
Relationship Between Foreign Direct Investment and Economic Growth: An Applied Research in Low Income, Lower Middle Income, Upper Middle Income, and High- Income Countries

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Abstract

This research aims to find the relationship between foreign direct investment (FDI) and economic growth at the global scale. The panel data, collected by the World Bank for a set of 135 countries over the period from 1990 to 2015, consists countries of four income groups – low, lower-middle, upper-middle, and high – based on gross national income (GNI) per capita. Linear regressions, which take the advantage of the ordinary least squares method, are used for estimating the unknown parameters. The results show that FDI has statistically significant and positive relationship with economic growth. Despite the development level, most countries have positive association with GDP growth. Based on these findings, some policies are recommended to attract more FDI and to use FDI resources more efficiently.

Keywords: Foreign direct investment; economic growth; low-income countries; lower middle-income countries; upper middle-income countries; high-income countries.

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1. Introduction

Foreign direct investment (FDI) is an investment in another country by bringing capital or any other property into the host country and directly participating in the management of businesses in that country with the aim of maximizing profits. From this concept, the essence of FDI is the activity of seeking profit of foreign investors. Theoretically, FDI can promote economic growth in different ways [1]. Some researchers argue that the effects of FDI on economic growth are expected to be twofold [2]. On one hand, FDI has many positive effects. FDI complements domestic capital, while domestic resources are limited. FDI capital contributes to increasing the competitiveness and expanding the export capacity of the receiving country, creating favorable conditions for the receipt of foreign capital. FDI helps to balance the international balance of payments by providing foreign capital flows and removing balance of payments constraints. FDI accelerates the acquisition of advanced and modern techniques, technologies and business management experience of foreign companies. FDI contributes to increasing the number of jobs and training workers, improving labor quality and productivity, and increasing export turnover. FDI creates a competitive environment in the host country, leading to higher efficiency and better products and services, and consumers can have a wider choice. FDI contributes to shifting the economic structure of host countries towards sustainable development, and international economic integration. On the other hand, FDI has some negative effects. FDI involves the transfer of outdated technology, causing damage to the host countries in terms of environmental degradation, poor product quality, high production costs; therefore, products of host countries can hardly compete in the world market. Besides, in the early stages of FDI attraction, many developing countries tend to relax environmental protection standards in order to compete with other countries in the process of attracting this capital. This has led to an increased risk of environmental pollution. The problems of environmental pollution along with depleted resources and political exploitation are among the things that host countries have to suffer when the FDI process takes place. The cost of attracting FDI is also high because host countries have to apply some incentives to foreign investors such as tax reduction and tax exemption for a fairly long time. FDI causes imbalances between enterprises receiving FDI and those not receiving the capital. The uneven distribution of FDI inflows to localities can lead to an increase in inequality within regions or economic sectors in the same country. If the host country does not have a strategic plan, it will lead to wrong directions in terms of investment locations, industries and investment scale. In addition, FDI increases the dependence of the host country on the capital, technology and sales networks of transnational companies. Local companies may suffer losses due to the issue of internal transfer prices from international companies. Moreover, the operation of multinational enterprises often requires more specialized skills than domestic enterprises. Although multinational activities have a significant influence on training and improving labor qualifications, FDI often benefits highly skilled workers rather than unskilled workers in less developed countries. Finally, the emergence of FDI enterprises can cause fierce competition with local domestic enterprises, thereby reducing the number of local enterprises. Thus, FDI not only brings positive effects to the host country's economic growth but also has many negative effects. In terms of society as a whole, if the positive effects are larger than the negative ones, FDI is said to be the driving force for the country's economic growth. On the contrary, if the positive impacts are smaller than the negative ones, FDI will become a threat to hinder the sustainable development of the country. This study will answer the question that in general, FDI has positive or negative impacts on economic growth of countries at different development stages around the world.

2. Literature Review

The impact of FDI on economic growth is studied and evaluated through the neoclassical growth model. In particular, this model assumes that technological progress and human capital are exogenous, so FDI increases domestic income when it has no long-term effect on economic growth. Long-term growth is possible through technological and population growth. The author in [3] argues that if FDI positively affects technology, it affects economic growth. The authors in [4] show that according to endogenous growth theory, FDI promotes economic growth if it increases profits in production by transferring technology. The authors in [5] determine the importance of human capital and the openness of the economy for growth. The authors in [6] show that foreign direct investment is an important channel in technology transfer and contributes more to economic growth than domestic investment. However, the higher productivity of FDI can only be realized when the host country has a minimum human capital threshold, i.e. FDI will contribute to economic growth only if the host country has enough capacity to absorb its advanced technology. By bridging the gap between domestic savings and investment, and bringing in the latest technology, management and know-how from developed countries, FDI can play an important role in achieving rapid economic growth in developing countries. The fact is that developing countries have not been considered as favorable destinations for FDI, as FDI mainly flows between developed countries. Furthermore, among developing countries, some like China, India, Nigeria and Sudan are major FDI recipients. The rest of the developing world is simply fighting for the scraps. However, FDI still plays a leading role in the economy by boosting gross domestic product (GDP) and overall economic growth. Therefore, FDI plays a very important role for a developing country to take effective measures in attracting potential foreign investors and enhancing the FDI-friendly atmosphere in the country. There have been many studies on the factors affecting FDI inflows into developing countries. The authors in [7] study on factors affecting FDI inflows into Bangladesh. The study uses panel data for 15 years from 2000 to 2014. The results show that FDI inflows into Bangladesh are positively correlated with GDP, inflation, infrastructure, labor cost, trade openness, and trade performance, but are negatively correlated with domestic taxes. Political stability has a negative, albeit insignificant, relationship with FDI inflows. The authors in [8] use panel data from 68 low- and lower-middle income developing countries for the period 2005-2007 to identify the determinants of FDI inflows into these countries. Based on a comparative discussion focusing on why some countries are successful in attracting FDI while others are not, the paper demonstrates that countries with larger GDPs and high GDP growth, a higher share of international trade and a more friendly business environment are more successful in attracting FDI. The results also show that market size, foreign subsidies and business environment have important and statistically significant effects on FDI. The authors in [9] study the factors affecting the flow of FDI in 38 developing countries in the period from 2000 to 2004. The authors use the following independent variables: growth rate of GDP per capita, infrastructure, inflation, labor cost, trade openness, risk and corporate tax rate. Research results show that growth rate of GDP per capita, infrastructure and trade openness have statistically significant and positive impacts on FDI flows. Inflation and tax rate have statistically significant and negative impacts. Labor cost and risk are statistically insignificant. The authors in [10] studies the factors affecting FDI in the period 1975-2003 in ASEAN countries. Accordingly, the results of this study show that the variables of market size, labor force growth rate, infrastructure and trade openness have significant impacts on FDI and are statistically significant. In general, previous studies show that FDI can have positive relationships with economic growth through diversified channels with accordingly certain conditions.

Some important determinants of FDI include GDP or GDP growth, GDP per capita growth, inflation, infrastructure, labor cost, trade openness or trade performance, domestic taxes, market size, foreign subsidies and business environment.

3. Methodology and Data

This study uses the data collected from the World Development Indicators of the World Bank. Using the single data source is expected to eliminate any unexpected errors due to the heterogeneity in recording systems of different countries. The data source contains information on 218 countries and territories across the world from 1960, but the problem of missing data limits the study to 135 countries over the period of 26 years (1990 – 2015). The two criteria to include an observation are the availability of data on foreign direct investment inflows for at least 20 years, and the availability of the purchasing power parity factor (PPP) data. Variables are converted to international real dollars using the purchasing power parity factor. World Bank categorizes countries into four income groups – low, lower-middle, upper-middle, and high – based on gross national income (GNI) per capita for the previous calendar year. The categorization remains fixed for the entire fiscal year, but might change across years. For the 2016 fiscal year, low-income countries are defined as those with GNI per capita in 2015 of \$1,025 or less; lower middle-income countries have between \$1,026 and \$4,035 GNI per capita; upper middle-income countries have between \$4,036 and \$12,475 GNI per capita; high-income countries have GNI per capita of \$12,476 or more. Accordingly, out of 135 countries in this study, the number of economies categorized as low, lower-middle, upper-middle, and high-income is respectively 21, 43, 40, and 31. We use linear regressions, which take the advantage of the ordinary least squares method, for estimating the unknown parameters. But ordinary least squares estimates are the best only when the assumptions are guaranteed: the errors have normal distribution, homoscedasticity and no serial correlation. Violations of these assumptions might lead to inefficient estimates. Therefore, it is important to check the assumptions of the regression models and fix the violations of the assumptions, if any. The tests of stationarity and cointegration should be carried out before doing regressions to avoid linear regression violations. The software STATA version 12 is used to process the data.

4. Results

4.1. High-income countries

Figure 1 shows that in high-income countries, FDI growth is positively related to economic growth (proxied by GDP growth). This relationship is relatively stable over the years during the research period 1990 - 2015.

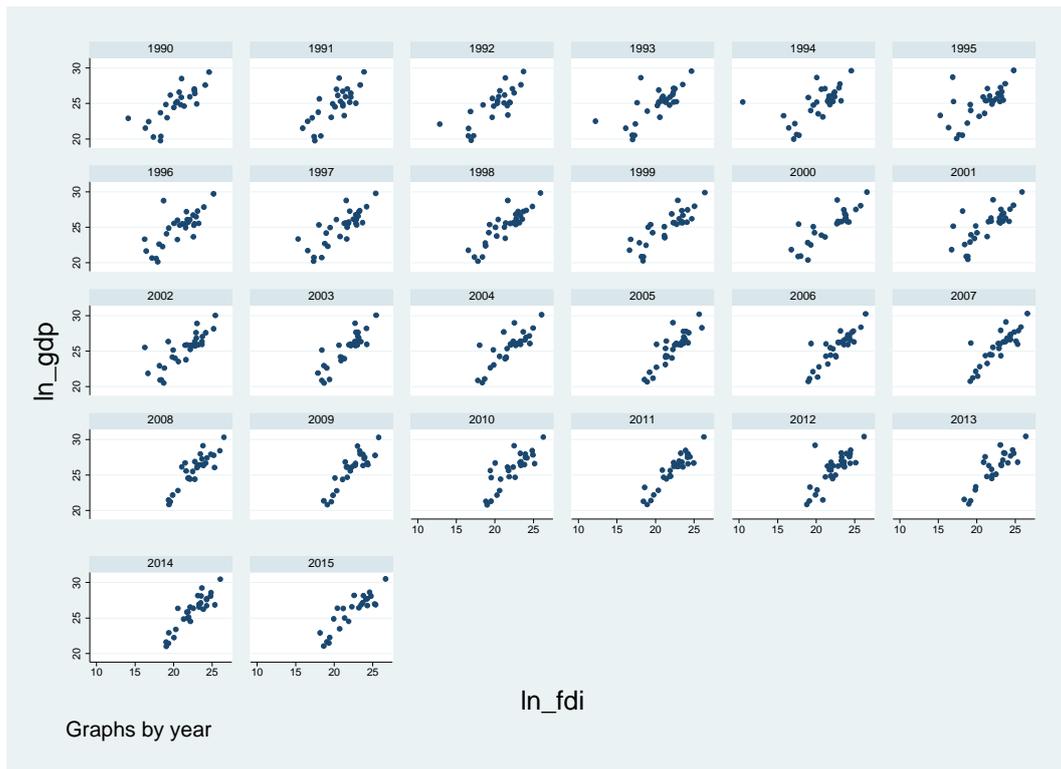


Figure 1: Relationship between FDI and GDP by year in high-income countries

Source: World Bank

However, when considering the relationship between FDI growth and economic growth in each high-income country (Figure 2), the relationship is not as clear. Some of the countries where FDI has a positive relationship with economic growth are Antigua and Barbuda, Australia, Chile, Iceland, Israel, Korea, Rep., Norway, Seychelles, Singapore, St. Kitts and Nevis, Switzerland, United Arab Emirates, United Kingdom, United States, Uruguay. In which, the relationship is most clearly seen in Singapore, Norway, Chile. The remaining countries, including the Bahamas, Bahrain, Barbados, Canada, Czech Republic, Denmark, Hungary, Japan, Kuwait, Macao, New Zealand, Oman, Poland, Saudi, Arabia, Sweden, Trinidad and Tobago, the relationship between FDI growth and economic growth are not clear. In general, there is no sign of negative relationship between FDI growth and economic growth in high-income countries.



Figure 2: Relationship between FDI and GDP in high-income countries

Source: World Bank

4.2. Upper middle-income countries

Figure 3 shows that in upper middle-income countries, FDI growth is positively related to economic growth. This relationship is very clear and tends to be stable over the years in the research period 1990 - 2015.

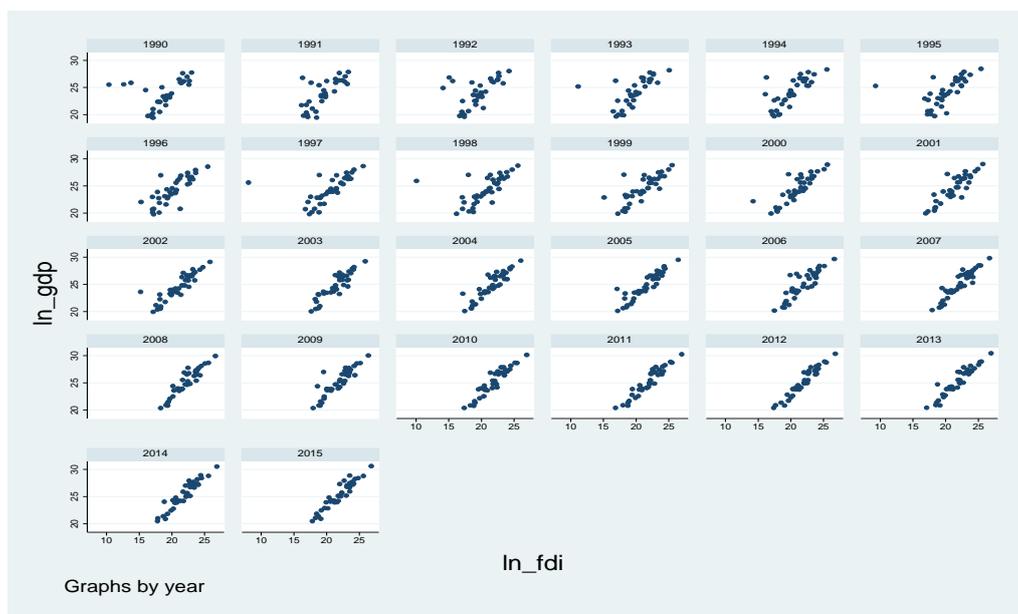


Figure 3: Relationship between FDI and GDP by year in upper middle-income countries

Source: World Bank

When considering the relationship between FDI growth and economic growth in individual upper middle-income countries (Figure 4), the relationship is not the same across countries. Some countries where FDI has a positive and clear relationship with economic growth are Albania, Argentina, Belize, Botswana, Brazil, China, Colombia, Costa Rica, Gabon, Grenada, Mexico, Namibia, Panama, Peru, St. Vincent, the Grenadines, Suriname, Thailand. In the other countries like Algeria, Angola, Bulgaria, Dominica, Dominican Republic, Equatorial Guinea, Fiji, Guyana, Iran, Islamic Rep., Iraq, Jamaica, Jordan, Kazakhstan, Macedonia, Malaysia, Mauritius, Paraguay, Romania, Russian Federation, South Africa, St. Lucia, Turkey, Venezuela, the relationship between FDI growth and economic growth is not clear. In general, there is no negative relationship between FDI growth and economic growth in upper middle-income countries.

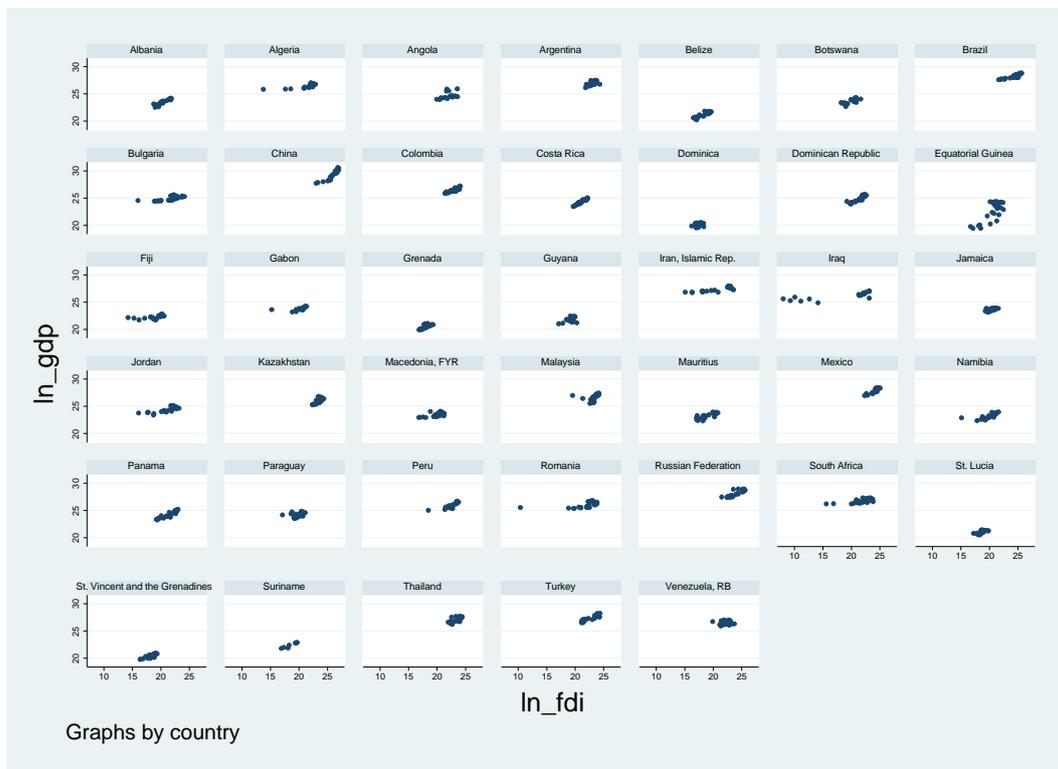


Figure 4: Relationship between FDI and GDP in upper middle-income countries

Source: World Bank

3.1.3. Lower middle-income countries

Figure 5 shows that in lower middle-income countries, FDI growth is positively related to economic growth. This relationship is also relatively stable over the years during the research period 1990 - 2015.

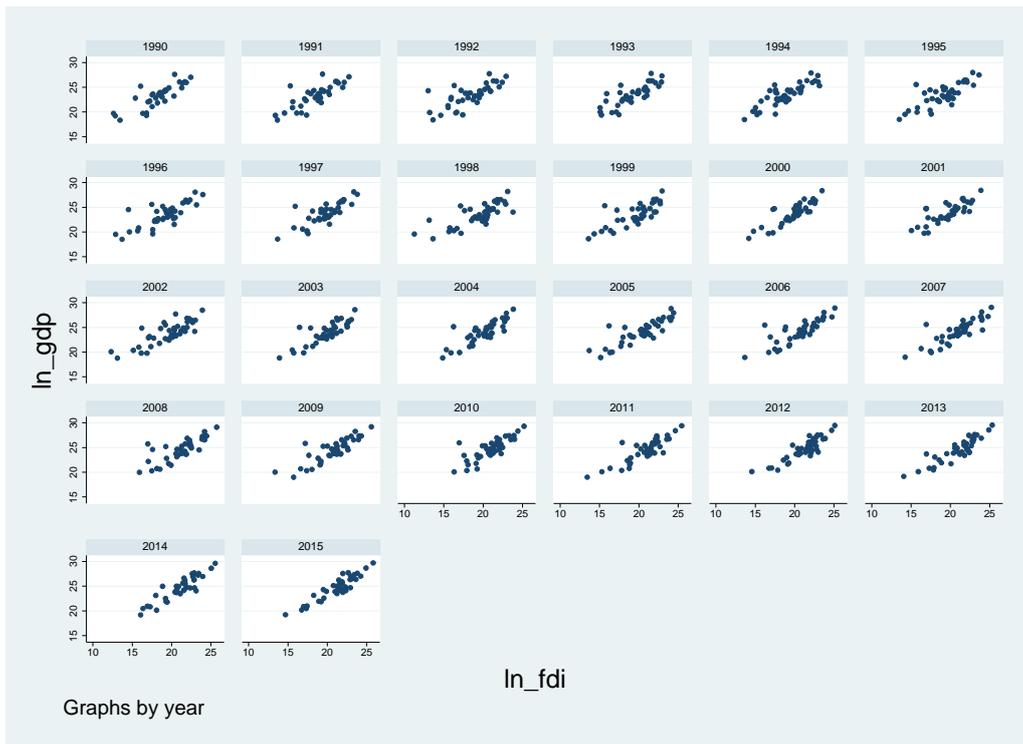


Figure 5: Relationship between FDI and GDP by year in lower middle-income countries

Source: World Bank

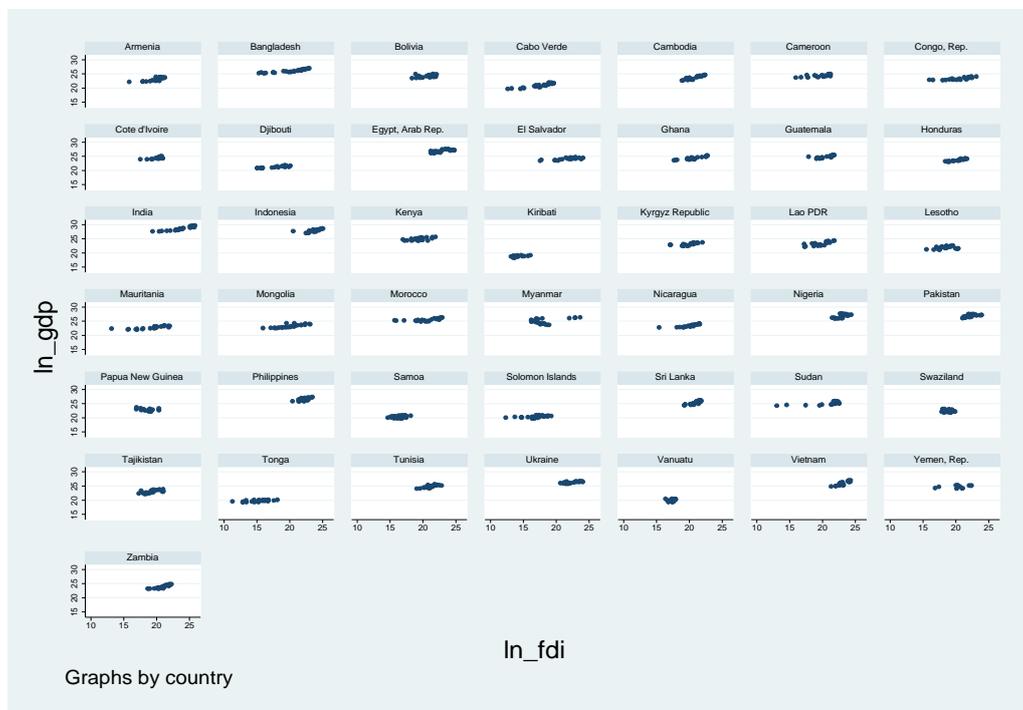


Figure 6: Relationship between FDI and GDP in lower middle-income countries

Source: World Bank

When considering the relationship between FDI growth and economic growth in each low-middle-income country (Figure 6), this relationship tends to be positive but small, and also relatively similar among countries. Except for some countries like Kiribati, Samoa, Swaziland, Tonga, Vanuatu, Yemen, Rep., the relationship between FDI growth and economic growth is not clear. In general, there is no negative relationship between FDI growth and economic growth in low-middle income countries.

4.4. Low-income countries

Figure 7 shows that in low-income countries, the relationship between FDI growth and economic growth is not as clear as in the other three groups of countries. This relationship only started to form a positive trend from 1995 to the end of the research period 2015. Before that, it was almost impossible to show the relationship between FDI growth and economic growth in countries with low income.

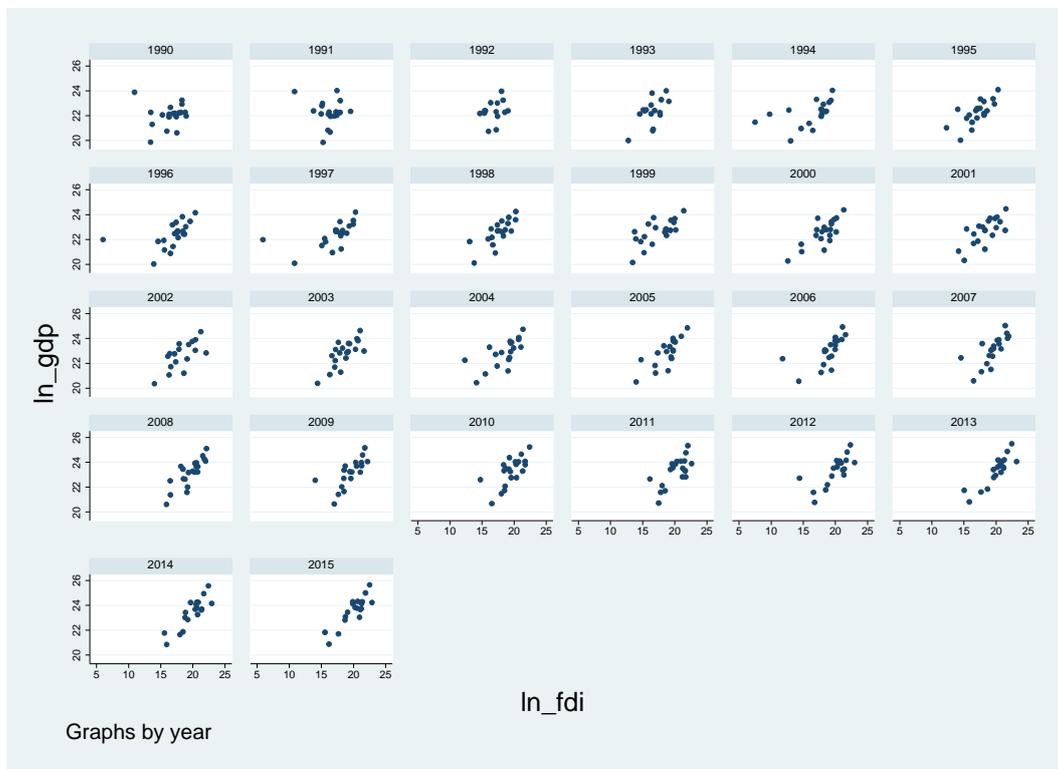


Figure 7: Relationship between FDI and GDP by year in low-income countries

Source: World Bank

When considering the relationship between FDI growth and economic growth in individual low-income countries (Figure 8), the relationship is not similar across countries. Some countries where FDI has a positive and clear relationship with economic growth are Burkina Faso, Mozambique, Rwanda, Senegal, Uganda. The remaining countries including Benin, Burundi, Central African Rep., Chad, Comoros, Congo, Dem. Rep., Gambia, Guinea, Guinea-Bissau, Madagascar, Malawi, Mali, Niger, Sierra Leone, Tanzania, Togo the relationship between FDI growth and economic growth is not clear. In general, there is no negative relationship

between FDI growth and economic growth in low-income countries.

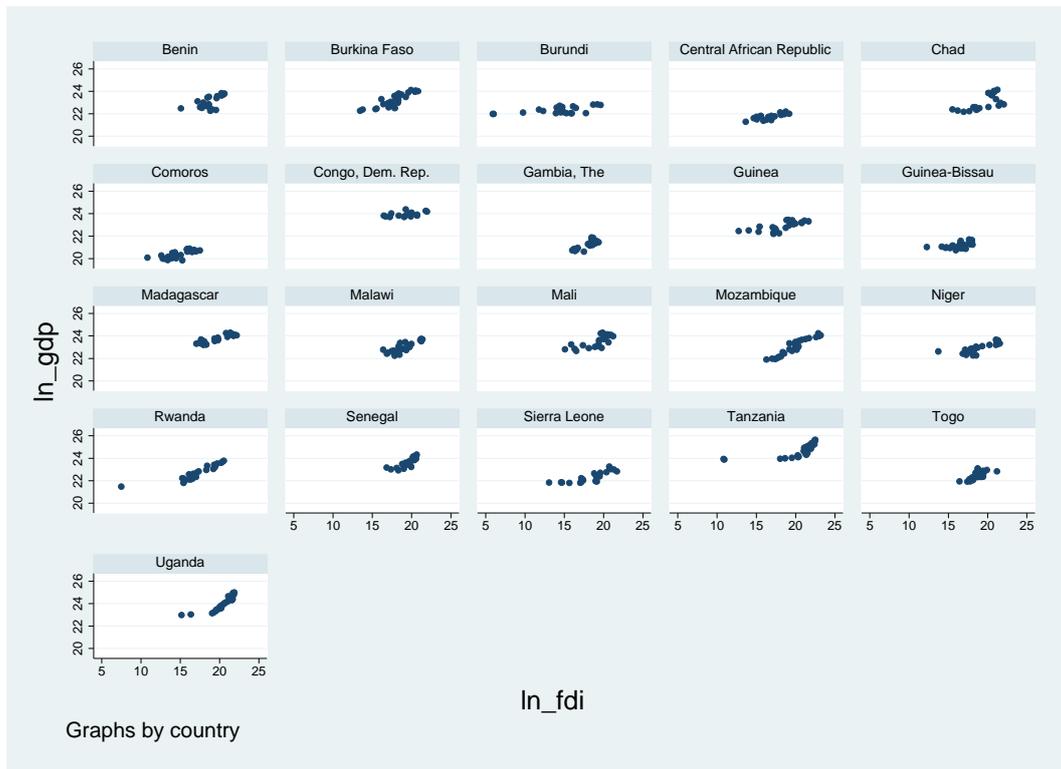


Figure 8: Relationship between FDI and GDP in low-income countries

Source: World Bank

4.5. Regression results

Summarizing all 135 countries studied during the research period 1990 - 2015, Figure 9 shows that the positive relationship between FDI growth and economic growth is relatively clear. Noticeably, the magnitude of the relationship in low-income countries is not as high as in the remaining groups of countries. The reason may be that this relationship only started forming a positive trend from 1995 to the end of the study period 2015, as indicated above.

To find if FDI has any statistical relationships with economic growth, we use linear regressions, which take the advantage of the ordinary least squares (OLS) method, for estimating the unknown parameters. We run OLS regression of 5 models, using the panel data of the studied countries in the period from 1990 to 2015. The first model includes all 135 countries in the sample. The second model includes only 31 high income countries. The third model includes 40 upper middle-income countries. The fourth model includes 43 lower middle-income countries. The fifth model includes only 21 low-income countries. Regression results of the five models are shown in Table 1.

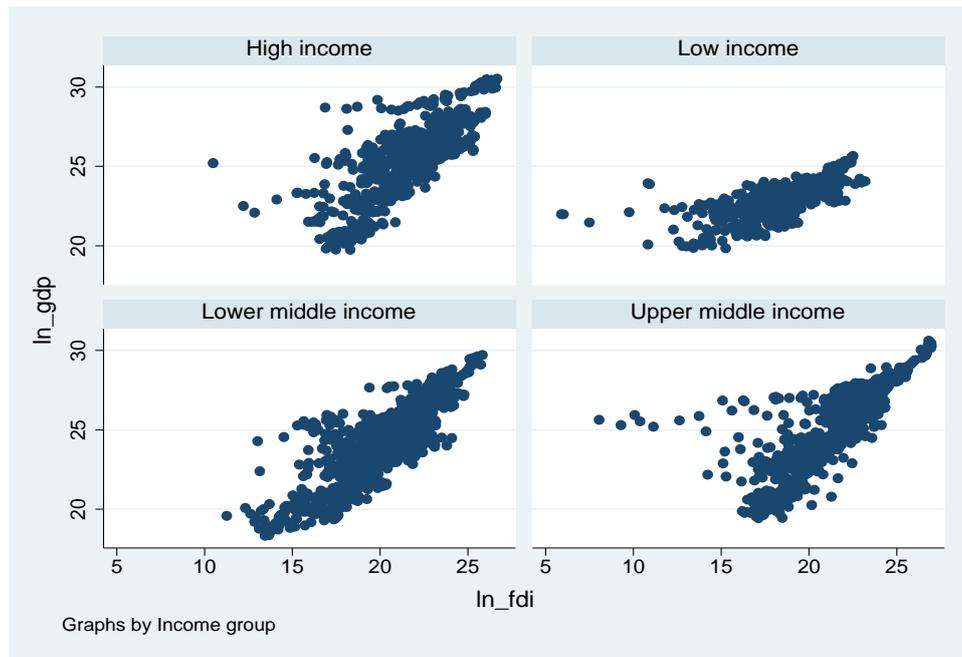


Figure 9: Relationship between FDI and GDP in 135 studied countries

Source: World Bank

Table 1: OLS regression results of the relationship between FDI and economic growth

Ln_GDP	135 countries	High income countries	Upper middle-income countries	Lower middle-income countries	Low-income countries
Ln_FDI	0.2168*** (0.0158)	0.2081*** (0.0211)	0.2259*** (0.0461)	0.2422*** (0.0184)	0.1811*** (0.0260)
constant	19.8915*** (0.3704)	20.8777*** (0.6103)	19.9346*** (1.0878)	19.1013*** (0.4189)	19.4931*** (0.5212)
Observations	3240	743	964	1036	497

Note: * p<0.05; ** p<0.01; *** p<0.001. Standard errors are in the parentheses.

It could be seen from Table 1 that FDI has statistically significant and positive relationship with economic growth. Particularly, the first 4 models show that one percent increase in FDI is associated with about 0.2 percent increase in GDP, the last model show that one percent increase in FDI is associated with a smaller percent increase in GDP (about 0.18). The explanation is the relationship between FDI and economic growth in low-income countries has just clearly started since 1995, as explained above. OLS estimates are the best only when the assumptions are guaranteed: the errors have normal distribution, homoscedasticity and no serial correlation. Violations of these assumptions might lead to inefficient estimates. Therefore, it is important to check the assumptions of the regression models and fix the violations of the assumptions, if any. Figure 10 shows the checking results.

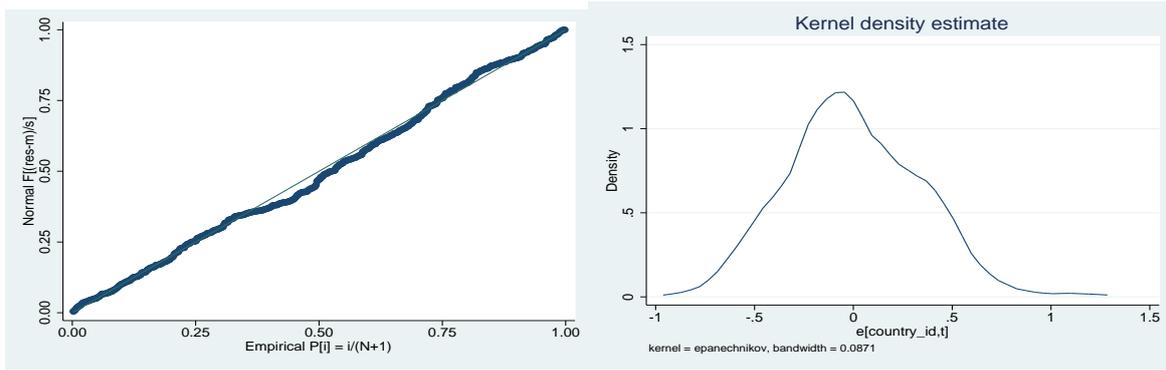


Figure 10: OLS assumptions checking

According to Figure 10, the assumptions are relatively guaranteed. Therefore, we can believe the above estimation results are reliable.

5. Discussion

This research aims to find the relationship between FDI and economic growth at the global scale. The panel data, collected by the World Bank for a set of 135 countries over the period from 1990 to 2015, is used to estimate the parameters. The results show that FDI has statistically significant and positive relationship with economic growth. Despite the development level, most countries have positive association with GDP growth. This means that FDI helps improve the performance of the economies overall. Specifically, in high-income countries, upper middle-income countries, and lower middle-income countries, FDI growth is positively related to economic growth. This relationship is relatively stable over the years during the study period 1990-2015, and is most pronounced in upper middle-income countries. In low-income countries, the relationship between FDI growth and economic growth is not as clear as in the other three groups of countries. This relationship only started to form a positive trend from 1995 to the end of the research period 2015. Before that, it was almost impossible to show the relationship between FDI growth and economic growth in countries with low income. The biggest limitation in this research is missing data. The reason we selected the data from the World Bank is that it contains a wide range of information of the countries all over the world, and the method to collect the data is treated consistently across the countries. Unluckily, the data of other independent variables are limited. Some variables of interest, such as bribery incidence (% of firms experiencing at least one bribe payment request), and Country Policy and Institutional Assessment (CPIA) indices, are believed to have considerable impacts on the relationship between FDI and economic growth. But they have too few observations to be included into the regression models. Therefore, we could run the simple regression model of the two variables only. For future research, it might be helpful to have more available datasets or a technical tool to deal with missing data.

6. Recommendations

FDI is an important source of economic growth; therefore, countries should have policies to attract more FDI. For example, some policies include: amending, supplementing and perfecting laws, mechanisms and policies to open up and improve the publicity and transparency in the management, exploitation and use of FDI resources;

Renovating the growth model towards the effective and integrated use of the economy's resources, especially FDI resources, technology and innovation; Focusing on synchronously implementing solutions to improve labor productivity, quality, efficiency, competitiveness and sustainable development of the economy; Concentrating FDI resources on developing products with comparative advantage, and high value added; Renovating the structure of economic sectors towards ensuring fair and equal competition between FDI and domestic enterprises.

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