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The Effect Of Manufacturing Characteristics On The Export Performance Of Manufacturing In Indonesia

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Abstract: The research aims are to estimate a structural model of the local competitiveness and to estimate FDI on the export performance of the manufacturing sector in Indonesia. This study uses data panel 33 provinces in Indonesia with time series 2004-2012. The results show that local competitiveness does not have direct effect on the performance of exports, but it affects through specialization level, the level of diversity, employment and economic growth. Furthermore, FDI has direct and significant effect on the export performance, but it does not affect through specialization level, the level of diversity, employment and economic growth.

Keywords: Export Performance, Local Competitiveness, FDI, Specialization Level, Level of Diversity, Employment and Economic Growth

1 INTRODUCTION

Many literatures have discussed the factors that affect on the export performance both in terms of the demand and the supply side ([1], [2], [4], [9]). The demand side saw the export from the foreign demand for products resulting from the manufacturing sector in the country. In contrary, the supply side saw the export from the supply of products from the domestic manufacturing sector. This study has similarities with [21] on variable the characteristics of the region (competition, specialization and diversity as well as foreign investment). The differences with research of [21] on the endogenous variables, in this study focus on the performance of export, while [21] uses a variable productivity growth. Empirical debate about export that affect economic growth or economic growth affect on exports has occurred in the long term ([3], [19], [22]). This study argues that productivity in the manufacturing sector results in advantages that can boost economic growth and naturally lead to the export performance ([18]). Several empirical studies indicate that FDI is usually affected byglomeration variables such as the local competitiveness, the level of specialization and the level of diversity ([13], [7]; and [17]). This study assumes that FDI causes the level of specialization or the level of diversity in products. This research aims to determine direct and indirect effect of the manufacturing characteristics which consists of local competitiveness and FDI on export performance through specialization level, diversity level, employment and economic growth.

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2 LITERATURE REVIEW

2.1 The Effect of Local Competitiveness on the Export Performance

The debate about the impact of local competition on export behavior has been occurring since the 1970s. First argument, that local competition may increase export due to the competitiveness pressure on the domestic firms, so that they will increase the growth by innovating and looking for new markets, including abroad market. These improvements allow companies to gain a bigger share and profits in the export market ([16]). Second argument, which states that the domestic large scale companies can take advantage from the market power and economic scale which makes firms can realize export. When the domestic competition more intensive, these companies will face a decline in profits in their export activities ([11]). Several studies support that the local competition can increase export ([4], [16]). Other study [20], find that local competition has negative effect on exports, while [12] finds that it does not have an effect.

2.2 The Effect of FDI on the Export Performance

Since the 1980s, FDI has become a dominant factor of technology transfer from developed countries to developing countries. This view is based on the multinational companies and their affiliates are an important source for international capital and technology. Foreign companies have technical knowledge, equipment, management, marketing and skills (Lall, 1997; Keller, 2004) in ([7], [8]). The knowledge spillovers from FDI occur through three main channels: (i) the training of foreign firms to domestic firms; (ii) the effects of long-term correlation between foreign and domestic companies that allow both to learn and adopt high technology and organizational skills; and (iii) the effects of competition from foreign companies force domestic companies to improve the productive techniques in order to remain competitiveness and productivity ([7], [8]). [6] finds the evidence of negative effects of spillovers US manufacturing companies for the period 1984-1992. While [10], does not find a significant effect of the knowledge spillovers on manufacturing exports. Furthermore, [5] finds that the benefits of the knowledge spillovers affecting on export companies of manufacturing positively in Spain for the period 1990-1998.

3 CONCEPTUAL FRAMEWORK

Conceptual framework of the structural model is to estimate the characteristics of the manufacturing sector on the export performance of the manufacturing sector is done by placing the local competitiveness and FDI as an exogenous variable, economic growth, employment, levels of diversity and the level of specialization as an intervening variable and performance of export as an endogenous variable.

Structural models of research can be seen in Figure 1 below:

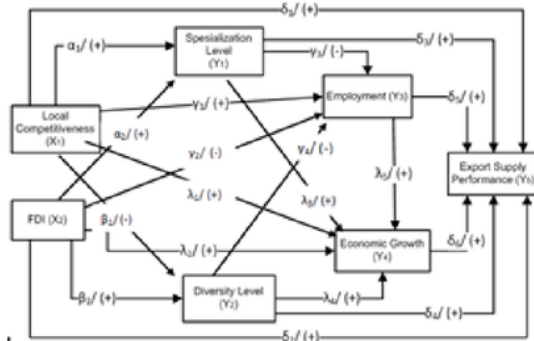


Figure 1. Conceptual Framework

4 RESEARCH METHODOLOGY

This study uses data of output from large and medium manufacturing subsector (IBS) consist of FDI manufacturing sector, employment, economic growth and the value of manufacturing exports from 33 provinces in Indonesia for the period 2004-2012. The research data were obtained from the Ministry of Industry and Trade of the Republic of Indonesia. Structural model in this study can be seen in the following functional equation:

$$Y_1 = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \mu_1 \quad (1)$$

Where, X_1 is local competitiveness; X_2 is FDI; Y_1 is level of specialization; α_0 ; constant; α_1 and α_2 are coefficient; μ_1 is error term.

$$Y_2 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \mu_2 \quad (2)$$

Where, X_1 is local competitiveness; X_2 is FDI; Y_2 is level of diversity; β_0 ; constant; β_1 and β_2 are coefficient; μ_2 is error term.

$$Y_3 = \gamma_0 + \gamma_1 X_1 + \gamma_2 X_2 + \gamma_3 Y_1 + \gamma_4 Y_2 + \mu_4 \quad (3)$$

Where, X_1 is local competitiveness; X_2 is FDI; Y_1 is level of specialization; Y_2 is level of diversity; Y_3 is employment; γ_0 ; constant; $\gamma_1, \gamma_2, \gamma_3,$ and γ_4 are coefficient; μ_4 is error term.

$$Y_4 = \lambda_0 + \lambda_1 X_1 + \lambda_2 X_2 + \lambda_3 Y_1 + \lambda_4 Y_2 + \lambda_5 Y_3 + \mu_6 \quad (4)$$

where, X_1 is local competitiveness; X_2 is FDI; Y_1 is level of specialization; Y_2 is level of diversity; Y_3 is employment; Y_4 is economic growth; λ_0 ; constant; $\lambda_1, \lambda_2, \lambda_3, \lambda_4$ and λ_5 are coefficient; μ_6 is error term.

$$Y_5 = \delta_0 e^{\delta_1 X_1 + \delta_2 X_2 + \delta_3 Y_1 + \delta_4 Y_2 + \delta_5 Y_3 + \delta_6 Y_4 + \mu_7} \quad (5)$$

$$\ln Y_5 = \ln \delta_0 + \delta_1 X_1 + \delta_2 X_2 + \delta_3 Y_1 + \delta_4 Y_2 + \delta_5 Y_3 + \delta_6 Y_4 + \mu_7 \quad (5.1)$$

Where, X_1 is local competitiveness; X_2 is FDI; Y_1 is level of specialization ; Y_2 is level of diversity; Y_3 is employment; Y_4 is economic growth ; Y_5 is export supply performance in $\ln \delta_0$; constant; $\delta_1, \delta_2, \delta_3, \delta_4, \delta_5$ and δ_6 are coefficient; μ_7 is error term. The operational definition of research variables refer to Appendices 1. Furthermore, the structural equation model is formed in the reduced form by substitution the functional refer to (1), (2), (3), (4) and (5.1) so that it becomes the following equation:

$$Y_1 = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \mu_1$$

$$Y_2 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \mu_2$$

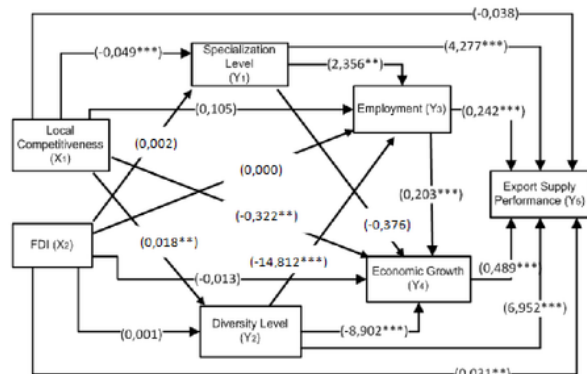
$$Y_3 = \phi_0 + \phi_1 X_1 + \phi_2 X_2 + \mu_4$$

$$Y_4 = \pi_0 + \pi_1 X_1 + \pi_2 X_2 + \mu_6$$

$$\ln Y_5 = \ln v_0 + v_1 X_1 + v_2 X_2 + \mu_8$$

6 THE ESTIMATE RESULTS

The results estimation of the study of the local competitiveness and FDI on the export performance can be seen in Figure 2 below (See Appendices 2):



Significance: *** (p=0,000); ** (p=0,050);

Figure 2. The Estimate Results the Local Competitiveness and FDI on Export Performance

The results estimation of study of the local competitiveness and FDI on the export performance partially can be seen in Figure 3 and 4 below:

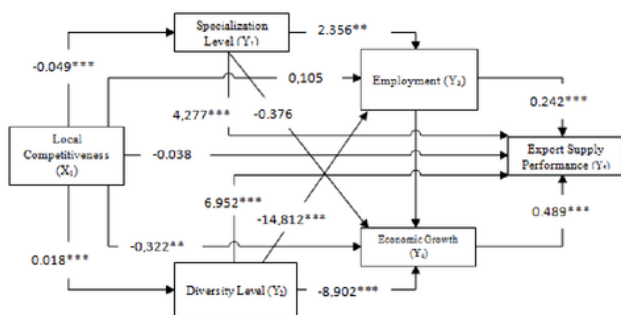


Figure 3. The Estimate Results the Local Competitiveness on Export Performance

Based on Figure 3, the local competitiveness does not have direct effect on the export performance, but it has a negative effect through the level of specialization, employment and economic growth. The increased of the local competitiveness can improve the export performance through level of diversity in the form of a concentration of 4 largest manufacturing subsectors.

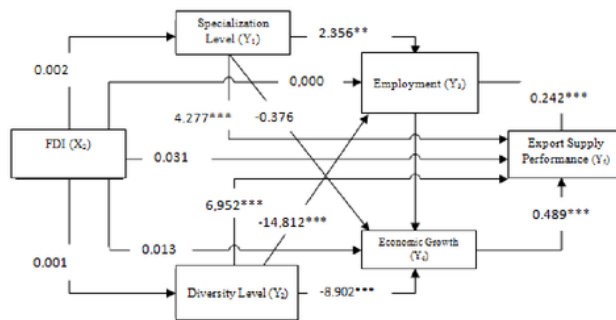


Figure 4. The Estimate Results of FDI on Export Performance

Based on Figure 4, FDI has direct effect and positive on the export performance, but FDI does not affect on the export performance through the level of specialization, the level of diversity, employment and economic growth.

6 CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The estimation results indicate an increase the local competitiveness does not improve the export performance of manufacturing. The local competitiveness can improve the export performance of manufacturing only through the increase of concentration on the four dominant subsectors of manufacturing in every province in Indonesia. Finally, the increases of FDI can improve the export performance directly. But it does not improve the export performance through the level of specialization, the level of diversity, employment and economic growth.

6.2 Recommendations

Based on the research results, the recommendations can be made in the following: (i) industry partnership among the small, medium and large scale with the large industries, it is important to implement in order to improve the specialization of manufacturing in every province in Indonesia; (ii) the development of infrastructure and superstructure such as roads, ports, airports, energy, telecommunications and unconvoluted bureaucracy. Furthermore, it needs to improve inter-regional connectivity and clustering in the area that can result they increase of climate business and the specialization of manufacturing sector; (iii) the support on the subsector of dominant manufacturing such as food and beverages, textiles, tobacco and footwear, rubber goods, paper products, furniture, and vehicles can be retained. However, government needs to develop the other subsectors, especially the subsectors oriented to the labor intensive so that to increase employment and economic growth in Indonesia; and finally (iv) government efforts needs to attract FDI by providing various incentives and facilities, but domestic investment must be given more incentives and facilities than foreign investment. In addition, in

the efforts of the economic development in the regions, the foreign investment should be arrange to invest in certain areas and certain economic sectors. It is necessary in order to reduce the dependence of Indonesia from foreign investment in long-term.

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Appendices

Appendices 1

1. Supply export performance (Y_5) is the export value of large and medium manufacturing (ISIC 15-37) from 33 provinces in Indonesia in 2004-2012.
2. Local competitiveness (X_1) is a ratio which is measured by the advantages of subsectors manufacture compared with the same of subsectors manufacture in other regions (provinces) in Indonesia. The following formula is used [21]:

$$\text{Local Competition} = \frac{\text{Output}_{jt}}{\text{OutputTotal}_j} \bigg/ \frac{\text{Output}_{it}}{\text{OutputTotal}_i}$$

where;

i = large and medium of sector manufacture to i (15, 16, 17, ..., 37)

j = province to j (1, 2, 3, ..., 33)

t = time to t (2004, 2005, 2006, ..., 2012)

If the values of manufacturing in the level of competition more than one indicate that a certain subsectors manufacture having the ability to fulfill the needs in province itself and also can fulfill the needs in the other provinces as well as export.

3. FDI (X_2) is a ratio of foreign direct investment in large and medium manufacturing in certain province divided by the total of foreign investment in certain provinces from 33 provinces in Indonesia.
4. Economic growth (Y_4) is GDRP in a certain year minus by GDRP in previous year then divided by the previous year. As shown in the following formula:
Economic Growth = $(\text{GDRP}_{jt} - \text{GDRP}_{jt-1}) / (\text{GDRP}_{jt-1}) \times 100\%$
GDRP = Gross Domestic Regional Product
5. Employment (Y_3) is a ratio of the number of workers in the large and medium manufacturing in certain provinces divided by the total of workers in certain province from 33 provinces in Indonesia for 2004-2012.

$$\text{Employment} = \frac{TK_{jt}}{TK_{jt-1}} \times 100\%$$

where;

TK = Workers

6. The level of diversity (Y_2) is a ratio of the output of the 10 largest subsectors manufacturing in certain province divided by the total output of manufacturing in certain province. In the measurement by using the following formula [21]:

$$\text{Diversity Index} = \frac{\text{Largest Output of 4 Subsectors Manufacture}_{jt}}{\text{Output of Sector Manufacture Total}_{jt}}$$

7. The level of specialization (Y_1) is a ratio described the specialization of manufacturing sector compared with other provinces. In the measurement using the *Krugman Specialization Index* (KSI) in [14] with the following formula:

$$\text{Specialization Index} = \sum_{i=1}^n |x_i - \bar{x}| \quad \text{To obtain } x_i \text{ using}$$

the following formula:

$$x_i = \frac{\text{Output}_{ij} / \text{Total Output}_{jt}}{\text{Output}_{jt} / \text{Total Output}_i}$$

Where Output_{ij} is output in the subsectors of manufacturing, to obtain \bar{x} using the following formula:

$$\bar{x} = \frac{\sum x_i}{n}$$

Krugman specialization index has a value range:

0 - 1.99: show that the province does not have a specialization

≥ 2 : show that the province has a specialization

Appendices 2

The Estimation Results

(1)	(2)	(3)	(4)	(5)
Local Competitiveness	Export Performance of Supply	-0,038	-0,523	0,601
	Economic Growth	-0,322	-2,742	0,006
	Employment	0,105	0,710	0,478
	Diversity Level	0,018	3,451	***
	Specialization Level	-0,049	-6,004	***
FDI	Export Performance of Supply	0,031	2,271	0,023
	Economic Growth	-0,013	-0,600	0,548
	Employment	0,000	0,007	0,995
	Diversity Level	0,001	0,650	0,516
	Specialization Level	0,002	1,214	0,225
Specialization Level	Export Performance of Supply	4,277	9,062	***
	Economic Growth	-0,376	-0,483	0,629
	Employment	2,356	2,427	0,015
Diversity Level	Export Performance of Supply	6,952	7,691	***
	Economic Growth	-8,902	-6,351	***
	Employment	-14,812	-9,638	***
Employment	Export Performance of Supply	0,242	8,377	***
	Economic Growth	0,203	4,383	***
Economic Growth	Export Performance of Supply	0,489	13,906	***

Note: (1) Independent Variable; (2) Dependent Variable; (3) Estimation; (4) t-Value; and; (5) Probabilities

Significantly: *** = 0,000; ** = 0,050; * = 0,10

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