0.08)      | 0.07<br>(0.108)     | -0.009<br>(0.071)     | 0.075***<br>(0.023)   |                       | 0.154<br>(0.225)     |                       |
| <i>TRADE</i>         |                     | 0.023**<br>(0.009)  | 0.02**<br>(0.009)   | 0.017*<br>(0.008)   | 0.021**<br>(0.007)    |                       | 0.025***<br>(0.006)   |                      | 0.051***<br>(0.013)   |
| <i>TRADEy2008</i>    |                     | -0.0003<br>(0.001)  | 0.003<br>(0.003)    | 0.004<br>(0.004)    | 0.004<br>(0.003)      |                       | -0.001<br>(0.001)     |                      | -0.0001<br>(0.007)    |
| <i>TRADEy2009</i>    |                     | 0.002***<br>(0.001) | 0.003<br>(0.003)    | 0.002<br>(0.004)    | 0.004<br>(0.003)      |                       | 0.003***<br>(0.001)   |                      | 0.007<br>(0.007)      |
| <i>ER</i>            |                     |                     |                     |                     | 3.48e-07<br>(0.000)   | 2.02e-06<br>(0.000)   | -1.84e-07<br>(0.000)  | 2.41e-06*<br>(0.000) | 3.38e-06**<br>(0.000) |
| <i>EDU</i>           |                     |                     |                     |                     | -0.054<br>(0.12)      | 0.014<br>(0.122)      | -0.081<br>(0.114)     | 0.397**<br>(0.208)   | 0.571***<br>(0.19)    |
| <i>GOVEXP</i>        |                     |                     |                     | 0.001<br>(0.001)    | -0.0001<br>(0.001)    | 0.0002<br>(0.0006)    | -0.0003<br>(0.001)    | 0.007***<br>(0.002)  | 0.009***<br>(0.002)   |
| <i>INF</i>           |                     |                     |                     | 0.0003<br>(0.0003)  | 0.0002<br>(0.0001)    | 0.0002*<br>(0.0001)   | 0.0002*<br>(0.0001)   | -0.001<br>(0.001)    | 0.0004<br>(0.001)     |
| <i>INTER</i>         |                     |                     |                     |                     | -0.001***<br>(0.0002) | -0.001***<br>(0.0002) | -0.001***<br>(0.0002) | 0.005***<br>(0.0003) | 0.003***<br>(0.0005)  |
| <i>TimeTrend</i>     | 0.007***<br>(0.001) | 0.007***<br>(0.001) | 0.007***<br>(0.001) | 0.006***<br>(0.001) | 0.009***<br>(0.001)   | 0.009***<br>(0.001)   | 0.01***<br>(0.001)    | -0.005***<br>(0.002) | -0.002<br>(0.002)     |
| <i>No Obs.</i>       | 160                 | 160                 | 160                 | 160                 | 160                   | 160                   | 160                   | 160                  | 160                   |
| <i>F – Stat</i>      | 32.82               | 37.39               | 35.76               | 1229.25             | 216.55                | 546.83                | 111.42                | 53.48                | 62.39                 |
| <i>R<sup>2</sup></i> | 0.8946              | 0.8994              | 0.9062              | 0.9124              | 0.9496                | 0.9382                | 0.9457                |                      |                       |

Notes: To account for heteroscedasticity and autocorrelations, we use *robust standard error* method to run fixed effect models in the columns from (1) to (7). The two last columns (8, 9) use the *Newey-West robust method*. Standard errors are in parentheses. \*\*\*1% significance level, \*\*5% significance level, \*10% significance level.

Source:

Author

estimation.

With the same panel and regression, GDP per capita is applied as a dependent variable to measure welfare. Table 6 indicates the panel regression results which reflect the impact of globalization on GDP per capita. The regressions are estimated with and without control variables as well as controlling for the impact of the global financial crisis through the time dummy. In terms of using only time trend as a control variable (columns (1) and (2)), *FDIGDP* and *TRADE* have a positive effect on *PGDP* at 1 percent significance level. From column (3) to (5), the regression is estimated with control variables. The impact of *FDIGDP* on *PGDP* is positive and statistically significant at the 5 percent level, whereas the impact of *TRADE* becomes insignificant. In columns (6) and (8), the model regress with control variables without *TRADE*, the effect of *FDIGDP* on GDP per capita remains positive and statistically significant at 1 percent and 5 percent level for two different methods. The model is estimated without *FDIGDP* in columns (7) and (9) to measure the impact of international trade on poverty reduction. The results show that the impact of *TRADE* on welfare is statistically positive. However, this impact is negative and significant at 1 percent level in the years of the crisis. These results state an increase in *FDI to GDP ratio* and a high degree of openness in ASEAN would lead to an increase in GDP per capita, therefore poverty will be improved. Moreover, the crisis negatively affected welfare improvement in the ASEAN.

Regarding the impacts of some control variables on GDP per capita, the *ER*, *EDU*, and *INF* have statistically positive effects on *PGDP* but they are insignificant. From the columns (5) to (7), the model is estimated with *robust standard errors method*. The results show the effects of government spending and infrastructure system are negative but insignificant and the effects are not as the same as the expectation of these variables on welfare improvement. Nonetheless, in columns (8) and (9), the effect of *GOVEXP* and *INTER* are positive and significant at the 1 percent level under the *Newey – West standard error method*. As a result, government spending and improvement of infrastructure system not only increases the *HDI* but also leads to an increase in GDP per capita. Thus, an increase in government expenditure and infrastructure improvement could significantly contribute to poverty reduction in the region.

In brief, the impact of FDI inflows and international trade on welfare are positive and significant, but their impacts on poverty reduction are negative during the crisis. When the inward FDI to GDP ratio increases by one unit holding others constant, the *HDI* increases by over 0.1 unit. For GDP per capita, when *FDIGDP* rises by 1 percent, the GDP per capita increases by around 0.05 percent. *TRADE*, on the other hand, the impact is much lower in terms of *HDI* only 0.02 unit, and larger in terms of *PGDP* about 0.08 percent.

Table 6: Panel regression results for the impact of globalization on *PGDP*

| <i>logPGDP</i>       | (1)                  | (2)                  | (3)                  | (4)                  | (5)                  | (6)                  | (7)                  | (8)                  | (9)                  |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <i>INTERCEPT</i>     | 7.255***<br>(0.118)  | 7.039***<br>(0.083)  | 7.256***<br>(0.115)  | 6.989***<br>(0.17)   | 7.819***<br>(1.393)  | 8.009***<br>(0.018)  | 7.946***<br>(1.453)  | 8.496***<br>(0.695)  | 6.78***<br>(0.612)   |
| <i>logFDIGDP</i>     | 0.068***<br>(0.021)  |                      | 0.058**<br>(0.024)   | 0.055**<br>(0.021)   | 0.045**<br>(0.019)   | 0.05**<br>(0.018)    |                      | 0.197***<br>(0.072)  |                      |
| <i>logFDIy2008</i>   | -0.042***<br>(0.006) |                      | -0.039***<br>(0.007) | -0.042***<br>(0.01)  | -0.035**<br>(0.013)  | -0.038***<br>(0.011) |                      | -0.131***<br>(0.054) |                      |
| <i>logFDIy2009</i>   | -0.013*<br>(0.008)   |                      | -0.008<br>(0.011)    | -0.008<br>(0.014)    | -0.002<br>(0.016)    | -0.008<br>(0.010)    |                      | -0.045<br>(0.052)    |                      |
| <i>logTRADE</i>      |                      | 0.088***<br>(0.019)  | 0.085***<br>(0.017)  | 0.053<br>(0.046)     | -0.008<br>(0.135)    |                      | 0.046<br>(0.131)     |                      | 0.407***<br>(0.069)  |
| <i>logTRADEy2008</i> |                      | -0.065***<br>(0.006) | -0.046***<br>(0.003) | -0.049***<br>(0.009) | -0.027*<br>(0.016)   |                      | -0.046***<br>(0.012) |                      | -0.154***<br>(0.065) |
| <i>logTRADEy2009</i> |                      | -0.08***<br>(0.007)  | -0.072***<br>(0.008) | -0.075***<br>(0.014) | -0.052***<br>(0.017) |                      | -0.06**<br>(0.022)   |                      | -0.19***<br>(0.070)  |
| <i>logER</i>         |                      |                      |                      |                      | 0.079<br>(0.129)     | 0.066*<br>(0.036)    | 0.033<br>(0.131)     | 0.014<br>(0.037)     | -0.129***<br>(0.033) |
| <i>logEDU</i>        |                      |                      |                      |                      | 0.637<br>(0.643)     | 0.673<br>(0.620)     | 0.653<br>(0.666)     | 1.161***<br>(0.385)  | -0.001<br>(0.339)    |
| <i>GOVEXP</i>        |                      |                      |                      | 0.02<br>(0.015)      | -0.0002<br>(0.019)   | -0.004<br>(0.020)    | -0.004<br>(0.020)    | 0.083***<br>(0.021)  | 0.071***<br>(0.019)  |
| <i>INF</i>           |                      |                      |                      | 0.002<br>(0.007)     | 0.002<br>(0.006)     | 0.001<br>(0.007)     | 0.003<br>(0.005)     | -0.01<br>(0.013)     | 0.015*<br>(0.008)    |
| <i>INTER</i>         |                      |                      |                      |                      | -0.01*<br>(0.006)    | -0.01<br>(0.006)     | -0.011*<br>(0.006)   | 0.054***<br>(0.005)  | 0.027***<br>(0.005)  |
| <i>TimeTrend</i>     | 0.101***<br>(0.01)   | 0.102***<br>(0.009)  | 0.099***<br>(0.009)  | 0.098***<br>(0.007)  | 0.123***<br>(0.016)  | 0.125***<br>(0.017)  | 0.13***<br>(0.016)   | -0.043**<br>(0.019)  | 0.034**<br>(0.016)   |
| <i>No Obs.</i>       | 160                  | 160                  | 160                  | 160                  | 160                  | 160                  | 160                  | 160                  | 160                  |
| <i>F – Stat</i>      | 53.34                | 1171.34              | 15647.31             | 5.29e+06             | 117.91               | 510.92               | 2595.45              | 50.93                | 78.24                |
| <i>R<sup>2</sup></i> | 0.8754               | 0.8805               | 0.8887               | 0.8919               | 0.9111               | 0.9084               | 0.9061               |                      |                      |

*Notes:* To account for heteroscedasticity and autocorrelations, we use robust standard error method to run fixed effect models in the columns from 1 to 7. The two last columns (8, 9) use the Newey-West robust method. Standard errors are in parentheses. \*\*\*1% significance level, \*\*5% significance level, \*10% significance level.



Source:

Author

estimation.

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#### **4.3. The impact of globalization on welfare across income groups**

To address the second research question, what is the impact of globalization on welfare across different income groups in ASEAN? Using lower-middle income group countries and upper-middle income countries as dummy variables is a way to capture the differences in the impact of inward FDI and trade on welfare across countries. The results are estimated by the *robust standard error method* and the *Newey-West method* with and without control variables. Similarly, using time dummy as a control variable in this model to capture the impact of the GFC on poverty reduction. Firstly, the impacts of FDI inflows and international trade on welfare using *HDI* as the dependent variable are presented in table 7.

Table 7 presents the regression results for ASEAN across income groups. The impact of *FDIGDP* on *HDI* is positive and statistically significant at 5 percent and 10 percent level. From the columns (1) to (4), the impact of FDI inflows on welfare in lower-middle income countries is greater than that of richer countries. However, the effect of inward FDI in poorer countries is smaller than that of richer countries, but it is insignificant (column (5)). Consequently, FDI inflows play a significant role in promoting economic growth and contribute to poverty reduction in poorer countries in comparison with richer countries in the ASEAN. In terms of *TRADE* variable, the impact of trade on welfare in poorer countries is larger and more statistically significant than that of upper-middle-income countries. As can be seen from column (5), with the presence of the GFC, inward FDI has a negative effect on *HDI* in upper-middle income countries, but the impact is positive in a lower-middle income group. Regarding trade, the impact of trade on welfare is the opposite, which is negative in poorer countries, but positive in richer countries. Thus, the financial crisis of 2008-2009 indirectly led to some negative effects on welfare across the ASEAN through its impact on inward FDI and international trade.

The effects of control variables such as official exchange rate, education, government spending, and the number of the Internet users on welfare are negative and insignificant in the columns (5) to (7). Nevertheless, these impacts become positive and significant at 1 percent significant level in the model estimated for *FDIGDP* and *TRADE* separately (column (8) and (9)). Thus, government spending and improvement of infrastructure play important roles in reducing poverty through fiscal policies supporting the poor and facilitating living conditions. The results also show that *HDI* increases over time. It can be concluded that the ASEAN had achieved some improvements in poverty reduction over the period due to increasing globalization and implementation of each country's economic policy.

Table 7: Panel regression results for the impact of globalization on *HDI* across income groups

| <i>HDI</i>                     | (1)                 | (2)                 | (3)                 | (4)                 | (5)                  | (6)                 | (7)                  | (8)                  | (9)                 |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|----------------------|---------------------|----------------------|----------------------|---------------------|
| <i>INTERCEPT</i>               | 0.599***<br>(0.005) | 0.578***<br>(0.012) | 0.581***<br>(0.010) | 0.567***<br>(0.012) | 0.589***<br>(0.026)  | 0.589***<br>(0.032) | 0.596***<br>(0.026)  | 0.376***<br>(0.060)  | 0.294***<br>(0.070) |
| <i>FDI<sub>LMIC</sub></i>      | 0.334**<br>(0.117)  |                     | 0.243*<br>(0.134)   | 0.217*<br>(0.123)   | 0.051<br>(0.077)     | 0.203**<br>(0.074)  |                      | -1.011***<br>(0.356) |                     |
| <i>FDI<sub>UMIC</sub></i>      | 0.079<br>(0.069)    |                     | 0.089<br>(0.079)    | 0.107*<br>(0.059)   | 0.148***<br>(0.034)  | 0.136**<br>(0.048)  |                      | 0.699***<br>(0.159)  |                     |
| <i>FDI<sub>LMIC</sub>y2008</i> | -0.021<br>(0.067)   |                     | -0.011<br>(0.203)   | 0.035<br>(0.251)    | 0.195**<br>(0.071)   | -0.029<br>(0.039)   |                      | 0.601*<br>(0.362)    |                     |
| <i>FDI<sub>LMIC</sub>y2009</i> | 0.034<br>(0.069)    |                     | 0.09<br>(0.209)     | 0.221<br>(0.207)    | 0.239*<br>(0.115)    | 0.005<br>(0.025)    |                      | 0.153<br>(0.481)     |                     |
| <i>FDI<sub>UMIC</sub>y2008</i> | 0.212<br>(0.190)    |                     | -0.629<br>(0.682)   | -0.861<br>(0.581)   | -1.207***<br>(0.372) | 0.36*<br>(0.205)    |                      | 1.238**<br>(0.511)   |                     |
| <i>FDI<sub>UMIC</sub>y2009</i> | 0.075<br>(0.060)    |                     | 0.032<br>(0.063)    | -0.003<br>(0.063)   | -0.027<br>(0.068)    | 0.132***<br>(0.035) |                      | 0.195***<br>(0.144)  |                     |
| <i>TRADE<sub>LMIC</sub></i>    |                     | 0.036**<br>(0.015)  | 0.028*<br>(0.014)   | 0.024*<br>(0.014)   | 0.043***<br>(0.009)  |                     | 0.048***<br>(0.007)  |                      | -0.001<br>(0.025)   |
| <i>TRADE<sub>UMIC</sub></i>    |                     | 0.012<br>(0.010)    | 0.007<br>(0.010)    | 0.008**<br>(0.011)  | 0.006<br>(0.005)     |                     | 0.010**<br>(0.004)   |                      | 0.057***<br>(0.013) |
| <i>TRADE<sub>L</sub>y2008</i>  |                     | 0.003<br>(0.003)    | -0.0003<br>(0.011)  | -0.004<br>(0.013)   | -0.15***<br>(0.004)  |                     | -0.004*<br>(0.003)   |                      | 0.022<br>(0.023)    |
| <i>TRADE<sub>L</sub>y2009</i>  |                     | 0.007*<br>(0.004)   | 0.0007<br>(0.011)   | -0.006<br>(0.012)   | -0.009*<br>(0.006)   |                     | 0.003*<br>(0.002)    |                      | 0.018<br>(0.025)    |
| <i>TRADE<sub>U</sub>y2008</i>  |                     | 0.0002<br>(0.001)   | 0.013<br>(0.014)    | 0.017<br>(0.011)    | 0.024***<br>(0.007)  |                     | 0.001**<br>(0.0005)  |                      | -0.005<br>(0.006)   |
| <i>TRADE<sub>U</sub>y2009</i>  |                     | 0.001*<br>(0.0006)  | 0.002<br>(0.002)    | 0.004*<br>(0.002)   | 0.006**<br>(0.003)   |                     | 0.002***<br>(0.0007) |                      | 0.003<br>(0.007)    |
| <i>ER</i>                      |                     |                     |                     |                     | -5.13e-07            | 1.99e-06            | -1.24e-06            | 5.57e-06***          | 6.10e-06***         |

|                      |                      |                      |                      |                      |                       |                       |                       |                      |                      |
|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|----------------------|----------------------|
|                      |                      |                      |                      |                      | (0.000)               | (0.000)               | (0.000)               | (0.000)              | (0.000)              |
| <i>EDU</i>           |                      |                      |                      |                      | -0.017<br>(0.096)     | 0.017<br>(0.132)      | -0.031<br>(0.096)     | 0.601*<br>(0.362)    | 0.719***<br>(0.205)  |
| <i>GOVEXP</i>        |                      |                      |                      | 0.001<br>(0.001)     | -0.0004<br>(0.0006)   | 0.0002<br>(0.0005)    | -0.001<br>(0.0007)    | 0.006***<br>(0.002)  | 0.007***<br>(0.002)  |
| <i>INF</i>           |                      |                      |                      | 0.0003<br>(0.0003)   | 0.0002*<br>(0.0001)   | 0.0002<br>(0.0001)    | 0.0002<br>(0.0001)    | -0.001<br>(0.001)    | -8.35e-06<br>(0.001) |
| <i>INTER</i>         |                      |                      |                      |                      | -0.001***<br>(0.0001) | -0.001***<br>(0.0002) | -0.001***<br>(0.0002) | 0.003***<br>(0.0004) | 0.003***<br>(0.0005) |
| <i>TimeTrend</i>     | 0.006***<br>(0.0007) | 0.007***<br>(0.0007) | 0.006***<br>(0.0006) | 0.006***<br>(0.0006) | 0.01***<br>(0.0007)   | 0.009***<br>(0.001)   | 0.01***<br>(0.0007)   | -0.001<br>(0.002)    | -0.0003<br>(0.002)   |
| <i>No Obs.</i>       | 160                  | 160                  | 160                  | 160                  | 160                   | 160                   | 160                   | 160                  | 160                  |
| <i>F – Stat</i>      | 131.32               | 282.46               | 109.30               | 98.63                | 170.02                | 187.50                | 233.40                | 72.16                | 48.37                |
| <i>R<sup>2</sup></i> | 0.9026               | 0.9035               | 0.9121               | 0.9164               | 0.9587                | 0.9422                | 0.9530                |                      |                      |

Notes: To account for heteroscedasticity and autocorrelations, we use robust standard error method to run fixed effect models in the columns from 1 to 7. The two last columns (8, 9) use the Newey-West robust method. Standard errors are in parentheses. \*\*\*1% significance level, \*\*5% significance level, \*10% significance level.

Source: Author estimation.

Table 8: Panel regression results for the impact of globalization on *PGDP* across income groups

| <i>logPGDP</i>                 | (1)                 | (2)                 | (3)                  | (4)                 | (5)                 | (6)                 | (7)                 | (8)                  | (9)                 |
|--------------------------------|---------------------|---------------------|----------------------|---------------------|---------------------|---------------------|---------------------|----------------------|---------------------|
| <i>INTERCEPT</i>               | 6.975***<br>(0.073) | 6.532***<br>(0.188) | 6.558***<br>(0.192)  | 6.363***<br>(0.181) | 7.743***<br>(0.819) | 8.043***<br>(1.021) | 7.859***<br>(0.834) | 7.938***<br>(0.569)  | 7.293***<br>(0.674) |
| <i>FDI<sub>LMIC</sub></i>      | 3.125*<br>(1.897)   |                     | 1.561<br>(2.069)     | 1.289<br>(1.696)    | 0.032<br>(1.464)    | 1.859<br>(1.550)    |                     | -5.276*<br>(3.336)   |                     |
| <i>FDI<sub>UMIC</sub></i>      | -0.499<br>(0.664)   |                     | -1.225*<br>(0.764)   | -0.827<br>(0.686)   | -0.373<br>(0.634)   | 0.033<br>(0.611)    |                     | 10.198***<br>(1.569) |                     |
| <i>FDI<sub>LMIC</sub>y2008</i> | 1.253<br>(1.073)    |                     | 1.928<br>(4.874)     | 2.668<br>(5.721)    | 4.508<br>(3.373)    | 1.549<br>(1.328)    |                     | 6.586**<br>(2.907)   |                     |
| <i>FDI<sub>LMIC</sub>y2009</i> | 1.407<br>(1.079)    |                     | 5.383<br>(4.428)     | 6.738*<br>(3.816)   | 7.37***<br>(2.528)  | 1.619**<br>(0.726)  |                     | 4.537<br>(3.839)     |                     |
| <i>FDI<sub>UMIC</sub>y2008</i> | 1.617<br>(2.469)    |                     | 26.241**<br>(11.715) | 23.742*<br>(13.636) | 16.852<br>(12.077)  | 3.201<br>(1.953)    |                     | 18.576***<br>(6.434) |                     |
| <i>FDI<sub>UMIC</sub>y2009</i> | -1.342*<br>(0.594)  |                     | 0.243<br>(0.368)     | 0.201<br>(1.453)    | 0.226<br>(1.057)    | -0.51<br>(0.514)    |                     | 6.562***<br>(1.415)  |                     |
| <i>TRADE<sub>LMIC</sub></i>    |                     | 0.394**<br>(0.139)  | 0.331*<br>(0.163)    | 0.255**<br>(0.119)  | 0.415*<br>(0.252)   |                     | 0.457*<br>(0.245)   |                      | 0.264<br>(0.236)    |
| <i>TRADE<sub>UMIC</sub></i>    |                     | 0.336***<br>(0.116) | 0.355**<br>(0.128)   | 0.35**<br>(0.124)   | 0.247***<br>(0.079) |                     | 0.228***<br>(0.064) |                      | 0.792***<br>(0.121) |
| <i>TRADE<sub>L</sub>y2008</i>  |                     | 0.096***<br>(0.020) | -0.03<br>(0.259)     | -0.073<br>(0.282)   | -0.181<br>(0.166)   |                     | 0.063*<br>(0.035)   |                      | 0.23<br>(0.175)     |
| <i>TRADE<sub>L</sub>y2009</i>  |                     | 0.093***<br>(0.023) | -0.185<br>(0.202)    | -0.261<br>(0.186)   | -0.294**<br>(0.118) |                     | 0.07<br>(0.072)     |                      | 0.293*<br>(0.176)   |
| <i>TRADE<sub>U</sub>y2008</i>  |                     | -0.008<br>(0.029)   | -0.443**<br>(0.207)  | -0.389*<br>(0.236)  | -0.25<br>(0.202)    |                     | 0.021<br>(0.027)    |                      | -0.049<br>(0.082)   |
| <i>TRADE<sub>U</sub>y2009</i>  |                     | -0.026*<br>(0.014)  | -0.053**<br>(0.024)  | -0.043<br>(0.056)   | -0.024<br>(0.037)   |                     | -0.012<br>(0.013)   |                      | 0.013<br>(0.082)    |
| <i>logER</i>                   |                     |                     |                      |                     | 0.033               | 0.068*              | 0.023               | 0.073**              | 0.07*               |

|                      |                     |                     |                     |                     |                     |                     |                     |                     |                     |
|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                      |                     |                     |                     |                     | (0.045)             | (0.037)             | (0.041)             | (0.038)             | (0.038)             |
| <i>logEDU</i>        |                     |                     |                     |                     | 0.756<br>(0.489)    | 0.814<br>(0.593)    | 0.802*<br>(0.491)   | 1.688***<br>(0.362) | 1.753***<br>(0.346) |
| <i>GOVEXP</i>        |                     |                     |                     | 0.019*<br>(0.01)    | -0.006<br>(0.020)   | -0.007<br>(0.021)   | -0.006<br>(0.021)   | 0.096***<br>(0.023) | 0.105***<br>(0.026) |
| <i>INF</i>           |                     |                     |                     | 0.002<br>(0.008)    | 0.001<br>(0.006)    | 0.001<br>(0.007)    | 0.001<br>(0.007)    | -0.001<br>(0.011)   | 0.009<br>(0.009)    |
| <i>INTER</i>         |                     |                     |                     |                     | -0.013**<br>(0.006) | -0.011*<br>(0.006)  | -0.013**<br>(0.006) | 0.041***<br>(0.005) | 0.032***<br>(0.005) |
| <i>TimeTrend</i>     | 0.101***<br>(0.011) | 0.105***<br>(0.010) | 0.104***<br>(0.011) | 0.103***<br>(0.008) | 0.135***<br>(0.017) | 0.126***<br>(0.018) | 0.135***<br>(0.017) | -0.001<br>(0.019)   | 0.027*<br>(0.017)   |
| <i>No Obs.</i>       | 160                 | 160                 | 160                 | 160                 | 160                 | 160                 | 160                 | 160                 | 160                 |
| <i>F – Stat</i>      | 206.82              | 115.88              | 83.27               | 74.13               | 82.12               | 112.74              | 122.95              | 171.95              | 80.85               |
| <i>R<sup>2</sup></i> | 0.8748              | 0.8822              | 0.8877              | 0.8917              | 0.9180              | 0.9074              | 0.9145              |                     |                     |

*Notes:* To account for heteroscedasticity and autocorrelations, we use robust standard error method to run fixed effect models in the columns from 1 to 7. The two last columns (8, 9) use the Newey-West robust method. Standard errors are in parentheses. \*\*\*1% significance level, \*\*5% significance level, \*10% significance level.

Source:

Author

estimation.

In terms of applying GDP per capita to measure welfare improvement, table 8 shows the panel regression results for the impact of globalization on poverty reduction across income group countries. The effect of *FDIGDP* on welfare is positive in the lower-middle income group, whereas the impact of this factor is negative in richer countries. However, the impacts of inward FDI on welfare in both groups are insignificant. With the presence of the financial crisis in 2008-2009, the effects of FDI inflows on welfare remain positive. Therefore, inward FDI could create more employment, improve productivity and local labour's skills, then it could be a crucial determinant to increase GDP per capita in ASEAN countries. In some cases, investments of FDI inflows in richer countries are more efficient than those of poorer countries, then they can contribute more to economic development.

For the impact of international trade, this factor has a positive and significant impact on GDP per capita at 1%, 5%, and 10% significance level (columns (2), (3), (4), (5) and (7)). The impacts are almost the same in both income groups. Thus, it can be argued that international trade has been an important factor in improving economic development as well as welfare improvement in the ASEAN over the period. However, through the impact of trade, the global financial crisis has a diverse impact on welfare. The results indicate that the coefficients of the interaction of trade and time dummy have both positive and negative signs in the model.

Regarding the impacts of control variables, the exchange rate and education have a positive impact on welfare at a 10% significance level (columns (6) and (7)). In addition, depreciation of domestic currency against foreign currency could promote exports of goods and services and they can contribute more to economic development. Similarly, a higher level of the qualified educated population could improve welfare. Government spending and improvement of infrastructure system have a negative impact on poverty reduction (columns (5), (6), and (7)). These effects are opposite to the expectation of fiscal policy and better infrastructure system in developing the economy. Nonetheless, they have a positive and significant impact on welfare at a 1% significance level (columns (8) and (9)). In addition, it is witnessed that GDP per capita also increases over the period in this model.

## 5. Conclusion and policy recommendations

This paper examines the globalization-poverty reduction nexus through the impact of FDI inflows and international trade on welfare across the ASEAN countries. The main focuses of this study are the impacts of inward FDI and international trade on poverty reduction in the ASEAN. The paper applies *HDI* and *GDP* per capita as dependent variables to measure the improvement of welfare in the contexts of other control variables derived from globalization.



To investigate the effects of inward FDI and international trade on welfare, the paper uses the fixed effects method to estimate the panel regression models. The models also apply time dummy as a variable to control the effect of the global financial crisis over the period.

On the basis, the findings of the paper demonstrate that there is a strong positive relationship between globalization in terms of FDI inflows and international trade and welfare improvement in the ASEAN as a whole, and across income group countries. The impact of inward FDI on poverty is greater in lower-middle income group than that of upper-middle income group country. This means that the poorer countries benefit more from FDI inflows than the richer countries. The results of the regressions depict the statistically significant impact of FDI inflows on welfare at 1% and 5% significance level before and after controlling for the official exchange rate, education, government spending, macroeconomic instability, the number of the Internet users, time dummy for the global financial crisis, and time trend. The study found that international trade has a lower impact on poverty reduction compared to FDI inflows. Moreover, during the global financial crisis, the impact of inward FDI and trade on welfare are diverse. This means that the crisis has some impacts on poverty reduction which could be negative and positive across the ASEAN countries. Furthermore, welfare improvement has increased over the period. This means that human development and living conditions have been significantly improved in the last decade.

Three main policy recommendations can be drawn from the empirical results. Firstly, a recommendation on FDI policy should be made. The ASEAN countries should continue to create appropriate incentives in order to attract more FDI from foreign countries. A higher level of FDI inflows with efficient investment would lead to higher level of welfare improvement due to the transfer of capital, advanced technologies, management skills, and other benefits from inward FDI to the host countries. These investments could create more employment, develop skills of local labours, promote technological progress, and thus improve welfare in the whole ASEAN region. The FDI policies should aim at regional development, the most productive sectors of the economy, and encourage FDI into labour intensive and pro-poor sectors such as agriculture, education, and infrastructure development. Secondly, some studies also confirm that the economy would benefit from trade due to the expansion of the markets and the availability of products from international trade. Thus, the ASEAN countries should form appropriate trade policies so as to expand the markets for the production of the economy as well as promote exports to the developed countries' market. Finally, the ASEAN countries should accelerate the implementation of investment liberalization agreements and other economic treaties internally and externally, and the

expansion of economic integration to the external regions. This policy not only moves up the regional value chain in the ASEAN but also stimulates FDI inflows and the degree of openness to trade so as to increase welfare improvement. Of course, macroeconomic stability, the high quality of education, adequate infrastructure system should be taken into account to generate attractive business environments to attract more inward FDI and stimulate international trade.

For this paper, due to the data limitations, the impact of globalization in terms of FDI inflows and international trade on welfare is not investigated clearly. In addition, globalization not only results in some benefits but also generate some disadvantages such as inequality. Hence, the globalization-poverty reduction nexus related to inequality in the case of the ASEAN countries have not investigated in this paper. This interesting and important issue will be assessed in the future research.

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