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Indonesian Firms in Facing Globalization: Do Foreign Ownership and Export Matter?

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ABSTRACT: The Indonesian firms need to prepare and be ready for the globalization and the industrial revolution 4.0. The inward-looking strategy is no longer sufficient to face competition, while the outward-looking strategy provides a significant benefit for the firms to survive and compete. In response to this globalization issue, the current study evaluated the outward-looking strategy by examining three critical external factors, besides inward-looking factors that contribute to Indonesian firmsô productivity. The outward-looking factors were foreign ownership, export, and import, whereas the inward-looking factors were material, labor, capital, and energy. Applying the augmented Cobb-Douglas production function on 8,589 manufacturing firms within seven years period, the findings of this current study showed the importance of foreign ownership, export, and import in significantly influencing the productivity of the Indonesian firms. The results were robust under four methods of analyses, namely Ordinary Least Squared (OLS), Generalized Least Squared (GLS), Maximum Likelihood (ML), and General Method of Moments (GMM). The findings suggested the outward-looking strategy for Indonesian firms to increase their productivity.

Keywords: globalization, outward-looking strategy, foreign ownership, export, import, productivity.

1 INTRODUCTION

The rapid change in the business environment due to globalization requires firms to accelerate their performances. One of the key performances in facing the rapidly changing competition is output productivity (Abdu and Jibir, 2017). Firms all over the world are increasingly concerned about how to increase productivity in response to the current highly competitive environment. Not only the inward-looking factors, such as increasing material, adding labor, and accumulating capital that influence the firmsô productivity, but also the outward-looking factors, such as foreign ownership, export, and import that contribute a pivotal role (Burger et al., 2017).

The conventional production theory focuses specifically on inward-looking or internal factors, such as material, labor, capital, and energy in analyzing firmsô productivity. The neoclassical production theory highlights some additional external factors that play essential roles in boosting output productivity. These external factors are augmented to production through the technology coefficient, which is assumed constant in the conventional production function. Grossman and Rossi-Hansberg (2008) added that the external factor such as trade (import and export) contributes to productivity, whereas Blomstrom and Kokko (2003) scrutinized the pivotal role of foreign ownership on output productivity.

Several preceding studies have been conducted on the determinants of firmsô output productivity with most of the studies examined the inward-looking or internal factors. Some studies incorporated outward-looking or external factors in the analysis. The findings in the existing literature concerning internal factors are conclusive, whereas the evidence related to external factors is inconclusive. The impacts of foreign ownership, export, and import remain a big question. This current study evaluates the inward-looking and the outward-looking factors of the Indonesian firmsô productivity, in the spirit to shed light on the debate. The novelty of this current research is twofold, the inclusion of outward-looking factors in the analysis of output productivity and the utilization of the rich dataset of 8,589 manufacturing firms in Indonesia.

1.1 *Input Factors and Output Productivity*

It is a general economic knowledge that, in producing output, a firm needs a particular combination of input factors (Nicholson and Synder, 2017). The neoclassical production theory prevails two key factors that directly affect output, namely labor and capital (Moysan and Senouci, 2016). The two-input framework is basically to assess the value-added of output, as the input material is not included in the production function. In analyzing total output, the four-input framework is complete and provides a more comprehensive analysis of the input factors (Halicioglu and Ketenci, 2018). The current study adopts the four-input analysis in examining output productivity. The hypothesis derived from the literature is:

H1: Each input factor (i.e., material, labor, capital, energy) has a positive and significant impact on output productivity.

1.2 *Export, Import, and Productivity*

The theoretical foundation for the relationship between trade (export and import) and firms' productivity can be traced back to Krugman (1979) and Helpman and Krugman (1985). In this early literature, trade increases the productivity of a firm through the scale effect and selection effect (Grossman and Rossi-Hansberg, 2008). Export increases the production scale and in turn, leads to the reduction of unit cost (Ottaviano et al., 2018). Import enables the product market to relocate the released factors of production to survival firms, which shows the selection mechanism as the result of trade openness.

Empirical literature strengthens the theoretical foundation by evaluating the trade impacts on firms' productivity. Kapri (2016) justified the positive effect of trade liberalization on the productivity of firms for Korea. A similar finding was provided by Amity and Konings (2007) for Indonesian firms. Topalova and Khandelwal (2011) also concluded the positive effect of trade on firm productivity in India. Based on these previous studies, this current research develops the following hypothesis:

H2: Trade liberalization increases the output productivity of local firms.

1.3 *Foreign Ownership and Productivity of Firms*

The idea of productivity effects from foreign direct investment (foreign ownership) arises from the groundbreaking paper of Caves (1974). This idea was developed to the empirical studies to examine the existence of these effects on local host-country firms (Blomstrom and Kokko, 2003). The earlier empirical research focuses on cross-sectional data due to the limitation on the availability of data (for example, Sjoholm, 1999; Takii, 2005; Blalock and Gertler, 2008). The current research on this area utilizes the panel data of firms in a specific country. Khalifah et al. (2015) examined the FDI effects on local firm in Malaysia, Kim (2015) evaluated those effects in South Korea, Liang (2017) pointed out the Chinese firms, whereas Suyanto et al. (2014) Sari et al. (2016), and Suyanto and Sugiarti (2018) analyzed the FDI productivity effects in Indonesia.

From the theoretical foundation and the previous empirical studies, the impact of foreign ownership on firms' productivity is hypothesized as follows:

H3: Foreign ownership has a significant positive effect on output productivity

2 RESEARCH METHODS

Following the existing literature by Halicioglu and Ketenci (2018) and Kapri (2016), this current study extends the conventional neo-classical Cobb-Douglass production function by incorporating trade (export and import) and foreign investment as additional inputs. The simple augmented production function when incorporating trade and foreign investment takes the form below:

$$Y_{it} = f(M_{it}, L_{it}, K_{it}, E_{it}, X_{it}, IM_{it}, FO_{it}) \quad (1)$$

where Y_{it} is the value of output for firm-*i* at time-*t*, M_{it} is the value of the material used by firm-i at time-t, L_{it} is an equivalent full-time worker of firm-*i* at time-*t*, K_{it} is the value of capital for firm-*i* at time-*t*, E_{it} is the value of energy used in the production of firm-i at time-t, X_{it} is the percentage of export from the total output, IM_{it} is the percentage of imported material to total values of the material, FO_{it} is a dummy variable of foreign ownership that takes a value 1 when the firm has foreign ownership or a value of 0 when the firm has no foreign ownership.

The long-run relationship for the augmented production function of equation (1) is expressed econometrically in logarithmic form as follows:

$$y_{it} = \beta_0 + \beta_1 m_{it} + \beta_2 l + \beta_3 k + \beta_4 e_{it} + \beta_5 X_{it} + \beta_6 IM_{it} + \beta_7 FO_{it} + \varphi_{it} \quad (2)$$

Where y_{it} is logarithmic of output value, m_{it} is logarithmic of material value, l_{it} is logarithmic of numbers of workers, k_{it} is logarithmic of capital value, e_{it} is logarithmic of energy value, φ_{it} is the stochastic error term, and other variables are as previously defined.

The equation (2) was calculated under four methods of analysis namely (1) Ordinary Least Squared (OLS), (2) Generalized Least Squared (GLS) Random Effect, (3) Maximum Likelihood (ML) Random Effect, and (4) General Method of Moment (GMM).

The data used in this research was 8,589 manufacturing firms in Indonesia over the 2007 to 2013 period; therefore, the total observation was 60,123 firms. This balanced panel data was constructed using the six-step procedure as in Suyanto et al. (2009), derived from the annual survey of large and medium manufacturing firms conducted by the Indonesian Central Bureau of Statistics (BPS).

3 RESULTS AND DISCUSSION

Table 1 presents the estimation results of equation (2) under the OLS, GLS, ML, and GMM methods. The sign of coefficients for each variable is the same for the four methods. The magnitudes vary under the four methods, but variations of the magnitudes are small except for GMM results, which very large than those in the other methods. The significant degree of each variable is the same under the four methods, except for Export (X) that has a lower degree of significance under GMM (at alpha 10%, while under the other methods are at alpha 1%). In general, all variables are statistically significant influencing output productivity.

The discussion of the estimation results was based on the GLS Random method, in column 2 in Table 1. As suggested in Wooldridge (2016), panel data with large numbers of cross-sectional observation is valid under the GLS Random method. Other methods were presented for robustness checks. In addition, the partial significance test shows that all variables are statistically significant at a high degree of 99% under the four methods, except for the Export variable under GMM. Interpretation of the estimation results under the GLS Random method is very much similar to other methods.

Table 1: Estimation Results of Augmented Production Equation under OLS, GLS, ML, and GMM

(Dependent Variable: Output)

	OLS Common Constant (1)	GLS Random Effect (2)	ML Random Effect (3)	GMM (4)
Constant	1.4836***	1.8656***	1.9071***	0.4135***
	(0.000)	(0.000)	(0.000)	(0.000)
m	0.5734***	0.5038***	0.4973***	0.2386***
	(0.000)	(0.000)	(0.000)	(0.000)
l	0.3326***	0.3595***	0.3576***	0.2386***
	(0.000)	(0.000)	(0.000)	(0.000)
Cont.				
k	0.0089***	0.0079***	0.0077***	0.0038***
	(0.000)	(0.000)	(0.000)	(0.002)
e	0.1791***	0.1875***	0.1882***	0.2201***
	(0.000)	(0.000)	(0.000)	(0.000)
X	0.0004***	0.0002***	0.0002***	0.0001*
	(0.000)	(0.000)	(0.000)	(0.061)
IM	-0.0010***	-0.0009***	-0.0009***	-0.0003***
	(0.000)	(0.000)	(0.000)	(0.014)
FO	0.0011***	0.0007***	0.0006***	0.0002***
	(0.000)	(0.000)	(0.000)	(0.005)
Number of Firms	8,589	8,589	8,589	8,589
Total Observation	60,123	60,123	60,123	60,123

Source: Estimation results on the balanced panel data
Note: *** indicates significance at 99%, ** indicates significance at 95%, and * indicates significance at 90%. The P-values are in parenthesis.

Concerning the material input (m), it was found that the coefficient is 0.5038 and significantly influences output at a 99% degree of confidence. The coefficient reflects the elasticity of material to output. The value of 0.5038 was interpreted as an increase in 1 percent material leads to an increase of output for 0.5038 percent. The coefficient of labor (l) is 0.3595, showing the positive impact of labor on output with the elasticity of 0.3595. The positive impact of labor is statistically significant fewer than 99% degree of confidence.

Capital had a positive and significant effect on output, with the elasticity coefficient of 0.0089. The other input variable of Energy (e) also had a positive coefficient and significant in affecting the output of the observed firms, with the elasticity coefficient of 0.1875. The sum of the elasticity coefficient of input to output for the four factors indicates the increasing return to scale in production.

The findings of the input coefficients are consistent with the neoclassical production theory that pinpoints input variables have positive impacts on output, with the elasticity of input to output is less than one for each input, as stated in Nicholson and Synder (2017). The findings are also in line with previous empirical studies on Indonesian manufacturing firms by Sari *et al.* (2016), Suyanto *et al.* (2014), and Suyanto and Sugiarti (2018).

Moving to the external variables, the positive and significant coefficient of export (X) presents a positive impact of export on output. A 1 percent increase in production export of a firm rises 0.0004 percent of its output. The finding of positive impact of export on production is not surprising as the more significant the percentage of output exported, the higher the productivity of output, which supports the arguments of Krugman (1979) and Helpman and Krugman (1985) and corresponds to previous empir-

ical studies by Amity and Konings (2007) and Topalova and Khandelwal (2011).

In contrast, import (m) had a significant negative impact on output. The increase in the percentage of imported material leads to a decrease in the firm's output by 0.0009 percent. The result is similar to Kapri (2016).

FDI that representing foreign ownership in a firm had a positive and significant effect on output. This finding is interpreted as the productivity impact of FDI on local firms. Foreign ownership induces output productivity in Indonesian manufacturing firms. This result justifies the theoretical arguments of Caves (1974) and Blomstrom and Kokko (2003) and consistent with findings of previous studies about Indonesia by Suyanto et al., 2014; Sari et al.,2016; Suyanto and Sugiarti, 2018) and elsewhere by Khalifah *et al.*, 2015 for Malaysia; Kim, 2015 for South Korea; Liang, 2017 for China.

4 CONCLUSION

This research explored the impact of inward-and outward-looking factors on the output productivity of Indonesian manufacturing firms. The total observed firms were 8,589 over the 2007-2013 period. Four distinctive methods of analysis, namely OLS, GLS, ML, and GMM, were applied to the balanced panel data. The results showed that the inward-looking factor, either material, labor, capital, or energy, had a positive and significant impact on output productivity, respectively. Export had a significant positive effect on output, indicating the importance of export in increasing productivity. Import had a significant negative effect on output, suggesting the disadvantage of using imported material in production. Foreign ownership had a positive and significant coefficient, implicating a productivity impact of foreign ownership in Indonesian manufacturing firms. The policy implication is twofold. Firstly, a firm needs to have an outward-looking strategy in increasing its productivity. Secondly, the firm policy in increasing output productivity can be achieved through export and foreign ownership. These two policy implications for outward-looking strategy are consistent with the current global environment and the industrial revolution 4.0.

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