Syntax Literate : Jurnal Ilmiah Indonesia p–ISSN: 2541-0849
e-ISSN : 2548-1398
Vol. 5, No. 12, Desember 2020

FOREIGN DIRECT INVESTMENT ON IMPROVING THE QUALITY OF EXPORTED COMMODITIES IN INDONESIA MANUFACTURE SECTOR

Dolly Poncho Siregar
Universitas Indonesia Depok Jawa Barat, Indonesia
Email: dolly.poncho@gmail.com

Abstract

Foreign Direct Investment (FDI) has been examined internationally has an effect on improvement of export quality. To examine the effect of FDI on Indonesia's export quality, this paper uses the theoretical framework of Melitz type where the model explains the heterogeneity within the firms and the significance of the inwards Foreign Direct Investment on the improvement of export quality. Proxy that is used as quality measurement is export unit value where FDI will affect optimal prices and quality. The theoretical model then transformed into panel data with the industry level data in Indonesia's manufacturing sector from 2011 to 2015. The finding estimated is there is a significant impact of Foreign Direct Investment on the quality of commodities exported which is increasing in Foreign Direct Investment increase the export unit value.

Keywords*: export unit value; foreign direct investment; indonesia; quality*

Abstrak

Penelitian atas pengaruh Foreign Direct Investment (FDI) terhadap peningkatan kualitas export telah dilakukan di banyak literature internasional. Untuk menunjukkan pengaruh FDI terhadap kualitas ekspor Indonesia, Penelitian ini menggunakan kerangka Teoretikal Melitz di mana model ini menjelaskan heterogenitas perusahaan dan signifikansi dari FDI pada peningkatan kualitas eskpor. Proxi yang digunakan adalah nilai unit eskpor di mana FDI akan mempengaruhi harga optimal dan kualitas. Model teoretikal akan diubah menjadi data panel dengan menggunakan data sektor manufaktur Indonesia dari tahun 2011 hingga tahun 2015. Hasil dari penelitian ini menemukan bahwa ada pengaruh signifikan dari FDI terhadap peningkatan kualitas ekspor yang ditunjukkan melalui peningkatan nilai unit ekspor.

Kata kunci: nilai unit ekspor; fdi; indonesia; kualitas

Introduction

Previous study shows that quality linked to the price. Higher quality products usually are sold in a higher price. A product that is high in terms of quality is signaled by a higher price (Utaka, 2015). This increasing of price will increase the income of a country.

However, not every country could produce a high-quality product, since to improving the quality means that the production process of the products will be more complicated and sophisticated. Therefore, a country needs to have access to technology.

 http://dx.doi.org/10.36418/syntax-literate.v5i12.1840

Advanced technology is not cheap, and not every country could afford to have this technology. One of the ways accessing the technology indirectly is the Foreign Direct Investment (FDI). One of the advantages of FDI can be viewed as the one that can increase the level of technical by bringing the advanced technology to the country that receive the investment through the learning by doing process (Blalock & Gertler, 2008). FDI could also a way to provide the channel of distribution, but their research also shows that the foreign firms presence within the industries is not statistically significant contribute on spillover effect (Barbosa & Eiriz, 2009).

Also, the FDI could have effect in productivity Athat theoretically could boost the performance of production especially on improving quality. The importance of improving quality is because of high quality product is usually sold with a higher price. Higher price could boost the performance of a country's economic especially related to international trade. However, only few previous researches show that the improvement of the quality of the commodities exported are related to Foreign Direct Investment.

A research by (Harding & Javorcik, 2012) concludes that there is a possibility that FDI are linked to the export quality upgrading but does not officially confirm the link. In the other hand, Research by (Wang & Wei, 2010) shows that there is no linkage between FDI and China's increasing export sophistication. In addition, export sophistication will be measurement bias since product quality has not been taken into account (Xu, 2010). In the other hand, research by (Zhu & Fu, 2013) shows that FDI make a contribution in export sophistication.

Based on previous studies, there is debate whether the presence foreign will increase the performance of the export of a country. Study by (Alvarez & López, 2008) concluded that the spill over effect of FDI could only positively impact the performance of the export if the effects can compensate the sunk entry cost. Therefore, there is variation of effect of FDI on export performance and would make sense that results of one country is not applicable on other countries.

Another studies in contrast shows that FDI has zero correlation in the performance of industry in relation to the export of commodities in the host country (Greenaway, D & Kneller, 2004). Therefore, the impact varies across countries since there is a variation in characters of a country in relations to capacity to absorb technology and also the human capital stock that is available in the host country.

Based On (Anwar & Sun (2017) shows that an increase in Foreign Direct Investment on Manufacture Sector in China contribute to a substantial rise on quality of export by formally introduce the export unit value as measurement of export quality in China Manufacture sector.

The importance of exports in economic growth is recently taken into account since for the developing countries it could enhance the economic growth. However, the importance is not about the amount exported to other countries, but what the commodities that are exported (Minondo 2010). The recent studies also show that there is benefit that can be received from trading, such as expansion the quality or the new product (Amiti & Freund 2010. Based on (Broda & Weinstein 2006) than only increasing the quantities of exported. Consequently, it would be beneficial to understand the significance of the improvement of quality drivers.

Host country could receive a positive impact of FDI not only directly but also indirectly. The impact of FDI on the export especially the performance of the export might be diverse based on the availability of the initial endowment of the human capital and additionally the technology endowment of the producers available within the country that

receive the investment (Girma et al. 2007). In addition, the government could also take part as one of the important roles by creating policies that regulating the competition in host country's market for the domestic and the foreign firms in host country (Barry and Bradley, 1997).

A multinational Enterprise manages to be a higher productivity firms since they have a competitive asset, and high skill human capital employees, products that are innovative and superior technology (Girma et al. 2007). Therefore, when there is a transfer the assets to the host country through spillover of knowledge, the host country will be benefited since the productivity will increase, the increase of the capacity of the workers and also the competitiveness of commodities that are exported. This will lead to the improvement of export performance. Macis and Schivardi in 2016 shows that firms that export will pay higher wage since they might need to employ a higher skilled worker.

Another benefit that can be acquired through FDI is the externalities of information from the foreign presence that can be used by the host country industry to learn the export performance (Aitken et al. 1997). One of the information that could give benefit to the host country is the experience and knowledge about regulations, the structure of the market, competitors, infrastructure of transportation, networks or research (Krugman 1989). All of these involves the fixed cost. FDI could also be the source of indirect aspects such as management techniques, imitation, training of labor or even new technologies.

Based on (Schott (2004)) shows that the amount of capital and skill in a country are positively correlated to the value of unit exports. The inflow FDI is a significant part in the globalization, however, the FDI has two dimensional effect to the host country, first putting the pressure since there is a difference productivity with the foreign affiliates, or second the FDI would eventually lead to the improvement of the techniques especially in producing or marketing the commodities and this would lead to increase of price of commodities in world market (Harding & Javorcik 2012). Furthermore, there is tendency that industry with foreign affiliates would export products with unit value is higher than the one without foreign affiliates (Waang & Wei, 2008; Harding & Javorcik, 2008)

In conclusion, limited research has studied impact on the improvement of the quality of export commodities by the Foreign Direct Investment and no research have studied the Indonesia export quality. Therefore, this paper is written to provide the information whether there is connection between the FDI and export unit value which has so far focused on China Manufacture sector. This paper will follow the following structure: the literature review, analytical framework, the data that is used in this paper, the result and discussion, and the conclusion.

Few previous reports examined numerous aspects of the quality of export. Research by (Schott (2004)) confirms the quality of export is affected by the characteristics of countries. (Brambilia and Porto (2016)) shows that to produce high quality goods, a firm need a high production cost and also to produce high quality goods means that firm will have to pay greater wages and also including higher production cost such as fixed cost.

(Anwar & Sun (2017) present a model of theoretical which this paper will use to observe the correlation of Foreign Direct Investment and the Industries' quality of commodities that are exported within industries in the host country.

Using Melitz-type of theoretical framework in (Anwar & Sun (2017), the analytical framework begins to derive the utility function of consumer to observe the consumer's behavior in export market.

(1) $$U = \left[\int_l \; q(l)^{1-\rho} \, a(l)^{\rho} dl \right]^{1/\rho}$$

where q is the quality demanded and a is the amount of product demanded.

The utility maximization will yield the demand function as follows:

(2) $a = \mu q E^{1/(\rho-1)}$

where E is the price of the export.

From the firm's side, to produce a product, a firm will need not only a fixed cost but also variable cost. The fixed cost involves the fixed export cost and the iceberg trade cost. The variable cost involves the labor. The productivity of labor depends the capability of the firm and also the quality of product. When the firms have a high capability, the labor would be more productive relatively because producing high quality product would be more difficult. Foreign presence in a firm could increase the capability of a firms through productivity spillovers. There is a positive productivity of spillovers from the existence of foreign firms through FDI (Xu & Sheng 2012).

Industry are presumed will be involving in a double stage profit maximization. During the first phase, firms decide profit that will maximize the quality of a product.

(3) $\max_E \pi = \left(E - \frac{\vartheta l}{s}\right) \mu q E^{1/(\rho-1)} - f - \sigma q^2$

The Profit maximization will yield the optimal price:

(4) $E = \frac{\vartheta l}{\rho s}$

In the following phase, firms arranged profit that will maximize price. Since advanced value commodities are comparatively extra challenging to manufacture, the price of assembly will be greater. Moreover, the fixed cost related to manufacturing advanced quality commodities is similarly higher. This double-stage profit maximization will yield optimal quality, and thus given the product quality, will yield optimal market price (Anwar and Sun, 2017).

(5) $\max_q \pi = (1 - \rho)\rho^{\frac{\rho}{1-\rho}} \vartheta^{\frac{\rho}{\rho-1}} \mu l^{\frac{\rho}{\rho-1}} s^{\frac{\rho}{\rho-1}} q^{\frac{1-(1+\theta)\rho}{\rho-1}} - f - \sigma q^2$

The level of optimal quality will be:

(6) $q = 2\sigma^{\frac{1-\rho}{1-\rho+\theta\rho}}[1-(1+\theta)\rho]^{\frac{1-\rho}{1-\rho+\theta\rho}} \rho^{\frac{\rho}{1-\rho+\theta\rho}} \vartheta^{\frac{-\rho}{1-\rho+\theta\rho}} \mu^{\frac{1-\rho}{1-\rho+\theta\rho}} l^{\frac{-\rho}{1-\rho+\theta\rho}} s^{\frac{\rho}{1-\rho+\theta\rho}}$

The firm level quality that is optimal will be:

(7) $q = \frac{\delta}{\delta - \frac{\rho}{1-\rho+\theta\rho}} \bar{C} C^{-\frac{1-\rho}{1-\rho+\theta\rho}} \left[(1-\varphi)e^{\varepsilon\epsilon\beta} + (\varphi)e^{\varepsilon\epsilon\beta}\right]$

Where $\bar{C} = 2\sigma^{\frac{1-\rho}{1-\rho+\theta\rho}}[1-(1+\theta)\rho]^{\frac{1-\rho}{1-\rho+\theta\rho}} \rho^{\frac{\rho}{1-\rho+\theta\rho}} \vartheta^{\frac{-\rho}{1-\rho+\theta\rho}} \mu^{\frac{1-\rho}{1-\rho+\theta\rho}} l^{\frac{-\rho}{1-\rho+\theta\rho}} s^{\frac{\rho}{1-\rho+\theta\rho}}$

If we substitute the optimal level of quality (6) into level optimal price (4), will yield:

(8) $E = \frac{\delta}{\delta - \frac{\rho}{1-\rho+\theta\rho}} \bar{C} C^{-\frac{1-\rho}{1-\rho+\theta\rho}} \left[(1-\varphi)e^{\varepsilon\epsilon\beta} + (\varphi)e^{\varepsilon\epsilon\beta}\right]$

Therefore, we can assume that change in foreign direct investment will affect change in the export price that is also change in quality.

(9) $\frac{\partial q}{\partial \varphi} = \frac{\partial E}{\partial \varphi}$

With q is the quality, E is the price of the export of the industry and φ is the Foreign Direct Investment. This equation suggests that the effect of FDI upon the quality of commodities could be recognized through the impact upon the price of the commodities that are exported.

Method

This paper's purpose is to provide empirical study to evaluate impact of Foreign Direct Investment upon the export quality that could be recognized through the export price that turned into export unit value.

The model for this research is based on (Anwar & Sun, 2018) empirical model, where this research suggest modification by using panel data to also estimate the fixed effect of cross section.

$$\ln(q_{it}) = \alpha_0 + \alpha_1 t + \alpha_2 \ln(l_{it}) + \alpha_3 \ln(f_{it}) + \alpha_4 ln(\varphi_{it}) + \theta_i + \mu_t + \varepsilon_{it}$$

Where q_{jt} represents export unit value, l is wage rate, f is fixed cost, φ is the Foreign Direct Investment, θ represents industry fixed effect, μ represents time fixed effect, and ε_{jt} : error terms.

The model specified above is a panel data method. We use the STATA Software version 14 for Statistical estimation to calculate all the statistical outcomes offered in this essay.

The variables involve in this paper is export unit value as the dependent variable. The independent variable is wage rate, fixed cost and our interest variable the Foreign Direct Investment. This paper expects that the wage rate, fixed cost and FDI will be positively correlated to the the quality of commodities that are exported. The trading cost such as iceberg is assumed not change over time. Fixed asset is used as a proxy of fixed cost.

The data that is used in this paper is Industry level data of Manufacture Sectors in Indonesia from Indonesia Statistic Bureau from 2011 to 2015. Data that is used are wage (l) and fixed assets (f). The firm level data were categorized into two-number industry classification method based on Indonesia Industrial Classification. The Foreign Direct Investment are acquired from Indonesia Investment Coordinating Board. The Foreign Direct Investment data used is the realization of inward Investment from outside Indonesia.

Indonesia Statistic Bureau and Ministry of Industry of Indonesia provide export unit value (q) data. The export unit value is obtained from the division of the total export to the total amount of quantity exported. The total export obtained by first converting the total price of commodity exported based on the commodity classification into total price of two-digit industry to calculate the total export of two digit industry. Since the data is in nominal terms, the price of the export should be transformed to the real terms using Consumer Price Index (CPI) from Indonesia Statistic Bureau. The formula used to obtain the real price is:

$$Real\ q_t = \frac{CPI_{2015}}{CPI_t}\ x\ Nominal\ q_t \quad (10)$$

Total data that can be collected is 115 (5 years from 2011 to 2015 and 23 two-digit industry classifications).

Table 1 denotes the statistical descriptive set of the Indonesia manufacture sector data that is estimated on this essay. The empirical result of the data would be discussed within the next section of this essay. Figure 1 shows the industry that attracts the FDI the most is the vehicle industry and the basic metal industry.

Table 1
Descriptive of the Statistical Summary

Variables	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
ln (q)	115	8.0824	1.4444	3.5734	10.4741
ln (φ)	115	12.2139	1.7954	3.8276	15.0199
ln (f)	115	22.9921	1.8177	17.2809	26.8862
ln (l)	115	22.2618	0.9567	18.9366	23.9773

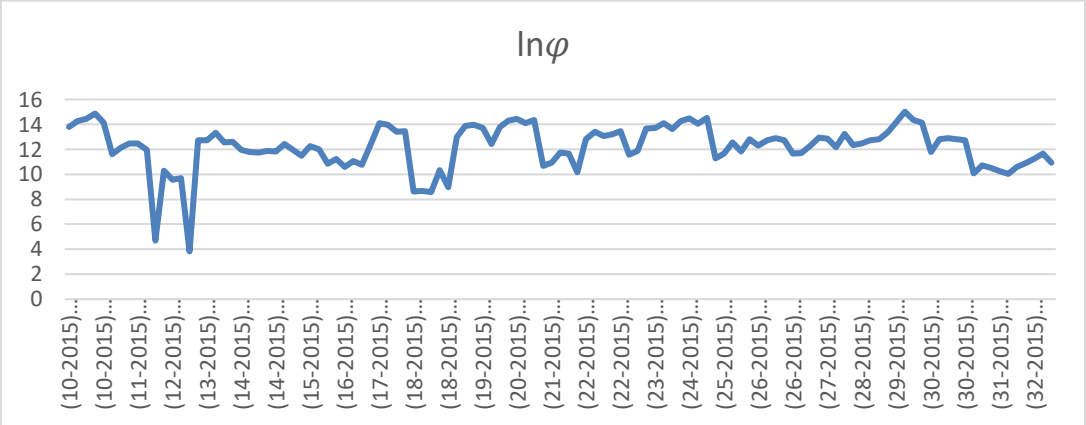

Figure 1
The Most Invested Industry

Results and Discussion

The analytical of the panel method here in this paper is using approach of the fixed effects (FE) and random effects (RE). The first thing to do is to test the best model of FE and RE. Using the Hausman test, the result shows the significant value. Therefore, the Fixed Effect model is considered more suitable compared to the Random Effect model.

Table 2
Fixed Effect Estimation Results

Number of Observations: 115			$\boldsymbol{R^2}$ **:** 0.3051
Dependent Variable: Export Unit Value Ln q	**Estimated Coefficient**	**t**	**P > |t|**
Ln φ (FDI)	0.1035	2.80	0.006***
Ln l (Wage)	0.3515	2.12	0.037**
Ln f (Fixed assets)	0.0587	1.83	0.071*
Constant	-2.3561	-0.73	0.466

Table 2 shows that there is positive correlation between the level of wage rate (l) on average and the export unit value of the industry. Increasing in wage rate will lead to increasing of export unit value on average. The result show that the relationship is statistically significant in 5 percent. This result shows that wage rate is one of the essential

elements in the marginal cost in relation to production. Therefore, the increasing in the one percent of wage rate will lead to the increasing the export unit value by 0.35 percent, and hence increasing the export price. In Indonesia case, the importance of wage as a part of the determinants of the price since the Indonesia is one of labor intensive countries (Setyari et al. 2015).

Industry fixed assets (f) that is proxy of fixed cost are also significant in 10 per cent. Unlike previous study by Anwar and Sun in 2017, this research finds that increase in fixed assets will increase the export unit value on average. Therefore, the increasing in the one percent of fixed assets will lead to the increasing the export unit value by 0.06 percent. Study by (Setyari et al. 2015) shows that there is an increasing trend showing that Indonesia will be Capital Intensive, although it is not a comparative advantage for labor intensive country like Indonesia.

The main interest variable of this paper is the FDI within the industry. The result displays that the foreign presence within the industry has significant effect on export price on 1 percent significance. Increase on foreign presence one percent on average will increase the export price of the industry by 0.1 percent, hence will increase the quality of the exported commodities. This result holds the assumption made before and similar to the result of the research by (Anwar & Sun (2017) that the foreign presence represents by the Foreign Direct Investment has a positively and statistically significant impact on the value of export unit of host country hence the impact also affecting the quality of the export.

This leads to importance of FDI to Indonesia export quality upgrading. However, there is slightly decreasing trend in 2015. Therefore, Indonesia needs to improve the business environment to attract more FDI to Indonesia.

Conclusion

This paper uses the theoretical framework of Melitz type where the model explains the heterogeneity of the firms. The result shows that the foreign presence represents by the Foreign Direct Investment has affected the quality of exported commodities by industries. The quality is straightforwardly linked to the value of export unit or the price of the export of the industry. The model includes the wage rate and fixed assets. This paper used the data from the period of 2011 to 2015 of the Indonesia's Manufacturing Sector. The proxy for the quality is the export unit value of the industry.

The empirical results presented in this essay suggests that rise in wage rate, fixed assets and the foreign presence will increase the export unit value of the industry, therefore would increase the quality of the exported commodities since the wage rate, fixed assets and foreign presence are statistically positive and significant. This finding is similar with the previous theories used in this paper and the result is expected to be the same as previous studies.

Since in the present, the Indonesia commodities exported are not widely recognized as a high quality and only known by the inexpensive price, the policy maker could take into account the importance of the FDI and would eventually lead to increase the product quality.

However, in this paper, the result was unable to report any government's policies especially in relation with the agreement of trade and price, and also the bargaining of the country. It would be beneficial if the next paper could examine the study using the more rigid data set such as the firm level data to see how the decision made by firms especially in Investment decisions.

BIBLIOGRAFI

Aitken, Brian, Hanson, Gordon & Harrison, Ann (1997). Spillovers, Foreign investment and Export Behavior. *Journal of International Economics*, *43*(1-2), 103-132

Alvarez, Roberto, & López, Ricardo A. (2008). Is Exporting a Source of Productivity Spillovers? *Review of World Economics*, *144*(4), 723–749.

Amiti, Mary & Freund, Caroline. (2010). An Anatomy of China's Export Growth. Chicago: *University of Chicago Press.*

Anwar, Sajid, & Sun, Sizhong. (2018). Foreign Direct Investment and Export Quality Upgrading in China's Manufacturing Sector. *International Review of Economics & Finance*, *54*, 289–298.

Barbosa, Natália, & Eiriz, Vasco. (2009). Linking Corporate Productivity to Foreign Direct Investment: An Empirical Assessment. *International Business Review*, *18*(1), 1–13.

Barry, Frank and Bradley, John. (1997). FDI and Trade: The Irish Host-country Experience. *The Economic Journal*, *107*(445), 1798-1811.

Blalock, Garrick, & Gertler, Paul J. (2008). Welfare Gains from Foreign Direct Investment Through Technology Transfer to Local Suppliers. *Journal of International Economics*, *74*(2), 402–421.

Brambilla, I & Porto, GG. (2016). High-Income Export Destinations, Quality and Wages. *Journal of International Economics*, *98*, 21–35.

Broda, C & Weinstein, D. (2006). Globalization and the Gains from Variety. *Quarterly Journal of Economics*, *121*(2), 541-585

Greenaway, D & Kneller, R. (2004). Exporting Productivity in the United Kingdom. *Oxford Review of Economic Policy, 20(3),* 358-371.

Girma, S, Kneller, R & Pisu, M. (2007). Do Exporters Have Anything to Learn from Foreign Multinationals?. *European Economic Review*, *51*(4), 981-998

Harding, Torfinn, & Javorcik, Beata S. (2012). Foreign Direct Investment and Export Upgrading. *Review of Economics and Statistics*, *94*(4), 964–980.

Krugman, PR (1989), *Exchange Rate Stability.* Amerika: *MIT Press.*

Macis, M & Schivardi, F. (2016). Exports and Wages: Rent Sharing, Workforce Composition, or Returns to Skills?. *Journal of Labor Economics*, *34*(4), 945-978.

Minondo, A. (2010). Exports' Quality-Adjusted Productivity and Economic Growth. *Journal of International Trade and Economic Development*, *19*(2), 257-287.

Schott, PK. (2004). Across-Product Versus Within-Product Specialization in International Trade. *The Quarterly Journal of Economics*, *119*(2), 647–678.

Setyari, NPW, Widodo, T & Purnawan, ME, (2015). Industrial Capital Intensity and Comparative Advantages Dynamism of Indonesian Export Products. *Jurnal Ekonomi Pembangunan*, *16*(2), 107-120.

Utaka, Atsuo. (2015). High Price Strategy and Quality Signalling. *The Japanese Economic Review*, *66*(3), 408–420.

Wang, Zhi, & Wei, Shang Jin. (2010). *What Accounts for the Rising Sophistication of China's exports? In China's Growing Role in World Trade* (pp. 63–104). University of Chicago Press.

Xu, Bin. (2010). The Sophistication of Exports: Is China Special? *China Economic Review*, *21*(3), 482–493.

Xu, X. & Sheng, Y. (2012). Productivity Spillovers from Foreign Direct Investment: Firm-Level Evidence from China. *World Development*, *40*(1), 62–74.

Zhu, Shujin, & Fu, Xiaolan. (2013). Drivers of Export Upgrading. *World Development*, *51*, 221–233.