

FDI and social welfare: evidence from 13 Asian low-middle income countries

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Abstract--- *The paper uses a two-step generalized method of moments (SGMM) to examine the impact of foreign direct investment (FDI) flows on social welfare in 13 Asian middle-income countries from 2000 to 2018. The empirical results show that the uneven distribution in the relationship between FDI and human development index (HDI) among countries. In particular, attracting high FDI inflows does not guarantee a positive impact on the country's HDI. Furthermore, the study provides evidence of an inverse relationship between FDI and growth in social welfare, measured through the HDI. Additionally, FDI attraction, although having a negative impact on the education, income and health indexes in these Asian countries but the results are not statistically significant.*

Keywords--- *Human development, FDI, health index, income index and education index.*

I. INTRODUCTION

Over the past years, the flow of foreign direct investment (FDI) into Asian low-middle income countries has rapidly changed, contributing to creating favorable conditions for economic growth and development. From 1995 to 2018, FDI into these economies increased from 51 billion USD to 142 billion USD (UNCTAD, 2019). FDI has always been considered as an important contributor to economic growth during this period. However, influenced by the world economic crisis in 2008, FDI growth has slowed considerably in the period 2008-2010, especially in 2009 witnessed 28% of the decline in FDI inflows (UNCTAD, 2017) compared to the previous year, FDI is still an important engine to the economic growth of Asian low-middle income countries.

Birdsall et al. (2010) pointed out that internationalization pressures developing countries to create favorable conditions for FDI inflows to Asian countries. Earlier, Rodrick (2006) also mentioned the inclusion of measures to enhance the attraction of investment capital in the Washington agreement in the process of economic policy making in developing countries. Numerous studies identify FDI that promote economic growth (Li & Liu, 2005; Zang, 2001; De Mello, 1999; Borensztein et al., 1998; or Mallampally & Sauvart, 1999), and FDI is considered as the main factor that promotes the transfer of resources from developed countries to developing countries. However, the ultimate goal of each economy is still to develop its people comprehensively while increasing FDI attraction does not mean improving human conditions. The Nobel Sen-winning economist (1995 and 1998) indicated that the development of an economy depends on many social and economic conditions. Therefore, the target of economic growth is not enough to measure the level of human development or social welfare.

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Whether or not FDI contributes to the promotion of human development in low-middle income economies in Asia is an issue that needs to be answered. Although some studies assessed the impact of FDI on human development index (HDI) but the conclusions about their impact are still conflicting. Specifically, while Reiter & Steensma (2010) and Lehnert et al. (2013) found out that FDI has significant implications for HDI. Basu & Azmat (2004) suggested that although FDI has a positive effect to HDI but not statistically significant. More specifically, the study of Bende-Nabendem et al. (2003) proved that FDI has a negative impact on human development in some developing countries such as the Philippines and Thailand. In addition, there are few studies regarding their relationship in Asian countries.

This study was conducted for 13 Asian low-middle income countries in the period 2000-2018 based on panel data combined with “Dynamic Panel- GMM estimators” method. Social welfare is measured through the HDI. This is the most common indicator of social welfare (Sen, 1999; UNDP, 1990). The main objective of the study is to investigate the role of FDI in social welfare, measured by HDI. Simultaneously, the research focuses on explaining and analyzing the impact of FDI on social welfare through their spillover effects and specific components of human development index including education, health and income indicators.

II. LITERATURE REVIEW

The role of FDI in economic development is expressed from the perspectives of neoclassical economists to recent studies. FDI from developed countries is considered as an integral factor for economic growth in developing countries. Studies by Todaro (1989), Vernon (1966) and Reiter & Steensma (2010) suggested that developing countries benefit directly from FDI through the diversification of capital flows, increased tax revenue and job creation. Besides, there are also arguments that the penetration and competition of foreign enterprises will boost the production efficiency of domestic enterprises. FDI is seen as an important factor in technology transfer to local businesses, while promoting their competitiveness, which has a positive impact on economic growth. Therefore, high competition is considered to be the source of productivity improvement in local businesses and economic growth in the host countries (Agosin & Machado, 2005 and Al-Sadig, 2013). However, Borensztein et al. (1998) pointed out that FDI has a positive contribution to changes in enterprise structure (through the impact on domestic investment and increase of labor productivity) regardless of whether or not human resources, income levels and geography.

The role of FDI is also expressed through the promotion of improving the quality of human resources in the host countries. The spillover effect of FDI leads to an increase in the demand for highly skilled labor due to the technology spillover. This has long-term benefits for human development, especially in developing countries. Feenstra & Hanson (1997) conducted analytical research on manufacturing industries in Mexico between 1975 and 1988, confirming that FDI played a significant role in the increase in skilled labor. Moreover, FDI growth is positively correlated to the increase in the demand for high-tech workers and the increase in wages for highly-skilled workers. In addition, according to Aitken et al. (1996), foreign firms have a larger human resource formation than domestic firms in countries including Venezuela, Mexico and the United States. However, these authors suggested the opposite effect of foreign investment in increasing productivity in domestic companies. This finding showed that FDI only has a positive impact on the formation of high quality human resources in foreign enterprises, thereby enhancing the interests of foreign companies in the long term.

The fact that FDI may have a negative impact on domestic businesses will be detrimental to the economic development and social welfare of receiving countries. Foreign firms possess higher technological resources and market experience than domestic firms. Therefore, they will buy back or push local businesses to the eve of bankruptcy to gain greater benefits. Thus, raising the contribution of FDI to the nation’s socio-economic development depends largely on the maturity of the domestic market (Konings, 2001; Agosin & Mayer, 2000 and Aitken & Harrison, 1999). More specifically, in assessing the impact of FDI on domestic investment in developing countries in Asia, Africa and Latin America from 1971 to 2000, Agosin

& Mayer (2000) found that while FDI contributed to eliminating domestic investment in Latin American countries, they have a positive impact on domestic investment in Asian and African countries. The authors also pointed out that governments in Latin American countries are less interested, have no screening process, and especially do not have policies to attract companies more desirable than other countries in Asia and Africa. Therefore, Agosin & Mayer (2000) proposed that the impact of FDI is not always in the same direction on domestic investment, and policies on FDI attraction play an important role in socio-economic development in developing countries. Moreover, Reiter & Steensma (2010) asserted that FDI inflows only have a positive impact on human development when FDI policies restrict foreign investors to invest in areas which create negative impacts on domestic investors. Concurrently, the study suggested that FDI reduces human development in countries with high levels of corruption.

In 2015, Agusty and Damayanti conducted the research on the effect of foreign direct investment and official development assistance (ODA) to human development index of developing countries from 2009 to 2013. The authors found that FDI and ODA are proven to have significant effect to HDI simultaneously. FDI and ODA are proven to have positive significant effect to HDI partially with the number of R^2 reaches 99% meaning that FDI and ODA can explain strongly its variance of HDI. This research can also be useful to consider the right type of capital sources or investment that should be taken by a country in supporting development. Gökmenoğlu et al. (2018) explores the impact of foreign direct investment (FDI) on the human development index (HDI) in Nigeria for the period of 1972-2013. Johansen cointegration test results reveal a long-term relationship between FDI and human development indices (e.g., school enrollment, life expectancy at birth, and gross national income). Toda-Yamamoto test results show long-run bidirectional causality between FDI and life expectancy at birth. There is also unidirectional causality from FDI to gross national income. These results indicate that FDI has a significant impact on the HDI in Nigeria during the sample period. The striking message our empirical findings conveys is that the effect of FDI on the HDI is a complicated issue, so to obtain optimum results policy-makers should be aware of and take into account the pros and cons of FDI inflows on several aspects of human development. And most recently, Ulucak et al. (2020) tries to explore the linkage among economic globalization, real income, and human development index in Asian countries from 1990 to 2015. The advanced econometric techniques that allow dependencies across countries are employed. The panel cointegration approach, Westerlund (2007) panel cointegration test, confirms the cointegration relationship among study variables, and the study estimates long-run cointegration parameters. Results reveal that economic globalization has not a significant impact on human development. However, real income promotes human development in Asian countries. The above arguments show that the impact of FDI on economic development and social welfare in receiving countries is not really clear. The reasons for the inconsistent conclusions about the impact of FDI are: (i) A number of previous studies rely on cross-sectional data and control the difference between variables over time and characteristics of research subjects; (ii) Recent studies mainly focus on studying the relationship between FDI and economic efficiency, which limits the review of conclusions about the role of FDI in socio-economic development comprehensively (Reiter & Steensma, 2010). Our research focuses on clarifying the effect of FDI on social welfare per capita as measured by the HDI. This is the most important indicator reflecting per capita welfare in education, health and income (Sen, 1999 and UNDP, 1990). HDI allows assessing the impact of FDI on social welfare in developing countries over time.

Although there are several studies on the effects of FDI on HDI but the conclusions are still inconsistent. Basu & Azmart (2004) used a simple regression model to assess the relationship between FDI and HDI based on data on 19 middle-income countries and 15 low-income countries from 1975 to 1999 and showed that FDI does not affect HDI. In the opposite direction, HDI has the same effect as FDI in low-income countries but has no effect in middle-income countries. Reiter & Steensma (2010) used a fixed effects model (FEM) to assess the role of FDI, FDI policies and corruption indexes over HDI for the panel data of 49 countries in the period 1980-2005. The two authors concluded that FDI has a significant impact on

HDI in the context of limiting foreign direct investors to invest in a number of areas that harm domestic investors. However, Bende-Nabendem et al. (2001, 2003) demonstrated that FDI has a negative impact on economic efficiency in some economies such as Hong Kong, Japan or Taiwan, or indirectly reduces HDI. This contradiction exists because the above studies have not addressed the problems in the regression model including autocorrelation, endogenous variables in the causal relationship between FDI and HDI (Basu & Azmart, 2004). To overcome this, the paper uses the Dynamic-GMM estimator method in combination with the Arellano-Bond test for autocorrelation. This is considered as an effective method to overcome the above phenomena (Roodman, 2006).

III. METHODOLOGY

Data

The study uses data of the above variables from the World Bank and UNDP websites to investigate the relationship between FDI and HDI of 13 Asian low-middle income countries from 2000 to 2018. The data on education, health and income indicators were collected for the period 2010-2018.

Variables, model and methodology

The paper uses the HDI index released by the United Nations to measure social welfare. HDI not only reflects wealth but also presents other aspects such as the health, education, and living standards of a nation (Anand & Sen, 2000). This index is based on calculating geometric average weights to indicate relatively the social development. In this paper, the HDI and its components (health, education and income) are used as the dependent variable, which helps to compare results in different dimensions of the human development.

For explanatory variables, foreign direct investment-official capital and an important external funding source for economic development and human development, is used as the main explanatory variable. FDI compensates for domestic budget shortages for a country's development process (Lehnert et al., 2013). Another important explanatory variable is the openness of trade (exports+imports/GDP). The development of free trade agreements creates an enabling environment for economic growth, which can make an important contribution to human development (Rodrik, 1999). Additionally, the paper bases on previous studies evaluating factors affecting HDI by Basu & Azmart (2004), Reiter & Steensman (2010) together with research by Bende-Nabendem et al. (2003) to include other explanatory variables including the logarithm of the total population, inflation, and the logarithm of GDP to minimize errors in the empirical research model.

$$Y_{i,t} = \beta_0 + \beta_1 Y_{i,t-1} + \beta_2 FDI_{i,t} + \beta_3 Trade_{i,t} + \beta_4 \text{Log Population}_{i,t} + \beta_5 \text{Log GDP}_{i,t} + \beta_6 Inflation_{i,t} \\ + Nation_i + Year_t + u_{i,t} \quad (1)$$

In model (1), there are two important problems that distort the estimation coefficients, including autocorrelation and endogeneity. In particular, endogenous variables are considered as a common defect in most models using cross data. Moreover, autocorrelation is also one of the common phenomena for time series data. Therefore, to obtain the best estimates, the study used Arellano & Bond's System Generalized Method of Moments (SGMM) regression model to overcome the autocorrelation phenomenon in panel data. This method is also suitable for short-time panel data and large number of cross-observations. Concurrently, to overcome the autocorrelation phenomenon between error (u_i) and explanatory variables, the study uses lags as instrumental variables including dependent variables (Roodman, 2006). Specifically, SGMM allows past values to be used as valid instrumental variables for endogenous variables. To test the validity of these instrumental variables, the research based on Hansen-J test with the hypothesis: the instrumental variable is not correlated with the errors in the regression model. Moreover, to check for autocorrelation, the study used Arellano-Bond test at alternative orders of difference. Therefore, to estimate the parameters of the model (1) through the SGMM method, the study replaces the variables with the first-order difference (Roodman, 2006) as follows:

$$\Delta Y_{i,t} = \alpha \Delta Y_{i,t-1} + \beta_1 \Delta FDI_{i,t-1} + \beta_2 \Delta Trade_{i,t-1} + \beta_3 \Delta LogPopulation_{i,t-1} + \beta_4 \Delta LogGDP_{i,t-1} + \beta_5 \Delta Inflation_{i,t-1} + \Delta u_{i,t-1} \quad (2)$$

The paper uses the SGMM estimation method to estimate the parameters in the original model to eliminate the defects in the regression model. Simultaneously, the study also uses unit root testing and other estimation methods as a basis for comparison with previous studies.

IV. EMPIRICAL RESULTS

The paper uses imbalance panel data for the analysis of FDI's impact on HDI. Dickey-Fuller unit root tests are used to avoid estimating parameters that are not their true values. Test results show that all variables are stationary at 1% significance level after taking the first-order difference. Therefore, the study employs the first-order difference to estimate the parameters. The autocorrelation test results show that the model has autocorrelation at first-order lag but there is no autocorrelation at lag 2 (Arellano Bond: $p_value = 0.203$). Therefore, the paper uses second-order lag as an instrumental variable, furthermore, the results of the Hansen J test show that the model has no correlation between explanatory variables and random errors ($p_value = 1,000$).

Table 1: The effect of FDI on HDI

Dependent variable: HDI	SGMM	FE	RE	FGLS
HDI at lag 1	0.97497 (0.00892)***	0.29188 (0.04672)***	0.34840 (0.04261)***	0.16121 (0.06681)**
FDI	-4.86×10^{-9} (1.50×10^{-9})***	-1.31×10^{-9} (2.39×10^{-9})	4.46×10^{-10} (3.16×10^{-9})	-4.72×10^{-8} (1.44×10^{-7})
Trade	0.000028 (5.85×10^{-6})***	0.000014 (0.000012)	0.000018 (0.000012)	7.45×10^{-6} (0.000034)
Log (Population)	-0.00115 (0.00081)	-0.06026 (0.02096)***	-0.04621 (0.00863)***	0.03765 (0.09956)
Inflation	-3.28×10^{-6} (3.12×10^{-6})	1.10×10^{-7} (1.75×10^{-7})	2.00×10^{-7} (2.13×10^{-7})	-0.000021 (.000044)
Log (GDP)	0.00255 (0.00108)**	0.04604 (0.00631)***	0.04269 (0.005611)***	0.04651 (0.01215)***
Intercept	-	0.00297 (0.00051)***	0.002519 (0.00037)***	0.00257 (0.00129)**
Wald Chi squared	-	-	471.10	471.70
Obs.	245	212	212	212
Hansen J: p_value	1.000	-	-	-
Arellano Bond: p_value	0.203	-	-	-

Note: The strong standard deviation value in parentheses; SGMM uses the second order lag as an instrumental variable, FE: fixed impact model, RE: random impact model FGLS: general least squares regression, Hausman test chooses the random effects model, and * $p < 0.1$ ** $p < 0.05$ and *** $p < 0.1$

The results in Table 2 present an estimate of the impact of FDI on HDI. In which column 1 presents the results from SGMM, columns 2 and 3 present the estimated results through a fixed effect model and a random effect model, column 4 uses the general least squares method. The SGMM estimation results are contrary to the original hypothesis of the study.

Specifically, FDI has a negative impact or reduces social welfare at a significant level of 1%. In other words, attracting more FDI reduces the human development index in receiving countries.

Estimates from the fixed effects model suggest that FDI has a negative impact on HDI, as opposed to the results of random effects model. However, these results are not statistically significant at 10%. It should be noted that FE, RE and GLS models do not take into account the conditions of endogenous variables and autocorrelation which leads to deviations in the estimation of parameters (Wooldridge, 2010). Theories of economic development argue that FDI contributes to economic growth in receiving countries through contributions to job creation, investment capital enhancement and indirectly through the technology spillover effect. Our findings shed light on the negative impact of FDI on the overall well-being of receiving countries, as demonstrated in the Reiter & Steensma (2010) study, FDI increases the concentration of industry, making the decline of domestic companies. More importantly, FDI does not bring advanced technology to the host country, so production efficiency is not high and the human development index is reduced.

Regarding other factors in the empirical model, the estimation results show that the HDI deviation in the previous period is strongly related to the growth rate of HDI in the current period ($b = 0.97497$; $p < 0.01$). Moreover, the higher the trade, the more significant it is to promote the HDI. Additionally, while the population and the inflation rate both have a negative impact on the HDI, these coefficients are not statistically significant at 1%. In contrast, the results provide more information about the role of GDP in promoting the HDI.

Table 2: The effect of FDI on HDI's component indexes

Dependent variables:	SGMM		
	Health Index	Education Index	Income Index
	(1)	(2)	(3)
Lag 1 of dependent variable	0.99808 (0.00518)***	0.94599 (0.02380)***	0.77369 (0.16335)***
FDI	-3.32×10^{-9} (2.08×10^{-9})	-5.14×10^{-9} (5.58×10^{-9})	-2.67×10^{-8} (1.91×10^{-8})
Trade	0.0000257 (0.000012)**	0.000016 (0.0000329)	0.000144 (0.000084)*
Log (Population)	0.001702 (0.000656)**	-0.00550 (0.00334)	-0.02356 (0.02221)
Inflation	0.000070 (0.000022)***	0.00023 (0.000066)***	-0.00028 (0.00010)**
Log (GDP)	-0.001137 (0.000624)*	0.0073594 (0.003412)**	0.03110 (0.02643)
Obs.	117	117	117
Hansen J: <i>p_value</i>	0.871	0.562	0.730
Arellano Bond: <i>p_value</i>	0.203	0.405	0.102

Note: The strong standard deviation values in parentheses; models 1 and 3 use lag 1 as the instrument variable, model 2 uses the lag 2 as the instrument variable; * $p < 0.1$ ** $p < 0.05$ and *** $p < 0.01$

The data on education, health and income indicators are fully mentioned in the period 2010-2018. The results of estimating the impact of FDI on social welfare measurement components are shown in Table 2. Arellano Bond and Hansen J tests show that the model has no autocorrelation. Moreover, there is no correlation between explanatory variables and random errors after the model chooses the corresponding lags. The estimation results show that FDI has a negative impact

on the health index, education index and income index (respectively in columns 2, 3 and 4, Table 2), but the estimated coefficient has no statistical significance at 10%. This result is contrary to the initial expectation of the study, and contrary to the results obtained by Lehnert et al. (2013). With respect to the impact of trade on welfare measures, the results indicate that this factor plays a role in promoting the health and income indicators at 5% and 10% levels, respectively but no significance in promoting the education index. Meanwhile, the population positively impacts on the health index, which does not make sense to reduce the education and income indexes. On the other hand, a high inflation rate boosts the health and education indexes but reduces the income one. This explains the impact of inflation and the population is unclear in human development. The empirical results also show that while GDP effects on promoting the education index, this factor has the effect of reducing the health index and significance for the increase in the income index.

V. CONCLUSION

The paper examines the impacts of FDI inflows on social welfare measured by the HDI in Asian low-middle income countries from 2000 to 2018. The empirical results are contrary to original expectations. Specifically, while theories indicate that FDI promotes the HDI, the results show that FDI attraction has a negative impact on the HDI in the host countries. Therefore, the paper supports the view that FDI inflows increase the concentration of industry and the decline of domestic companies. More importantly, FDI inflows do not bring advanced technologies to these countries. These led to the ineffective production efficiency of the host countries and reducing the human development index. In addition, the impact of FDI on HDI components is unclear. The results indicate that FDI inflows have a negative impact on health index, education index and income index, but the estimated coefficient is not statistically significant. This may be due to data on indicators are only collected in a short period. Therefore, the Asian low-middle income countries should apply policies to restrict foreign investors in some areas which reduce or slow down domestic enterprises and obligate them to commit to apply modern technologies into production process.

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