

The Relationship of Foreign Direct Investment Inflow and Economic Growth in Thailand (2006–2016)

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Abstract

This paper analyzes the relationship of foreign direct investment inflow (FDI inflow) to economic growth of Thailand during the period of 2006 to 2016. The analysis used the simple linear regression model. Aside from assessing the relationship of FDI inflow and GDP of the country, the relationship of the variables for major 11 sectors of the Thai industries were also studied. The results showed that total FDI inflow had a positive effect on the economic growth of Thailand. However, when analyzing each sector, the results indicate that FDI inflow had a significant effect on the GDP of 4 sectors including electricity, gas, steam and air conditioning; construction; transportation and storage, and a group of poorly defined sectors. For the other 7 sectors, FDI inflow did not have a significant effect.

Keywords: Foreign direct investment, gross domestic product, inflow, economic growth, Thailand

Introduction

Gross domestic product is a measure of the value of final goods and services produced by a country during a period of time. It is the most important indicator of economic activity (OECD, 2009).

Thailand has been successful in developing its economy over many years. The nation's GDP grew 7.8% a year on average, which was the second highest among other countries after the Republic of Korea. However, the economic growth was affected by the Asian Financial crisis in 1997–1998. In 2008–2009, the economy was affected again by the global financial crisis and also by the flooding in 2011. In recent years, in particular 2015, GDP growth has slowed to 2.9 percent (Asian Development Bank, 2015).

After the year 2000, Thailand has become the second largest economy and has the 4th highest income per capita in the Association of Southeast Asian Nations (ASEAN). It is the 22nd largest economy in the world. In 2011, after more than 20 years as a lower-middle-income country, Thailand attained an upper-middle-income status (Asian Development Bank, 2015).

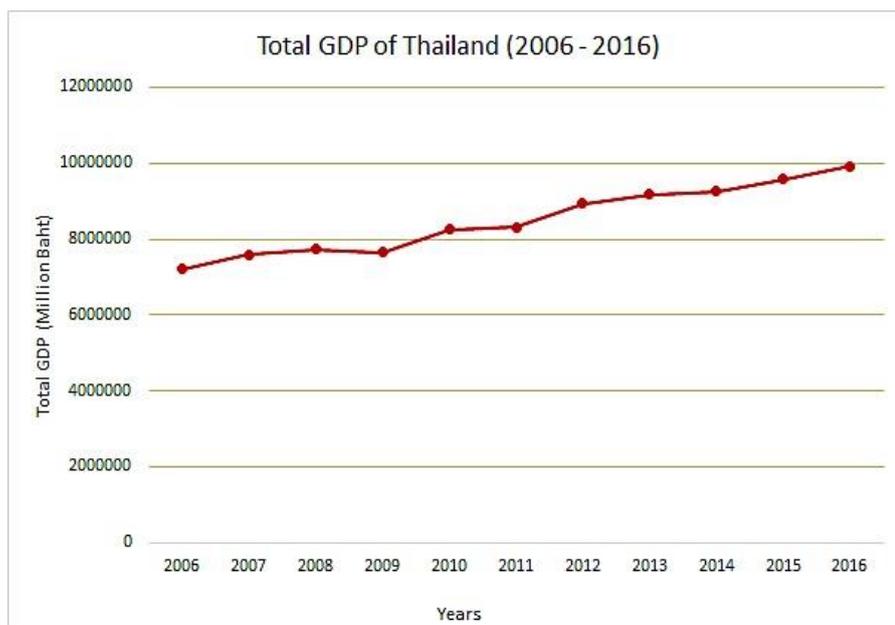


Figure 1. Thailand Total GDP from 2006 to 2016 (Bank of Thailand, 2018)

Figure 1 shows data of Total GDP of Thailand for the period of 2006–2016. It can be seen that the GDP value had increased continuously from 7,204,756 million Baht in 2006 to 9,909,667 million Baht in 2016.

Foreign direct investment (FDI) is a large portion of capital flows. The magnitude of FDI in Thailand has varied over time; nonetheless, the number has been positive. Since late 2000, the volume of FDI inflows has been at an increasing rate.

FDI is a category of investment in a country made by a resident of another country or economy. The main objective of the investor is to build long-term relationships with direct investment enterprises. Investors may have a “lasting interest” when they own at least 10% of the voting power of a direct investment enterprise. This allows the investors to gain power in the economy of the direct investment enterprise. FDI statistical data would include direct investment positions (equity and debt), direct investment income flows (distributed earnings, reinvested earnings, interest income) and direct investment financial flows (equity and debt) (OECD, 2008).

Figure 2 shows the movement of FDI inflow in Thailand for the period of 2006–2016. For the period of 2006–2010, the FDI inflow moved up and down. Starting at year 2011, the inflow increased continuously from 807,905.45 million Baht to 2,826,610.78 million Baht up until the year 2013. After that year until 2016, the inflow decreased to 2,028,328.47 million Baht. One of the factors of the increase during those periods was the increase of trade credit between affiliated enterprises, which the Bank of Thailand counted into the other sector of the inflow.

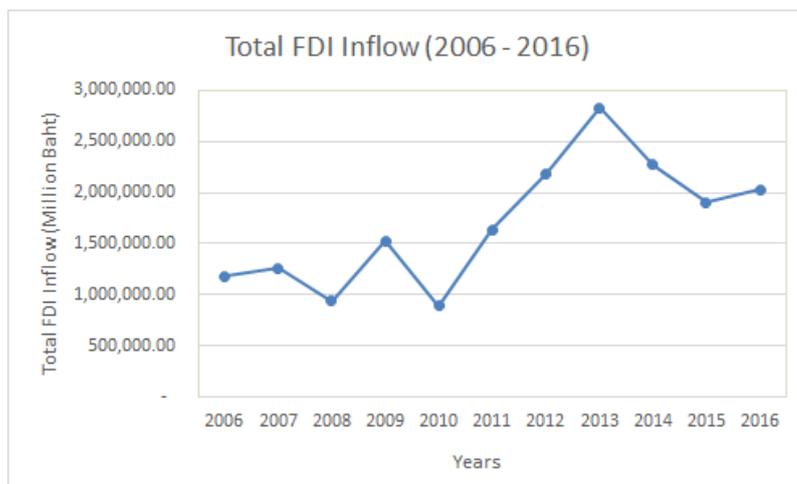


Figure 2. FDI Inflow in Thailand (2006–2016) (Bank of Thailand, 2018)

Figure 3 shows the average shares of FDI inflow to Thailand during the period of 2006–2016. It can be seen that most of FDI inflows were in the other sectors, which include trade credits among affiliates. It is followed by financial intermediation, which includes debt and equity instruments. The last major part of FDI inflows consisted of wholesale and retail, repair of vehicles, personal and household goods, and real estate activities. Other sub-sectors including agriculture, forestry, fishing, mining and quarrying, manufacturing, electricity, construction, communication, transport and storage, and accommodation and food services were considered as minor proportions for FDI inflow.

The relationship of FDI and the economic growth has been studied in several researches. Many have claimed that FDI can have important positive effects on a host country. FDI inflow could affect capital information as they are sources of financing, or capital formation, which is a determinant of economic growth. Furthermore, FDI inflow may increase a host country’s productivity and could change comparative advantage (Moudatsou, 2003).

Average shares of FDI Inflow (2006 - 2016)

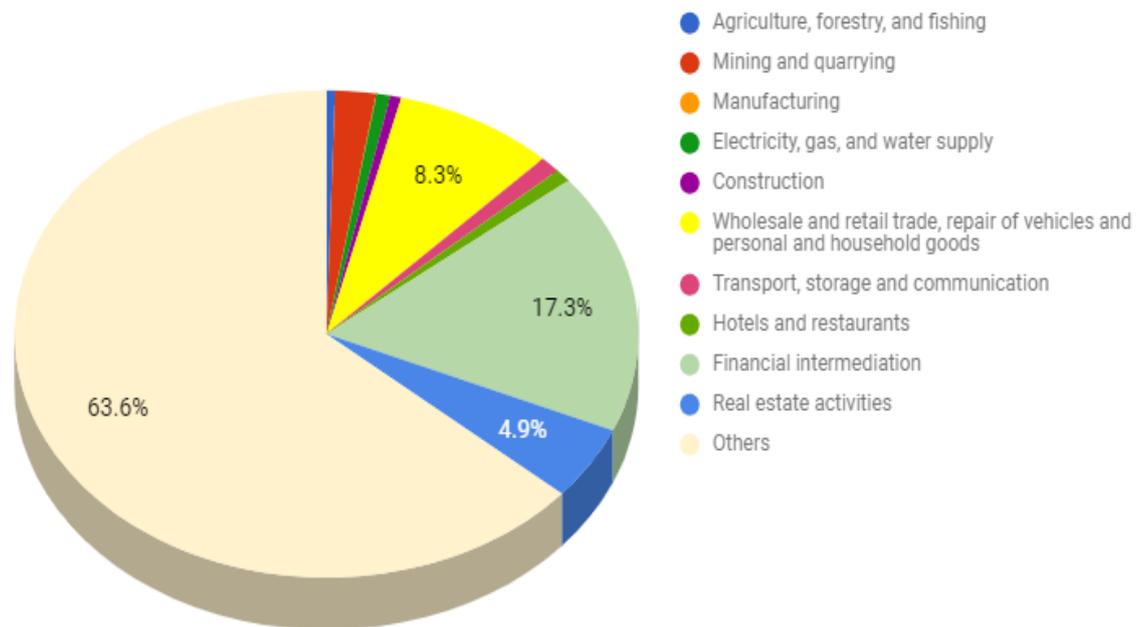


Figure 3. Average Shares of FDI Inflow in Thailand (2006–2016) (Bank of Thailand, 2018)

Several studies of economic growth have applied FDI as a variable into their studies. Blomstrom, Lipsey, and Zejan (1994) showed a significant relationship between FDI inflow as a percentage to GDP and the growth per capita GDP in all developed countries for the period 1960–1985. In the study of Borenstein, De Gregorio, and Lee (1998), a similar conclusion also was shown, where the growth per capita GDP for 69 developing countries from 1970–1989 was studied. In a different context—OECD countries—the measurement of FDI inflows showed that there was a significant positive influence on growth, with a stronger interaction factor between FDI and educational attainment. In other words, the higher the level of education, the greater the gain from FDI inflow. Similarly, Compos and Kinoshita (2002) studied the impact of FDI on economic growth in 25 Central and Eastern European and former Soviet Union transition economies from 1990–1998. Their study concluded that FDI had a positive effect on economic growth.

This research aimed to study the relationship of FDI and economic growth of Thailand by examining the relationship of FDI inflow and GDP in the period of 2006–2016. Eleven main economic sectors of Thailand were also analyzed to examine the relationships among the variables.

Literature Review

Foreign direct investment (FDI) is the process where people in one country obtain asset ownership enabling them to gain of control over production, distribution, and other activities of a company in a foreign country (Moosa, 2002). The parties involved in FDI are typically large multinational companies, called MNCs. FDI processes can be further categorized as either horizontal FDI or vertical FDI.

Horizontal FDI is undertaken when the firm wants to expand the business horizontally to produce the same or similar goods in a host country as in the home country. Vertical FDI occurs when a firm exploits raw materials, or wants to be closer to the consumer by acquiring distribution channels. Common strategies include seeking low-cost locations (Ek, 2007).

FDI can be in the form of green field investment, mergers, and acquisitions, and joint ventures. Greenfield investment is the process where a company establishes new production and other facilities in a foreign country. This process creates employment opportunities and adds value to the output of

the host country. However, mergers and acquisitions can be harmful to the host country due to layoffs or closing of some local activities in the country. Joint venture is considered as a partnership. It can be a partnership with a company in the host country, or government institutions, or another foreign company. Joint venture is a form of investment to manage risks and expertise (Moosa, 2002). FDI inflow also can increase a host country's productivity and exports, whereby productivity growth may indirectly affect exports. In addition, FDI affects economic growth by increasing the host country's trade (Moudatsou, 2003).

The flow of FDI also brings domestic savings and can finance new investment opportunities in a host country. Increases in productivity, through the transmission of ideas across the countries, can occur in developing countries allowing them to benefit from FDI. Therefore, it can be seen that the foreign investment flow may be related with an increase of efficiency in production, and thus can lead to a higher growth rate in the economy (Gerschenkron, 1952).

If FDI brings benefits as discussed above, the economy of a host country is expected to grow. The relationship of these two variables has been observed in several studies.

Abbas, Akbar, Nasir, Ullah, and Naseem (2011) investigated the impact of FDI on economic growth (GDP) on SAARC countries by using multiple regression models. The results showed that there was a significant and positive relationship between GDP and FDI. Puapan (2014) examined the overall and sectorial economic impact of FDI on the Thai economy by using data from 2005–2013. For the overall economic impact, FDI had a positive impact on Thailand economic growth. For sectorial analysis, 5 sub-sectors out of 9 sectors show that FDI had strong impacts to the sector's value output. Aykut and Sayek (2007) analyzed the differential effect of the primary, services, and manufacturing sectors FDI on economic growth by using cross-country data between 1990 and 2003. Only FDI inflows to manufacturing sectors had a positive impact on economic growth.

Moudatsou (2003) estimated the growth effects of FDI for each country in isolation and by pooling the data for the whole European Union (EU) for the period of 1980–1996. For specific country estimation, the study showed that growth determinants varied across EU members. When data were pooled, the results showed that FDI has a positive effect on the growth rate of EU economies. Simionescu (2016) investigated the relationship between economic growth and FDI inflow in the European Union (EU-28) in the period of the recent economic crisis. Panel data analysis was used for the analysis. The conclusion was that there was an overall positive relationship between economic growth and FDI starting with the year 2008. Another study also mentioned the important role of FDI in stimulating economic growth in Eurozone countries (Pegkas, 2015).

Zhang (1999) studied the impact of FDI on growth in 10 East Asian countries. He found that FDI enhanced growth in the long run for mainland China, Hong Kong, Indonesia, Japan, and Taiwan, and in the short run for Singapore. Ek (2007) also investigated the impact of FDI on economic growth in China during the period of 1994–2003. The data showed that FDI has a positive impact on economic growth through new technology transferred from one country to another and it increased output and GDP of the recipient country.

Despite these positive effects, the issue of whether FDI generates positive spillovers for host countries is still under debate. Some researchers have concluded that there is no relationship between FDI and economic growth of a host country. In the survey of the literature, Hanson (2001) argued that evidence for positive spillovers from FDI for a host country was weak. The research of Temiz and Gökmen (2013), where FDI inflow and GDP growth in Turkey was analyzed using econometric methods, indicated that there is no significant relationship between FDI inflow and GDP growth both in the short and long run. An examination of the relationship of FDI, trade openness, and economic growth of Tunisia was undertaken by Belloumi (2014) for the period of 1970–2008 using the bounds testing (ARDL) approach. The results indicated that there was no significant causality from FDI to economic growth, from trade to economic growth, or from economic growth to trade in the short run.

Herzer, Klasen, and Nowak-Lehman (2008) investigated the impact of FDI on economic growth in 28 developing countries. The study used co-integration techniques on a country-by-country basis. It showed that there were no long-run or short-run effects of FDI on economic growth in many

countries. There was no association between the growth impact of FDI and the level of per capita income in the developing countries involved in the study. In addition, the studies of Duasa (2007) along with Kakar and Khilji (2011) also could not find strong evidence on the growth impact of FDI in Malaysia. These studies concluded that FDI does not support economic growth.

This research focused on finding the relationship of FDI inflow and economic growth in Thailand, which is an emerging Asian economy. Statistical data of FDI inflows and total GDP of the country during 2006–2016 were analyzed. In addition, this article also investigated FDI inflow and GDP for 11 main economic sectors of the country in order to understand more about the relationship between variables in the different sectors.

Empirical Framework: Assumptions and Data

The paper considered the impact of FDI Inflow on the economy of Thailand during the years 2006–2016 by analyzing the data over this period. In addition, FDI inflow and GDP for 11 main economic sectors of the country were analyzed to determine relationships between variables.

GDP (Chain Volume Measure)

In this paper, total GDP value based on chain volume measures (CVM) was applied, which measures changes in the quantities of products or services produced or sold. Chain volume measures give better indications of movement in real output and expenditures because they consider price relativities that occur from one period to the next (Australian Bureau of Statistic, 2003).

According to the National Economic and Social Development Board (2017), the estimation of Thailand's GDP in real terms based on CVM uses an annual overlap technique to link yearly indices, with the year 2002 as the reference year.

FDI Inflow

FDI inflow, which is the volume of transactions associated with the increase in investment during 2006–2016, was analyzed. Data were in the form of equity capital, reinvestment of earnings, or borrowing from affiliates. Starting from years 2009 and 2011, this item also included transactions in debt securities, and trade credits between affiliated enterprises. Negative FDI inflow may occur in the case where direct investment enterprises in Thailand incurred losses or pay dividend in excess of the profit of the current period. This shows negative "reinvestment of earnings" which surpass the normal FDI inflow (Bank of Thailand, 2018).

Methodology and Hypotheses

The relationship of FDI inflow to Thailand's gross domestic product (GDP) was analyzed from 2006 to 2016. The objective of the analysis was to observe the relationship of these two variables using simple linear regression with the SPSS statistical program. The analysis also examined the relationship of these two variables separately for 11 major economic sectors of the Thai economy that are considered important. Data for FDI inflow and GDP were from the Bank of Thailand's database.

The sectors that were studied included: (1) All sectors; (2) agriculture, forestry and fishing sectors; (3) mining and quarrying sectors; (4) manufacturing sector; (5) electricity, gas, steam and air conditioning supply sectors; (6) construction sector; (7) wholesale/retail trade sector; (8) transportation and storage sectors; (9) accommodation/food service activities sectors; (10) financial and insurance activities sectors; (11) real estate activities sectors; and (12) other activities sectors.

Both null and alternate hypotheses are presented below:

All Sectors

H₁₀ Total FDI inflows of all sectors do not have a significant effect on total GDP of all sectors.

H_{1A} Total FDI inflow of all sectors have a significant effect on total GDP of all sectors.

Agriculture, Forestry and Fishing Sectors

H₂₀ FDI inflows of agriculture, forestry and fishing sectors do not have a significant effect on GDP of the same sectors.

H_{2A} FDI inflows of agriculture, forestry and fishing sectors have a significant effect on GDP of the same sectors.

Mining and Quarrying Sectors

H₃₀ FDI inflows of mining and quarrying sectors do not have a significant effect on GDP of the same sectors.

H_{3A} FDI inflows of mining and quarrying sectors have a significant effect on GDP of the same sectors.

Manufacturing Sector

H₄₀ FDI inflows of manufacturing sector do not have a significant effect on GDP of the same sector.

H_{4A} FDI inflows of manufacturing sector have a significant effect on GDP of the same sector.

Electricity, Gas, Steam and Air Conditioning Supply Sectors

H₅₀ FDI inflows of electricity, gas, steam and air conditioning supply sectors do not have a significant effect on GDP of the same sectors.

H_{5A} FDI inflows of electricity, gas, steam and air conditioning supply sectors have a significant effect on GDP of the same sectors.

Construction Sector

H₆₀ FDI inflows of construction sector do not have a significant effect on GDP of the same sector.

H_{6A} FDI inflows of construction sector have a significant effect on GDP of the same sector.

Wholesale and Retail Trade Sector; Repair of Motor Vehicles/Motorcycles Sector

H₇₀ FDI inflows of wholesale and retail trade sector; repair of motor vehicles and motorcycles sectors do not have a significant effect on GDP of the same sectors.

H_{7A} FDI inflows of wholesale and retail trade sector; repair of motor vehicles and motorcycles sectors have a significant effect on GDP of the same sectors.

Transportation and Storage Sectors

H₈₀ FDI inflows of transportation and storage sectors do not have a significant effect on GDP of the same sectors.

H_{8A} FDI inflows of transportation and storage sectors have a significant effect on GDP of the same sectors.

Accommodation and Food Service Activities Sectors

H₉₀ FDI inflows of accommodation and food service activities sectors do not have a significant effect on GDP of the same sectors.

H_{9A} FDI inflows of accommodation and food service activities sectors have a significant effect on GDP of the same sectors.

Financial and Insurance Activities Sectors

H₁₀₀ FDI inflows of financial and insurance activities sectors do not have a significant effect on GDP of the same sectors.

H_{10A} FDI inflows of financial and insurance activities sectors have a significant effect on GDP of the same sectors.

Real Estate Activities Sectors

H₁₁₀ FDI inflows of real estate activities sectors do not have a significant effect on GDP of the same sectors.

H_{11A} FDI inflows of real estate activities sectors have a significant effect on GDP of the same sectors.

Other Activities Sector

H₁₂₀ FDI inflows of other activities sectors do not have a significant effect on GDP of the same sectors.

H_{12A} FDI inflows of other activities sectors have a significant effect on GDP of the same sectors.

The analysis of the relationship was conducted as shown below:

$$\text{GDP}_{n,t} = \beta_0 + \beta_1 (\text{FDI}_{n,t})$$

Where GDP

n,t represents Gross Domestic Product (GDP) of sector n at year t (dependent variable)

$\text{FDI}_{n,t}$ represents Foreign Direct Investment inflow (FDI inflow) of sector n at year t (independent variable)

(n) represents sector of the analysis

(t) represents time period (year)

β_0 represents as intercept term (Shalabh, IIT Kanpur, n.d.)

β_1 represents slope parameter. It measures the average change in dependent variable per unit change in independent variable, holding the other independent variables constant (Hanke & Wichern, 2009).

Results and Discussion

The empirical results for all sectors are reported in Table 1. From the analysis, total FDI inflows of all sectors exerted a significant effect on total GDP of all sectors. This supports H_{1A} that postulates that the total FDI inflows of all sectors exerts a significant effect on total GDP of all sectors. The research results support the conclusion of positive associations between FDI inflows and economic growth as shown in the research of Gerschenkron (1952), Abbas et al., (2011), Puapan (2014), and Zhang (1999).

For the sector level, the results showed that FDI inflows to only 4 sectors of Thai economy had a significant effect on GDP of these sectors. The results support the similar analysis of Puapan (2014), as well as Aykut and Sayek (2007), who concluded that FDI flowing to some sectors of the economy had a strong impact on economic growth.

It is interesting to note that FDI inflows to all sectors do not affect economic growth. The results indicate that FDI inflows to some sectors of the Thai economy can have a strong impact on economic development. However, this covers FDI inflows to other sectors, including trade credit among affiliates. Therefore, FDI inflows to the sectors that support economic development will be the focus of this section.

Table 1. Empirical Results for All Sectors

Statistic	Value
Adjusted R-Squared	0.500
Durbin-Watson Statistic	1.176
F Statistic	11.007
Significance	0.009
Beta	0.742

Further detailed analysis was undertaken to determine which sectors contributed most to the statistic observed. FDI inflows of electricity, gas, steam, and air conditioning supply sectors exerted a significant effect on GDP of the same sector as shown in Table 2. This provided support for H_{5A} that postulates that FDI inflows of electricity, gas, steam, and air conditioning supply sectors have a significant effect on GDP of the same sectors.

Table 2. Electricity, Gas, Steam and Air Conditioning Supply Sectors

Statistic	Value
Adjusted R-Squared	0.711
Durbin-Watson Statistic	1.809
F Statistic	25.592
Significance	0.001
Beta	-0.860

The construction sector inflows similarly had a significant influence ($P=0.001$) on the GDP of the same sector as shown in Table 3. This provides strong support for H_{6A} that postulates that FDI inflows of the construction sector has a significant effect on GDP of the same sector.

Table 3. Construction Sector

Statistic	Value
Adjusted R-Squared	0.77
Durbin-Watson Statistic	2.311
F Statistic	34.558
Significance	0.000
Beta	-0.891

Two other sectors returned significant results, namely, Transport and Storage and Other Activities sectors (Tables 4 & 5). In the case of Transport and Storage, the analysis means that H_{8A} is supported. Hence, FDI inflows of transportation and storage sectors have a significant effect on GDP of the same sectors. From the analysis, FDI inflows of the Other Activities sector had a significant effect on GDP of the same sector. This means that H_{12A} also is supported. The hypothesis states that FDI inflows of the Other Activities sector has a significant effect on GDP of the same sectors.

Table 4. Transportation and Storage Sectors

Statistic	Value
Adjusted R-Squared	0.53
Durbin-Watson Statistic	1.14
F Statistic	12.293
Significance	0.007
Beta	-0.76

Table 5. Other Activities Sector

Statistic	Value
Adjusted R-Squared	0.786
Durbin-Watson Statistic	0.873
F Statistic	37.743
Significance	0.000
Beta	0.899

The Other Activities sector represents an ill-defined group and dissection of the components might well return non-significant results for many of the individual components. Indeed, 7 sectors returned non-significant results. The levels of significance achieved are given in Table 6.

Table 6. FDI Inflows to Various Sectors and the Level of Significance Recorded on GDP in These Sectors

Sector Investigated	Level of Significance
Accommodation and food service	0.939
Agriculture, forestry and fishing	0.599
Financial and insurance activities	0.070
Manufacturing	0.092
Mining and quarrying	0.076
Real estate activities	0.096
Retail trade and motor vehicle repair	0.055

From Table 6 it can be observed that several sectors might be investigated more extensively because of the level of significance achieved, which was between the 5 and 10% levels. The sectors of particular interest are financial and insurance activities, mining and quarrying, and retail trade and motor repair activities. These might be investigated over a longer period of time. The results support the investigation of Puapan (2014), as well as Aykut and Sayek (2007), who concluded that FDI in only certain sectors had a significant impact on economic growth.

Conclusions

In assessing the overall impact of the economy, it was found that FDI inflow contributed positively to economic growth of Thailand. However, when analyzing the sectorial details, the result indicates that FDI inflow had a significant effect on only 4 sectors including electricity, gas, steam and air conditioning, construction, transportation and storage, and other sectors. For the other 7 sectors, FDI inflow did not have a significant effect on these sectors' output.

When analyzing the relationship of FDI inflow and GDP into sectors, FDI inflows of other sectors had a strong effect on GDP of the sector. The FDI inflows of other sectors include trade credit among the affiliates. For other sources of FDI inflows, most of them did not have a significant effect on the economic growth, although further analysis may be merited.

Therefore, policymakers should be aware of promoting FDI inflow to the country. It would be more beneficial for the country if the government promoted FDI inflows to the most responsive sectors that lead to the development of the economy.

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