Revisiting the Nexus of FDI and Employment in International Trade: Evidence from the Emerging Construction Service Sector

Herlitah*1, Muhammad Fawaiq2, Herlindah3

Received: 2018, October 15  Accepted: 2019, January 02

Abstract

This study examines the relationship between Foreign Direct Investment (FDI) and employment in the Indonesia construction service sector. The method used in this study is Panel VECM Granger. The data used are the data of FDI inflow and employment in the construction sector in some provinces, namely North Sumatra, Riau, Jakarta, West Java, East Java, and Bali from 2000 to 2014. The share of the six provinces is 80% of the total national FDI in the construction sector. The results showed that there is unidirectional causality in the short-term and long-term between FDI and labor. That relationship is the inflow of FDI strongly influenced by employment. In other words, Indonesian human resources can encourage investors to invest in Indonesia and not vice versa.

Keywords: International Trade, Construction Services Sector, FDI, Employment, Panel VECM-Granger.

JEL Classification: F13, F14, F16, F21, F23.

1. Introduction

Indonesia has opened its market access of the service sector in the World Trade Organization (WTO) since the Uruguay Round of 1994. Trade-in services liberalization is continued in bilateral and regional cooperation. The bilateral cooperation signed by Indonesia is the Indonesia-Japan Economic Partnership Agreement (IJEP). The agreements under the regional forum are ASEAN and ASEAN + 1 (ACFTA, AKFTA, AANZFTA, and AJFTA).

---

1. Faculty of Economics, Universitas Negeri Jakarta, Jakarta, Indonesia (Corresponding Author: herlitah@unj.ac.id).
2. Ministry of Trade Republic of Indonesia, Indonesia (muhammadfawaiq@yahoo.co.id).
3. Faculty of Laws, Universitas Brawijaya, Malang, Indonesia (herlindah@ub.ac.id).
Besides, in the internal of ASEAN, trade in services is negotiated in a road map called the ASEAN Framework Agreement on Services (AFAS).

The service sectors agreed in each trade cooperation forum consist of 12 service sectors: business, communications, construction, distribution, education, environment, finance, health, tourism, recreation, transportation, and other service sectors (WTO 1991). The twelve services sectors based on article 1 of the General Agreement on Trade in Services (GATS) as well as Article 39 of Law No. 7 of 2014 are divided into four modes or ways of trade is cross border supply (Mode 1), consumption abroad (Mode 2), commercial presence (Mode 3) and movement of natural persons (Mode 4) (WTO, 2002). In each trade cooperation forum, Indonesia has given different levels of liberalization in each sector and each mode of supply. Based on the WTO document No. S / L / 92, general, the levels of services liberalization are fully liberalization without restriction if the Schedule of Committee (SOC) is written none, opened with restrictions, if there are restrictions such as restrictions on foreign equity participation (FEP) and no commitment (unbound) (WTO, 2001).

In terms of Mode of Supply, Ishido (2012) finds that the highest level of liberalization of services at the ASEAN and ASEAN + 1 cooperation forums is at Mode 1 and Mode 2. Mode 1 and Mode 2 have generally been full liberalization or without restriction. The Mode 3, related to foreign direct investment (FDI), has started to open even with restrictions such as restrictions on foreign capital ownership. Restrictions on foreign equity participation (FEP) have been increased from 49% to more than 50%. The aims in increasing FEP are to encourage FDI and to create employment in the service sector. For Mode 4, related to labor, based on Ishido (2012), is the most restrictive mode of supply. This means that each country still severely limits the entry of foreign labor to the domestic services market. The purpose of the restrictiveness in Modes 4 is to protect the domestic labor market. Therefore, it will be difficult for Indonesian labor to work abroad so that one of the best solutions is to increase the job opportunities in domestic market through FDI.

In the service sector liberalization, one of the key sectors that have been liberalized by Indonesia since the Uruguay Round in 1994 is the
construction services sector. The construction services sector is very important for Indonesia because it contributes 9.8% to Gross Domestic Product (GDP). The contribution of the construction sector is in the fourth after the agriculture sector: 13.08%. The sectors with the largest contribution to Indonesia's GDP are the manufacturing industry (21.5%) and retail (13.44%). Also, the construction services sector also absorbed 12% formal employment and informal workforce by 61% (Manning and Aswicahyono, 2012 in Findlay and Pangestu, 2016).

The highest liberalization of the construction services sector given by Indonesia is in the cooperation of IJEPA and AFAS, the openness of foreign capital has reached 55%. This foreign capital ownership is continually upgraded by Indonesia to the latest domestic recommendations (Presidential Regulation No. 44 of 2016) which has allowed foreign ownership of up to 70%. The increased liberalization of the construction sector is expected to increase the FDI inflow to Indonesia. This is in practice quite effective. This is following the research of Tongzon and Cheong (2016) where the number of Korea’s service providers has increased since the enactment of the ASEAN-Korea Trade in Services (AKTIS) signed in 2007 and ratified by Presidential Regulation No. 11 of 2007 (Tongzon and Cheong, 2016). Further Tongzon and Cheong (2016) found that after the implementation of AKTIS, Korean service providers in Indonesia increased from 5 companies in 2005 to 11 companies in 2007 and increased rapidly to 73 companies by 2012.

The other effect of FDI inflow to Indonesia is encouraging economic growth. Latip (2009) finds that the influx of FDI has a positive effect on regional economic growth in the provinces of Indonesia. The continued impact of FDI is the creation of employment. According to the Head of BKPM on Kompas (2015), each additional FDI of USD 1 million will absorb an average workforce of 350 people. Furthermore, the study will examine the relationship between the entries of FDI in the construction services sector with the inclusion of labor in this sector.

2. Method and Data
The relationship between FDI inflow and labor has been the concern of some researchers in the world. This is interesting because the influx
of capital flows could encourage the production of services as well as the increase of labor absorption. However, from the investors’ view, the availability of labor is also a consideration to invest in a particular country. Bekhet and Mugableh (2016) examined the relationship between the entry of FDI and labor in Malaysia’s economic sector. The study used a model approach of time series by testing Granger Causality between the two variables.

Furthermore, Hasli, Ho, & Ibrahim (2016) also measured the impact of FDI on several macroeconomic indicators such as inflation rate, interest rate, Gross Domestic Product (GDP), trade openness, debt, exchange rate, domestic money and unemployment in the People's Republic China, Singapore and Malaysia. This study used regression analysis of panel data with ordinary least square method (OLS). Concerning the unemployment issue, the study found that unemployment affects the entry of FDI into these countries. This illustrates that the availability of human resources influences investors' decisions to invest in a particular country. Gyasi and Li (2015) examined the impact of Chinese FDI on labor in the construction services sector. The research methodology used by Gyasi and Li is linear regression. The relationship between FDI and labor is also examined by Said and Jamoussi (2015) using the Spatial Durbin Model (SDM) panel.

From some of these studies, we can learn some methodologies used to measure the relationship between FDI and labor. These methodologies are Granger Causality and linear regression. Because the purpose of this research is to see the causal relationship between FDI and labor, the method used is Granger Causality such as Bekhet and Mugableh (2016). However, the data used in research Bekhet and Mugableh are time-series data, and this research using panel data, and the method of this research is Panel-VECM Granger. A study related to the Panel-VECM Granger that also related to trade in services’ research is undertaken by Samimi et al. (2013). Because this study aims to see the relationship between FDI with Labor (LB) and referring to previous research, then this study will use the VECM Granger model as follows:
\[
\Delta \text{FDI}_{i,t} = \alpha_{1,i} + \phi_{1,i} \text{ECT}_{i,t-1} + \sum_{j=1}^{k} \gamma_{1,j,i} \Delta \text{FDI}_{i,j,t} + \sum_{j=1}^{k} \theta_{1,j,i} \Delta \text{LB}_{i,j,t} + \epsilon_{1,i,t} \\
\Delta \text{LB}_{i,t} = \alpha_{2,i} + \phi_{2,i} \text{ECT}_{i,t-1} + \sum_{j=1}^{k} \gamma_{2,j,i} \Delta \text{FDI}_{i,j,t} + \sum_{j=1}^{k} \theta_{2,j,i} \Delta \text{LB}_{i,j,t} + \epsilon_{2,i,t}
\]

(1) (2)

where \( i \) describes the province, \( t \) (period), and \( j \) is the optimum lag. As for \( \Delta \) is operator difference, \( \text{ECT} \) is lagged error-correction term obtained from the long-term co-integration relationship, \( \phi_1 \) and \( \phi_2 \) are coefficients and \( \epsilon_1, \epsilon_2 \) are error terms.

Data used in this research is quantitative data in the form of FDI realization and data of permanent workers in the construction service sector. According to Latip (2009), FDI is a form of investment invested directly and move in various sectors. Latip further explained that the flow of FDI does not include global portfolio investment in the form of shares through the sale and purchase in exchange, bonds, and other securities. The permanent worker is a worker who is administratively registered as a permanent worker and usually earns a regular monthly salary of the business throughout the year (BPS, 2014). The permanent worker referred to this study is a permanent worker who works in the construction services sector and does not include day laborers. This is because the international trade negotiations service sector in Mode 4 (Movement of Natural Person) only discusses the workforce in service companies and not talk about day laborers.

FDI and permanent labor entry data are Panel data with the cross-section from six provinces and time series from 14 years from 2000 to 2014. Total observations from panel data are 90 observations. Based on the sources, the data in this study are secondary data obtained from related agencies, i.e. data on the number of permanent labor (LB) in the construction services sector in the province of North Sumatra, Riau Province, DKI Province. Jakarta, West Java Province, East Java Province, and Bali Province were obtained from the Central Bureau of Statistics (BPS). The FDI realization data for the construction services sector in North Sumatra Province, Riau Province, DKI Province, Jakarta, West Java Province, East Java Province, and Bali Province
were obtained from the Investment Coordinating Board (Capital Investment Coordinating Board / BKPM).

3. Results and Discussion

3.1 FDI and Labor in the Construction Services Sector

The total realization of FDI inflow in the construction sector in six provinces (North Sumatra, Riau, DKI Jakarta, West Java, East Java, and Bali) in Indonesia in the 14 years (2000-2014) has reached USD 5.25 billion or 80% of the total realization of FDI inflow of construction sector that amounted to USD 6.53 billion. The realization of the FDI is mostly concentrated in the Province of DKI Jakarta and West Java, which reached 75.4% of the total.

The contribution of permanent labor in this sector in six provinces observed in 2014 reached 48% of the total. The province with the greatest contribution is the Province of DKI. Jakarta by 17% and East Java by 12% and West Java by 8%. The trend in the number of permanent labor in the construction services sector in the five provinces in the period 2010-2014 is average to 11.67%. The trend from the five provinces is higher than the national trend of 10.69%. A province that has the highest trend is the Riau province (16.45%) then DKI. Jakarta (12.99%) and West Java (8%).

3.2 Granger Causality between FDI and Labor (LB) in Indonesia’s Construction Services Sector

The first step in Panel-VECM is to test the stationarity of each variable. This stationarity test starts at the level with the test results presented in Table 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Prob. in Level</th>
<th>Information</th>
<th>Prob. for First Difference</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI</td>
<td>0.022</td>
<td>Stationary</td>
<td>0.0001</td>
<td>Stationary</td>
</tr>
<tr>
<td>LB</td>
<td>0.999</td>
<td>Not Stationary</td>
<td>0.0185</td>
<td>Stationary</td>
</tr>
</tbody>
</table>

Source: Research findings.

Table 1 shows that the stationarity test at the level for the FDI variable with Prob. By 0.02 or less than the 5%, which means that the
FDI variable has been stationary. Nevertheless, prob. in labor is a variable greater than the real level of 5% or not stationary. Therefore, with the principle that both variables are integrated in the same order, then the variable should be tested at the first difference. The Prob. both variables at first difference were lower than the 5%. This means that both variables are integrated in the same order that is at first difference. Therefore, the test can be continued in the next stage of the co-integration test. The results of co-integration testing are presented in Table 2 as follows.

<table>
<thead>
<tr>
<th>Test Statistics</th>
<th>Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel v-Statistic</td>
<td>7,14</td>
<td>0,0000</td>
</tr>
<tr>
<td>Panel rho-Statistic</td>
<td>-1,73</td>
<td>0,0419</td>
</tr>
<tr>
<td>Panel PP-Statistic</td>
<td>-4,66</td>
<td>0,0000</td>
</tr>
<tr>
<td>Panel ADF-Statistic</td>
<td>-5,81</td>
<td>0,0000</td>
</tr>
<tr>
<td>Group rho-Statistic</td>
<td>-1,85</td>
<td>0,0325</td>
</tr>
<tr>
<td>Group PP-Statistic</td>
<td>-7,89</td>
<td>0,0000</td>
</tr>
<tr>
<td>Group ADF-Statistic</td>
<td>-3,91</td>
<td>0,0000</td>
</tr>
</tbody>
</table>

Source: Research findings.

The co-integration test in Table 2 shows that prop, in all test types smaller than the 5% real level. Thus, both variables have co-integration relationships. This co-integration relationship also means that there is a long-term equilibrium relationship between these variables and there is no room for spurious regression (Kao, 1999 in Eslamloueyan and Jokar, 2014). Because both variables have a long-term relationship, the variables could be estimated using Panel-VESM (Hill, Griffiths and Lim, 2012 in Alhayat and Muslim, 2016). Before conducting a Granger causality test with VECM, a lag length test (Lag Length Criteria) was used for VECM testing. Lag test results are presented in Table 3 as follows.
Table 3: Lag Test Results

<table>
<thead>
<tr>
<th>Lag</th>
<th>Schwarz information criterion</th>
<th>Hannan-Quinn information criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>50.96</td>
<td>50.92</td>
</tr>
<tr>
<td>1</td>
<td>48.82*</td>
<td>48.69*</td>
</tr>
<tr>
<td>2</td>
<td>48.95</td>
<td>48.73</td>
</tr>
<tr>
<td>3</td>
<td>49.14</td>
<td>48.82</td>
</tr>
<tr>
<td>4</td>
<td>49.40</td>
<td>48.99</td>
</tr>
<tr>
<td>5</td>
<td>49.39</td>
<td>48.89</td>
</tr>
</tbody>
</table>

**Source:** Research findings.

**Notes:** variables affect the sign (*)

Lag test results with Schwarz information criterion and Hannan-Quinn information criterion show that each variable relates to the first lag. This means that changes in FDI and LB in the previous year affect the change in their respective values in the following year. Thus the first lag(-1) will be included in the VECM Granger test in equation (1) and equation (2). The VECM Granger equation after processing the data for the equation (1) becomes equation (1.1) and equation (2) becomes equation (2.1) as follows:

\[\Delta \text{FDI}_{i,t} = 39973.85 + (-0.84*(\Delta \text{FDI}_{i,t-1} - 3.25*\text{LB}_{i,t-1} + 67246.77)) + 0.07*(\Delta \text{FDI}_{i,t-1}) + (-4.69*\Delta (\text{LB}_{i,t})) \]  

(1.1)

\[\Delta \text{LB}_{i,t} = -0.01 + 0.01*(\Delta \text{Moda3}_{i,t-1} - 3.25*\text{LB}_{i,t-1} + 67246.77) + (-0.01)*\Delta \text{Moda3}_{i,t-1} + (-0.09*\Delta (\text{LB}_{i,t})) \]  

(2.1)

Equation (1.1) shows the effect of construction service labor force on FDI. To test the hypothesis of the equation (1.1), the coefficients tested with the null hypothesis of short-term relationships are \( \Theta_1 = -4.61 = 0 \) and for long-term relationships are \( \Theta_1 = -0.84 = 0 \). Furthermore, equation (2.1) shows the influence of FDI on LB. The null hypothesis of the short-run relationship is \( \gamma_2 = -0.01 = 0 \) and \( \gamma_1 = -0.01 = 0 \) for the long-term relationship. The results of the Wald test of equation (1.1) and equation (2.1) for the short-term Granger causality relationship are presented in Table 4.
Table 4: Results of the Wald Test on Short-Term Causality Panel

<table>
<thead>
<tr>
<th>Variable</th>
<th>∆FDI</th>
<th>∆LB</th>
</tr>
</thead>
<tbody>
<tr>
<td>∆FDI</td>
<td>------</td>
<td>10,52 (prob. 0,0001)</td>
</tr>
<tr>
<td>∆LB</td>
<td>0,39 (prob. 0,3972)</td>
<td>------</td>
</tr>
</tbody>
</table>

Source: Research findings.

Notes: All values in the table are F-statistics.

Based on test results of significance coefficient $\theta_1$ equal to 0 with LB as a free variable and FDI as a dependent variable known that prob. Of the F-statistic is smaller than the 5% or reject H0. It means that the LB variable of the construction service sector influences the influx of FDI in the service sector in the short term. In the reverse direction (the effect of FDI on LB), coefficient $\gamma_2$ has the prob. Of the F-statistic is greater than the 5% or accepting H0. Thus, it is known that the two variables have a one-way short-term relationship that is only the LB that affects the FDI. After a short-term relationship is known, then Granger’s causality test is undertaken to determine the long-term relationship between the two variables. In the long-term relationship, the coefficient tested with Wald Test is the ECT coefficient of equation (1.1) and equation (2.1). With the results of testing, the long-term relationship is presented in Table 5 as follows.

Table 5: Results of the Wald Test on Long Term Causality Panels

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient ECT</th>
<th>F-Statistic (prob.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>∆FDI</td>
<td>-0,84</td>
<td>8,62 (0,0045)</td>
</tr>
<tr>
<td>∆LB</td>
<td>-0,01</td>
<td>0,63 (0,6327)</td>
</tr>
</tbody>
</table>

Source: Research findings.

The coefficient ECT ($\varphi_1$) in equation (1.1) with the independent variables of the LB has a prob. The F-statistic is smaller than the 5% or the H0 is rejected. The coefficient of ECT ($\varphi_2$) in equation (2.1) is proud of the F-statistic that is smaller than the 5% or rejecting the H0. This means that on the long-term causality test, there is a one-way relationship as well as on short-run that labor variable is encouraging the inflow of FDI in the construction services sector.

The ECT coefficient ($\varphi_1$) for the free variable of labor is -0.84 which means that the rate of change in FDI value to achieve the
equilibrium caused by changes in labor value is 84% per year. Therefore, ECT coefficient values are large and close to the number of one, also shows that the time required by the FDI variable to achieve the equilibrium caused by changes in LB variables will also be faster. The coefficient value of ECT (φ2) for the free variable of FDI is only 0.01 or the rate of change of labor to achieve the equilibrium caused by the change of FDI value only 1% per year or very slow. This also means that the entry of FDI does not encourage an increase in the number of LB in the construction services sector. To examine the strength of the effect of LB on the entry of FDI in the construction, service sector, Granger causality test is done which combines short and long-term Granger causality. The test results are presented in Table 8 as follows.

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>ΔFDI ECT(-1)</th>
<th>ΔLB ECT(-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI</td>
<td>10,52 (prob. 0.0001)</td>
<td></td>
</tr>
<tr>
<td>LB</td>
<td>0.94 (prob. 0.3972)</td>
<td>10,52 (prob. 0.0001)</td>
</tr>
</tbody>
</table>

Source: Research findings.
Notes: All values in the table are F-statistics.

Based on Table 6, it is known that the hypothesis H0 where the coefficient φ1 is equal to the coefficient Ω1 equal to zero is rejected. This is indicated by the prob. Of the F-statistic is smaller than 5%. Thus, the LB variable of the construction services sector strongly influences the entry of FDI in this service sector. The findings of this study are following the research of Bekhet and Mugableh (2016) who also found that there is a one-way relationship that the influx of FDI influences the workforce in the manufacturing sector and vice versa in the construction services sector. Where labor availability encourages the entry of FDI in Malaysia. This study is inversely proportional to Said and Jamoussi's (2015) study, which found that FDI had a direct and positive regional impact spillover on Labor in the Tunisian case.

Thus, the inflow of FDI in the construction services sector to Indonesia is significantly driven by Indonesia's human resources in the sector. This is interesting because the attractiveness of Indonesia can
encourage investors in the construction services sector to invest. In the future, the human resources of Indonesia's construction services sector must be improved in terms of both quantity and quality. Increasing the quantity and quality of human resources in construction services can be increased through education as well as competency or certification tests. The Indonesian manpower service or human resources sector is an export potential for Indonesia especially in Mode 4. Although currently, every partner country of Indonesia cooperation is still relatively restrictive to Mode 4, in the future negotiations on trade in construction services to be more focused on Mode 4 so that potential human resources Indonesia can work abroad and generate foreign exchange.

According to the State, and Adam (2012), FDI encourages labor mobility in the same industry. This can also happen in Indonesia as the high quality of human resources will encourage Indonesian construction workers to work in the same companies abroad through a scheme of intra-corporate transferees (ICT) services trading cooperation. ICT is a workforce in a company that is transferred to the same company overseas, which is generally restricted between 2 - 5 years (Nielsen and Taglioni 2003). Besides, research Gyasi and Li (2015) found that FDI from China to Ghana positively affects labor efficiency from low skill to skilled labor. In other words, the impact of FDI from the study literature more on the development of workers' capacity.

4. Conclusion
The realization of FDI in the construction services sector in Indonesia is concentrated in the Provinces of DKI Jakarta and West Java Province. The total FDI of the construction services sector coming into these two provinces from 2000 to 2014 is 75.4% of the national total. The total number of labor in the six provinces observed has reached 48% of the national total with the highest contribution being in the province of DKI. Jakarta. Furthermore. The trend of fixed labor growth in the period 2000-2014 is greater than the national trend.

The test results show that there is a one-way short-run causal relationship between the two variables. The relationship is the influx of FDI is significantly influenced by the number of permanent
workers in the construction services sector of Indonesia. This one-way relationship of mutuality also occurs in long-term relationships where FDI variables are significantly influenced by labor variables with ECT coefficients of -0.84 or speed of FDI change to achieve equilibrium due to kindergarten changes of 84% per annum. In contrast, the variable influx of FDI in the construction services sector is insignificant driving the number of permanent workers in the sector. This causal relationship is tested again by combining long-term and short-term causal relationships and it is well known that the influx of FDI in the construction services sector is strong and significantly influenced by the permanent labor in this sector.

References


