



THE EFFECT OF IMPORTED INTERMEDIATE-GOODS FROM CHINA TOWARDS EMPLOYMENT AND WAGE OF MANUFACTURING INDUSTRY SECTOR IN INDONESIA 2011-2018

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Abstract

This study aims to determine the effect of imports of intermediate goods from China on the employment and wages in the Indonesian Manufacturing Industry. This study uses secondary data from Badan Pusat Statistik, with cross-section data consisting of 24 sectors of the Klasifikasi Baku Lapangan Usaha Indonesia (KBLI) and time-series data for 2011-2018. The analysis tool used is the Two-Stage Least Square (TSLS) with the random effect estimation model. Endogenous variables in this research are employment and wages. Exogenous variables in the study are imports of intermediate goods from China, female workers, college workers, and added value. The results showed that employment and value-added had a positive and significant effect on wages, while the import of intermediate goods from China did not have a significant effect on wages. Meanwhile, female workers, college-workers, and wages have a positive and significant effect on employment, while imports of intermediate goods from China do not have a significant effect on employment in Klasifikasi Baku Lapangan Usaha Indonesia (KBLI) sector.

Keywords: *Employment, Wages, Imports of Intermediate-Goods From China, Two-Stage Least Square (TSLS), Random Effect*

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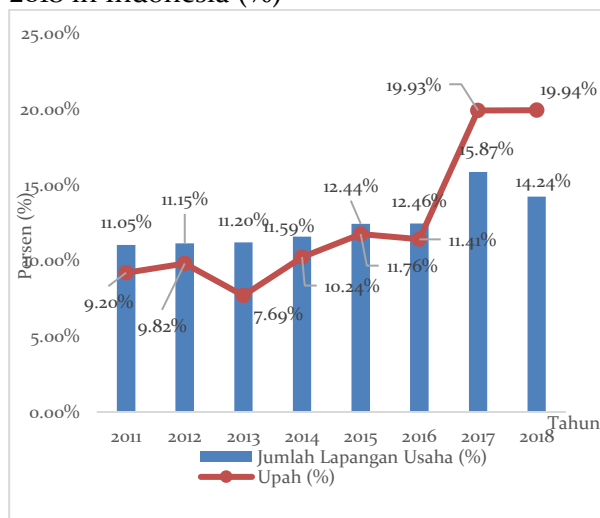
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INTRODUCTION

Indonesia is a country that adopts an open economic system. It means that Indonesia could export and import the goods to and from overseas (Lini and Sasana, 2019). China and Indonesia have nurtured a good relationship, especially in trading. Indonesia imports large numbers of intermediate goods. The massive import development from the main country, which is China is capable to decrease employment and wages (Autor et al., 2013) and (Mion and Zhu, 2013). Figure 1 illustrates the rate of growth in wages and employment in the Indonesian manufacturing industry based on KBLI 2011-2018.

Figure 1. The growth rate between Wage and Employment in Manufacturing Industry 2011-2018 in Indonesia (%)



Source: Statistics Indonesia (Badan Pusat Statistik), 2018d, processed

Figure 1 demonstrates that the growth rate of wages and employment increased in 2011-2018. Yet, the growth of employment increased slower and wages significantly increased in the current years. The growth rate on employment from 2011 to 2014 tended to be

stable followed by the growth rate of wages that tended to be increased, although in 2013 the rate of wages decreased to 2% and re-increased in 2014 by 2%. In 2017, the employment growth raised to 4% followed by the wages that significantly increased to 9%, compared to 2016. Hence, the employment growth back to declining in 2018 by 2%, while the growth of wages remained stable by 19,94%.

The collaboration in trade has promoted largely imported goods from China, particularly for intermediate goods. This factor also leads to the assumption that imported goods from China impacted the decrease of employment growth and the rise of wage levels.

Based on the above background and empirical explanation, several studies have been performed on the impact of imported goods from China on employment and wages that reveal various outcomes. Álvarez and Claro (2009) found that the imported goods that originated from China, negatively influence employment growth in the manufacturing industry in Chili. Zhi et al. (2019) found the absence of significant influence between the competition of imported goods from China with the employment, wages, and the recruitment of labor, yet the import activities lead to the company's productivity in Thailand.

Taniguchi (2019) revealed that the improvement of imported goods from China positively influences the employment growth

of the manufacturing industry sector in Japan. Balsvik et al. explained that the imported goods from China negatively influence the less-skilled and might lead the unemployment. Mion and Zhu (2013) underlined that imported goods from China reduce the employment growth that has the low technology. Nevertheless, the import competition does not influence the steadiness of the company.

There is a control variable in this research, as follows: high-educated resources, female workers, and added-value for the manufacturing industry in Indonesia.

High-educated workers have the capability in accomplishing the tasks, It is relevant, they could manage various tasks and alter a series of assignments based on the market condition and technology advancement (Autor and Acemoglu, 2010). The increase of high-educated resources could absorb technology for employment, so the female workers can participate. Juhn et al. (2014) stated that market demand on female workers arises when the output demands also arise, then the business field will respond by improving the production process by using the most-recent computerized machines. Later, the varied workers will enhance the productivity which can be notified from the production added-value in real fields. Productivity level and workers' competition will be demonstrated from the company's added value (Soaita, 2012).

Several empirical research from several countries has researched the impact of import activities from China on domestic workers based on firm-level and industry-level. They produce several country-based results outcomes; hence this topic should be explored until recently. This study focuses on the impact of imported intermediate goods from China on employment, in terms of wages and business fields, particularly in the Indonesian manufacturing industry. Therefore, this research aims to analyze the impact of imported intermediate goods from China on the employment and wages of the manufacturing industry in Indonesia from 2011 to 2018.

THEORETICAL BACKGROUND

Theory of Labor Market

The labor market is signified as a place of transaction, in terms of offer and demand on workers (Case and Fair, 2007). Classic assumption suggests that the wage highly depends on the worker's preferred quality over the offered worker's quantity. The labor supply is defined as the number of workers are offered by a household on a certain level of wages. Every household considers the level of wage, output cost, the value of time, and select numbers of workers that will be offered. The decision from the company on how many workers will be eventually hired is part of the decision on increasing the overall profits.

Theory of Labor Demand

Case and Fair (2007) differed the separate two conditions by using one-variable production function and two-variables production function, as follows:

If a company deals with market wages level as the marginal cost of one unit of labor, then it will recruit the workers to maximize the total profit, instead of marginal profit, in which:

$$W = MRP_L \quad (1)$$

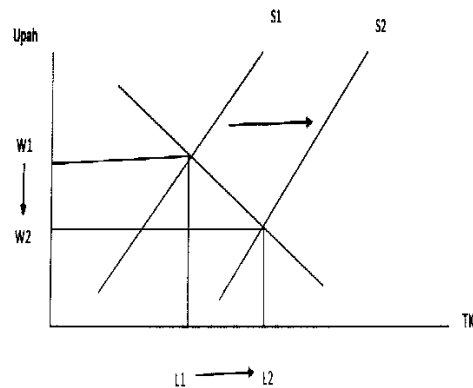
The company will skip the recruitment process if the cost exceeded the value of the unit produced by the worker. If the wage market decreases, the requirement for workers will rise in quantity. If the wage market is raised, the requirement for workers will decline in quantity. The company considers the output value that reflects in the output price towards the input value that reflects in the marginal cost.

Under the assumption, if a company applies production function with two variables in the short and long term, it employs capital input (K) and labor (L) over the cost of labor factor (PL) and capital cost (PK). Input may be treated as complementary or substitution.

Theory of Labor Supply

Mankiw (2003) suggested that the labor curve is shifted if people change the desirable working hours to a certain wage level. Figure 2 illustrates the curve of labor supply.

Figure 2 The curve of Labor Supply



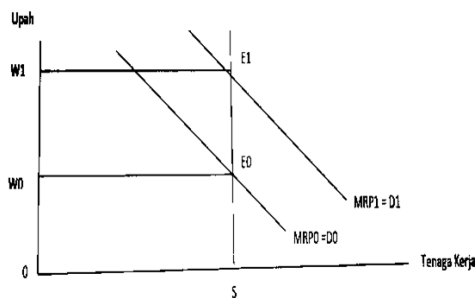
Source: Mankiw, 2003

Once the labor supply increases from S_1 to S_2 , the equilibrium wages will decrease from W_1 to W_2 . Under lower wages, the company will recruit more workers, hence the employment absorption increases from L_1 to L_2 . The change in wage demonstrates the existence of value change on labor's marginal products. With the existence of more workers, the additional output produced by the addition of workers becomes smaller.

Theory of Wages

Price changes in the economy create a price index. The price index is an index that delivers a description of the average change of prices from time to time. Real payment received by workers depends on their productivity, as shown by Figure 3.

Figure 3 Determination of Wage for Labor Market



Source: Sukirno, 2013

The curve of $MRP_0 = D_0$ and $MRP_1 = D_1$ describes the marginal sale results. The condition where the curve of MRP_1 is positioned above the MRP_0 defines that at every level of labors' employment, the result of marginal sale presented by MRP_1 is higher than MRP_0 . If the prices of MRP_1 and MRP_0 are identical, yet the position of MRP_1 is higher than MRP_0 , it specifies the difference in productivity. The MRP_1 curve illustrates the production activity in which the resulting curve of marginal sale is higher than MRP_0 . It signifies the higher productivity of MRP_1 than MRP_0 . The conclusion could be drawn that Figure 3 demonstrates a higher level of productivity will lead to higher real wages.

Theory of Production

Sukirno (2013) revealed that production function indicates the association between production factors and the level of manufacturing. The production factor is addressed as an input factor, while the number of productions is called output. The production function is shown by the below equation:

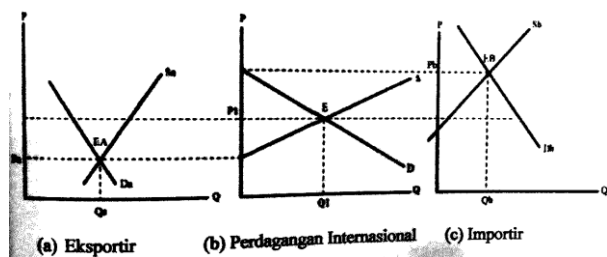
$$Q = f(K, L, R, T) \quad (2)$$

In which K refers to the capital stock, L is labor (every type of work and skills), R is a natural resource, and T is the technology being used, Q is a production, which must be generated by various production factors that altogether employed to manufacture the products that currently analyzed for the production characteristics.

Theory of International Trade

Salvator (2014) explained the process of international trade by using the following Figure 4:

Figure 4 The process of International Trade



Source: Salvatore, 2014

Figure 4 describes that before the international trade has taken place, the price of the commodity in Country A is counted as P_a with the total production of Q_a . While in Country B, the price of a commodity is recorded as P_b with the total production of Q_b . International trade occurs due to excessive supply in Country A and extra demands in Country B. In international trade, the price offered by Country A will experience the excess supply. In Country B the price is bigger than the international market, hence the occurrence of excess demand will be experienced. The condition, when excess demand and excess supply are eventually met, establishes the price

in the international market that is settled with P_1 . The occurrence encourages Country A to export and Country B to import a certain commodity. Hence, the international trade process occurs.

Type of Research

Secondary data published by Statistics Indonesia (BPS) are used in this research. The data includes 24 *Klasifikasi Baku Lapangan Usaha Indonesia* (KBLI) in manufacturing sector from 2011-2018.

Data, Instruments, and Technique of Data Collection

- a. Intermediate-goods import uses the statistics data of Imported Intermediate Goods from China. The import data collected follows the production category of *Klasifikasi Baku Lapangan Usaha Indonesia* (KBLI) class C in the manufacturing sector from 2011 to 2018 (in kilogram).
- b. This research employs the wages determined by the company, including incentives, bonuses, and welfare based on the publication of Manufacturing Industry Statistics from 2011 to 2018 (in rupiah).
- c. Business fields include the companies that operated from 2011 to 2018 in 24 sectors included in *Klasifikasi Baku Lapangan Usaha Indonesia* (KBLI) class C based on the publication of Statistics in the Manufacturing industry from 2011 to 2018 (in unit).
- d. The data of highly educated workers are derived from the total of other workers published in the Statistics of Indonesian Manufacturing Industry. Other workers are defined as the workers who are indirectly related to the production process. These workers generally work in a company as business support, such as manager, head of Human Resource, secretary, and others. Based on the publication of statistics in the manufacturing industry from 2011 to 2018 (in the unit of people).
- e. Female workers in this research, include the female workers who perform the production process in the manufacturing industry based on the publication of statistics in the manufacturing industry from 2011 to 2018 (in the unit of people).
- f. Added-value in the manufacturing industry is used as a measurement in 24 sectors included in *Klasifikasi Baku Lapangan Usaha Indonesia* based on the publication of statistics in the manufacturing industry from 2011 to 2018 (in Rupiah).

The Technique of Data Analysis

In assessing the parameter for simultaneous equation model, Two Stage Least Square (TSLS) method is employed in this research, with the model specification as follows:

$$W_{it} = \alpha_0 + \alpha_1 IMPChit + \alpha_2 VAit + \alpha_3 EMPit + e_{it} \quad (3)$$

$$EMPit = \beta_0 + \beta_1 IMPChit + \beta_2 EDUit + \beta_3 FEMit + \beta_4 Wit + u_{it} \quad (4)$$

In which W_{it} refers as the level of wages, $IMPChit$ represents the imported intermediate goods from China, $VAit$ is added-value, $EMPit$ is the business field, $EDUit$ represents high-educated labor, and $FEMit$ refers to female workers. The result of reduced-form is formulated, as follows:

$$W_{it} = \pi_0 + \pi_1 IMPChit + \pi_2 VAit + \pi_3 IMPChit + \pi_4 EDUit + \pi_5 FEMit + vit \quad (5)$$

$$EMPit = \pi_6 + \pi_7 IMPChit + \pi_8 EDUit + \pi_9 FEMit + \pi_{10} IMPChit + \pi_{11} VAit + wit \quad (6)$$

This research employs 8 years-time series with 192 samples of the cross-section. Yet the value that is equated with “log” experiencing Gauss Markov detection problems and to reduce the research time by 1 year. Therefore, this research employs 7 years-time series (T) and 168 samples of the cross-section. This research uses random effect since the result of assumption detection Gauss Markov is determined as passed by using one year of research. Therefore, for the next specification, “New Logarithm” (NL) will be applied.

RESULT OF THE RESEARCH AND DISCUSSION

In this research, random effect TSLS is employed to identify the impact of the variable of imported goods from China, added-value, and business fields towards wages in 24 sectors included in the manufacturing industry KBLI 2011-2018. The result of regression is explained in below Table 1.

Table 1 The Result of Regression on Pay Equity

Variable	Coefficient	t-statistics	Prob
C	3.4468	7.5592	0.0000
NLIMPCh	0.0076	0.2731	0.7850
NLVA	0.3364	5.8466	0.0000
NLEMP	0.8260	8.6051	0.0000
Adjusted R-squared	0.6251		
F-statistic	116.3375		

Source: The result of Data Processing

Based on the estimation using Random Effect TSLS as shown in Table 1, the model of pay equity is delivered, as follows:

$$\widehat{NLW}_{it} = 3,4468 + 0,0076NLIMPChit + 0,3364NLVAit + 0,8260NLEMPit$$

To identify the impact of the variable of the imported goods from China, high-educated workers, female workers, and wages towards business fields in 24 sectors of KBLI 2011-2018, a random effect is employed in this research. The result of regression can be elucidated in Table 2.

Table 2 The Result of Regression on Business Field Equity

Variable	Coefficient	t-statistics	Prob
C	-0.8823	-2.3767	0.0186
NLIMPCh	0.0217	0.6632	0.5081
NLEDU	0.2610	3.3375	0.0010
NLFEM	0.1309	3.0530	0.0026
NLW	0.1946	2.1749	0.0311
Adjusted R-squared	0.6525		
F-statistic	84.0756		

Source: The Result of Data Processing

Based on the estimation using Random Effect TSLS as shown in Table 2, the model of business fields equity is delivered, as follows:

$$\widehat{NLEMPit} = -0,8823 + 0,0217NLIMPChit + 0,2610NLEDUit + 0,1309NLFEM_{it} + 0,1946NLWit$$

The analysis discovered that wages variables have a positive and significant influence on business fields. On the contrary, the variable of business fields has a positive and significant influence on wages variable, which is aligned with the supply and demand theory in workers' labor, when a company could establish the profit due to the demand on products, then the demand on workers is also high. The company will raise the input cost, in the form of wages, as compensation for workers. Besides, when a company grows bigger, it triggers another economic demand to develop other activities or fields to produce the particular products or facilities that are required by the designated company. The existence of new business fields leads to a wage raise. A similar finding also revealed by Calvó-Armengol and Jackson (2007) stated that wage level and business fields are connected and share a strong and positive correlation. Calvó-Armengol and Jackson (2007) explained, if the demand on workers is proposed by business fields, hence the workers will apply at the level of their preferences, which means that the workers must apply to the business field that matches their current situation.

Based on the result estimation, the variable of imported intermediate goods from China influences insignificantly towards the level of wages in the manufacturing industry.

The result of this research contradicted the study conducted by Autor et al. (2013) stated that the imported intermediate goods from China are significantly influencing the worker's market in the United States. It is due to the total import from China is able to influence either manufacturing sector and others, as well as able to decrease the household average income. This research differs from the theory of Heckscher-Ohlin that a country tends to export its commodities that are relatively excessive and cheap, and will import the relatively expensive and rare commodities. On the other hand, a country that is rich in workers will export the relatively labor-intensive goods and import the capital-intensive goods. China and Indonesia are two countries with the largest population in the world. It means that in every production, both countries tend to apply worker-intensive production. The percentage of wages growth level and the percentage of imported intermediate goods from China fluctuate differently in each sector.

Based on KBLI, the manufacturing industrial sector consists of sectors with 24 different classifications, hence the wage system in each sector is less identified. This problem is aligned with the research conducted by Taniguchi (2019) revealed that in Japan labor market, the raise of import activities from China has no influence on the level of wages and is insignificant. Taniguchi (2019) explained this condition happens due to the variation of wages in each sector that makes them less-

identified. Then, Balsvik et al. (2015) found the absence of influence on imported goods from China to the wages that promote the Nordic model, due to the flexible wage system in business fields margin. Mion and Zhu (2013) stated that the difference in the level of wages occurs inter-industries, instead of between industries. It signifies that level of wages in KBLI sectors is not influenced by an external factor, such as import activities from China, but solely more influenced by the internal industrial wage system.

Based on the estimation result, added value variable positively and significantly influences the level of wages in sectors included in KBLI. The previous statement is aligned with Sukirno (2013) stated that real wages received by workers depend on their productivity. Case and Fair (2007) stated that workers' productivity increase aligned with the level of wages. Hence, the company will have the incentive to recruit the workers as long as the value of production is similar or higher than the level of wages. It means that the increased added value demonstrates the rise of productivity that eventually leads to an increased level of wages. This statement is aligned with the research of Putra (2018) suggested that the increased added value will increase the level of wages in the manufacturing sector. Putra (2018) revealed that factors that cause the lack of added value created by industry are: First, the low production level, which indicates the lack of

market control. It is related to the capability of the industry to grab orders. Less order leads to lower production, hence the added value is less-created. Second, high intermediate cost, in which the cost of raw material and supporting material are relatively expensive for industry. Third, is the ability to process the raw material. It is highly related to the existing technology, besides, the difference in numbers and quality of the workers who operate the tools are also associated with the final products' quality. The increase of added value enhances productivity, which is stimulated with a raise.

Based on the estimation result, the variable of imported intermediate goods from China insignificantly influences the business sectors included in KBLI Indonesia. This research found different results from a study previously conducted by Taniguchi (2019) stated that the imported intermediate goods from China positively influence the manufacturing sector growth for local workers market in Japan since the workers in manufacturing increased rapidly due to the imported goods from China. Taniguchi (2019) classified the imported goods from China based on business fields are located in each provincial area in Japan. So as Álvarez and Claro (2009) and Balsvik et al. (2015) stated that imported goods from China decrease the existence of business fields in manufacturing sectors for the local labor market. Both studies are plant-level research that concentrated on each sector. This research comes up with a

different result with a study conducted by Mankiw (2003), notified that once a country opens an international trade and becomes an importer of a commodity, the domestic producer will suffer a loss, while the domestic customers will be provided with benefits. Nevertheless, the opening of international trade will be beneficial for the designated country overall, since the advantage exceeded the loss. The manufacturing industry that imports intermediate goods from China indicate significant results in Indonesian trading. Puji et al. (2017) suggested that efficiency level disparity and different productivity in each sector of the Indonesian manufacturing industry become the obstacles that prevent the business fields from developing. It is due to the existence of the gap in the structure and dominant market share on a certain type of business in each sub-sector in the manufacturing industry sector. Dika (2012) analyzed and found the impact of import activities from China by utilizing a single industry sector as the sample, which is the garment and textile industrial sector. It is revealed a positive impact of import in company's endurance, although no significant impact was found towards company's growth. This research is aligned with the research conducted by Zhi et al. (2019) who discovered that the influence of imported goods from China was insignificant towards the business fields in Thailand. It was due to the exclusion of business fields variety, industry-by-year,

region-by-year, industry-by-region, and industry-by-region-by-year. Hence, once a component was differentiated in research, the result came up with the negative influence of imported goods from China towards business fields in Thailand.

Based on the result of estimation, female workers have a positive and significant influence on business fields in sectors based on Indonesian KBLI. It is aligned with the research performed by Juhn et al. (2014) stated that the involvement of female workers in the manufacturing industry indicates that business fields in their efforts to improve the utilization of technology in the production process, hence the physical force is less-used in the manufacturing sector. Based on the empirical study result, it is proven that the technology still provides a less significant contribution to the growth of the Indonesian industrial sector and is relatively way left behind from other countries in the area of Asia Pacific (Puji et al. 2017). Based on the data derived from Statistics Indonesia (BPS) indicates three sectors, which are the food industry (13,11%), the apparel industry (21,79%), and the tobacco processing industry (11,96%) averagely are the most-contributed sectors to Gross Domestic Product (GDP). Although the technology contribution to Indonesian industry growth is way behind from other countries, as found by Puji et al. (2017) in their research, several manufacturing industries keep on improving their technology implementation in the production process,

mainly for the above dominant sectors. In terms of contribution to GDP, those sectors provide a high contribution, especially the food industry. Besides, the policy of the Ministry of Women Empowerment and Child Protection (Kemen PPA) that persistently tries to protect female workers from every kind of discrimination and exploitation, as well as to improve their productivity in the Indonesian industrial sector, supports the role of female workers. Hence, the productivity will be more improved with the protection towards their rights.

Based on the result of estimation, high-educated workers influence the business sectors included in Indonesian KBLI, positively. Sukirno (2013) stated that a more advanced economy requires high-educated resources, along with other professional resources. Generally, the more complex a job, the longer education should be taken by the designated experts. Fewer workers accomplish high education, hence only high-educated workers receive high payment. It is assumed that education increases workability that directly leads to productivity improvement. Besides, from the perspective of workers, Mankiw (2003) stated that in the signal theory in education, the knowledge is received during university fails to provide real productivity benefit, yet the worker sends the self-productivity signal to the company with his willingness to sacrifice the time during college. In this matter, the action is made not for

intrinsic benefits, but the willingness to take the sacrificial action, which delivers personal information to the company. The numbers of participation of high-educated workers in business fields promote the level of efficiency in business fields. The developed business fields encourage skill improvement through education. Zhi et al. (2019) and Balsvik et al. (2015) stated that the fall of business fields is caused by low productivity, it is suffered from its lack of capability to survive in the market due to low competitiveness.

CONCLUSION AND SUGGESTION

Conclusion

Based on the result of the research, it is shown that imported goods from China insignificantly influence wages. Other variables that might influence wages are added value and business fields. The rise of wages improves added value. It is highly associated with the level of productivity. When a company rises workers' wages, the productivity will improve so as the added value. Meanwhile, there is a simultaneous positive correlation between the level of wages and business fields. Once wages raise, the business fields in the KBLI sectors will also develop.

Also based on the result of the research, it is exposed that the imported intermediate goods from China influence insignificantly to business fields. Meanwhile, high-educated workers, female workers, and wages influence business fields positively. The increase in numbers of high-educated workers will

develop the business fields. Likewise, the increased participation of female workers also leads to the improvement of business fields. In this case, the female workers are related to the increased use of technology. It is assumed that the business fields that keep on improving the technology utilization will reduce the physical exposure in the production process, and it will eventually lead to the increased numbers of female workers in the sectors included in KBLI

Suggestion

Additional variables, such as sample classification based on sectors, industry-by-year, region-by-year, industry-by-region, industry-by-region-by-year can be considered for further research, as well as the addition of import samples originating from the low-income countries and high-income countries, for delivering better results.

Implications and Limitations

A business field that intends to increase the company's added value, might consider the application of wages, to boost up the productivity that can promote the added value. The business field can also consider employing high-educated workers and female workers, to stimulate productivity.

Due to the limitation of this research, it is suggested for future research to engage additional research variables and observations that could expand the robustness in research quality. Therefore, it is recommended to employ other variables and indicators that

could possibly influence the growth of business fields and wages.

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