pISSN : 2301 – 8968

JEKT ♦ 14 [1] : 11-35 eISSN : 2303 – 0186

Keterbukaan Perdagangan, Aglomerasi Ekonomi Dan Permintaan Tenaga Kerja Manufaktur : Bukti Empiris Di Indonesia

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ABSTRAK

Tarif impor yang semakin menurun di negara-negara berkembang khususnya Indonesia selama dua dekade terakhir dalam jangka pendek memiliki hubungan positif dengan permintaan tenaga kerja formal manufaktur. Akan tetapi pada jangka menengah dalam periode 5 tahunan, penurunan tarif impor dan permintaan tenaga kerja formal manufaktur menunjukkan hubungan negatif. Adanya keterbukaan perdagangan mendorong mobilitas tenaga kerja, baik antar daerah dan antar sektor yang mengakibatkan aglomerasi ekonomi. Penelitian ini bertujuan untuk menganalisis pengaruh penurunan tarif impor sektor manufaktur terhadap permintaan tenaga kerja formal manufaktur pada jangka menengah di tingkat kabupaten/kota dengan pendekatan *Regional Tariff Exposure* sektor manufaktur. Pendekatan *Regional Tariff Exposure* sektor manufaktur pada penelitian ini menggunakan pengembangan dari model faktor spesifik. Dengan menggunakan estimasi regresi tertimbang dan menerapkan selisih antar waktu 5 tahun diperoleh hasil bahwa *Regional Tariff Exposure* sektor manufaktur berpengaruh negatif terhadap permintaan tenaga kerja formal manufaktur. Sementara sektor manufaktur yang terdiversifikasi pada suatu wilayah terdampak pengaruh paparan tarif yang lebih kecil terhadap permintaan tenaga kerja formal manufaktur dibandingkan pengaruh langsung dari paparan penurunan tarif. Hal ini dapat menjadi solusi dalam pembentukan kawasan industri yang beragam untuk mengurangi paparan akibat perdagangan.

Kata kunci : Keterbukaan Perdagangan; permintaan tenaga kerja; aglomerasi ekonomi,

Klasifikasi JEL : F16, J23, R23

ABSTRACT

The declining import tariffs in developing countries, especially Indonesia, over the last two decades in the short term have a positive relationship with the demand for formal manufacturing labor. However, in the medium term in the 5 year period, a fall in import tariffs and demand for formal manufacturing labor shows a negative relationship. Trade openness encourages labor mobility, both between regions and between sectors which results in economic agglomeration. This study aims to analyze the effect of decreasing import tariffs on the manufacturing sector on demand for formal manufacturing labor in the medium term at the district / city level with the Regional Tariff Exposure approach to the manufacturing sector. Regional Tariff Approach The manufacturing sector exposure in this study uses the development of a specific factor model. By using the weighted regression estimation and applying a difference between 5 years the results show that the Regional Exposure Tariff manufacturing sector has a negative effect on the demand for formal manufacturing labor. While the diversified manufacturing sector in an area is affected by the effect of lower tariff

exposure on the demand for formal manufacturing labor than the direct effect of exposure to tariff reduction. This can be a solution in the formation of diverse industrial estates to reduce exposure to trade. While the diversified manufacturing sector in an area is affected by the effect of lower tariff exposure on the demand for formal manufacturing labor than the direct effect of exposure to tariff reduction. This can be a solution in the formation of diverse industrial estates to reduce exposure to trade. While the diversified manufacturing sector in an area is affected by the effect of lower tariff exposure on the demand for formal manufacturing labor than the direct effect of exposure to tariff reduction. This can be a solution in the formation of diverse industrial estates to reduce exposure to trade.

Keywords: Trade Openness; labor demand; economic agglomeration,
JEL classifications: F16, J23, R23

PRELIMINARY

The early period of trade openness in the 1980-1990s has boosted exports of the manufacturing sector from developing countries (Golub, 1997). This increases the absorption of the manufacturing workforce and accelerates the regional growth of developing countries. The more open the trading system is with the decreasing average import tariffs (UNCTAD, 2013)making competition between producers in the manufacturing sector increasing. Price competition between domestic and foreign producers causes domestic producers to experience losses which have an impact on reducing the demand for formal labor in the manufacturing sector. Demand for labor in the manufacturing sector is decreasing, increasing the flow of labor in the informal and non-tradable sectors(Muendler, 2010) which has an impact on regional development that is not optimal.

The decreasing demand for labor in the formal manufacturing sector is not only due to losses due to trade but also due to the need for workers with certain skills in the manufacturing sector which is experiencing expansion in the export market. Manufacturing companies that experienced an expansion in exports chose to lay off workers with low education which resulted in reduced access of unskilled workers to the manufacturing sector. Muendler (2010) and Dix-Carneiro & Kovak (2017) found this in developing countries in Brazil which set import tariffs at the sectoral level and apply nationally. The determination of different import tariffs between sectors also results in different demand for labor, both between sectors and between regions. In addition,

differences in the demand for labor in the manufacturing sector between regions are also caused by differences in economic potential between regions that encourage labor mobilization and result in spatial concentration of workers or economic agglomeration. Handerson & Kuncoro (1996) found a population growth in manufacturing locations during the period of trade openness. Population growth will increase the supply of labor in an area which will have an impact on increasing job search competition.

Competition for job searches in regions with a centralized and diverse manufacturing sector benefits workers because the cost of mobilizing workers between sectors is cheaper. Workers who experience losses due to the impact of reduced tariffs will move more quickly to the manufacturing sector, which experiences trade advantages in areas with diverse manufacturing sectors. The diverse manufacturing sector in a region reflects different employer preferences and job requirements. A more diverse manufacturing company will provide a greater opportunity to find the optimal match between workers' skills and job requirements (Fullerton & Villemez, 2011). In addition, in various industrial areas, price competition for manufactured goods can also be suppressed and reduce exposure to tariff reductions. Astiyah et.al (2005) using cross-industry data found that the decline in manufacturing prices tends to be suppressed in areas with diversified manufacturing industries.

Meanwhile, the measurement of trade openness at the regional level is generally measured using the degree of trade openness. The degree of trade openness is the proportion of trade volume to national income. However, at the regional level in some countries, there is not enough accurate data that describes international trade, so that the measurement of the degree of openness at the regional level has not yet reflected the flows of international trade. Meanwhile, according to Jaumotte et.al (2013) the measurement of trade openness can also be done de jure by using tariff data. Meanwhile, the measurement of the impact of trade openness at the regional level through the Regional Tariff Exposure approach is growing.

Indonesia as a developing country, after experiencing success in the early period of trade liberalization, has become increasingly involved in international trade agreements. Indonesia is committed

to the WTO to reduce tariffs to the range of 0-5 percent. In addition, Indonesia together with ASEAN countries formed a free trade area and committed to reducing tariffs on the manufacturing sector. In the last decade, the decline in import tariffs has continued to be accompanied by a decrease in the demand for manufacturing labor by 11.81 percent in 2004 after increasing by 13.31 percent in 2001.The contribution of the Indonesian manufacturing sector also experienced a very drastic decline in 2010 by 22.04 percent after the increase. amounted to 26.17 percent in 2009. (Central Statistics Agency, 2000-2018). This is proportional to the declining contribution of the manufacturing sector because the production input from formal labor has also decreased.

By using data at the district / city level, this study analyzes the effect of reducing import tariffs in the manufacturing sector with the Regional Tariff Exposure approach in the manufacturing sector on the demand for formal labor in the manufacturing sector in the medium term. This is done in the medium term due to limited data and to accommodate the mobilization of workers between sectors due to long-term trade (Autor, Dorn, & Hanson, 2013). Apart from that, this research also accommodates the possibility of confounders affecting the demand for formal manufacturing labor at the regional level. In contrast to Dix-Carneiro & Kovak's (2017) research, this study accommodates the effect of economic agglomeration through the manufacturing diversification index, the ratio of manufacturing labor to total population, total population and the ratio of skilled labor to total labor, in addition to the possibility of confounding from rising commodity prices. and changes in export and import values estimated by Dix-Carneiro & Kovak (2017).

The next two sections of this paper will discuss a literature study on how trade policies with reduced tariffs affect the demand for formal manufacturing labor and the empirical methods used in analyzing the demand for formal manufacturing labor. Meanwhile, the fourth part of this paper will explain the results of the estimation of the effect of reduced tariffs on the demand for formal manufacturing labor. Conclusions and suggestions for further research development will be presented in the fifth section.

LITERATURE REVIEW

The impact of trade on a country's economic sector can be explained by using a specific factor model. The specific factor model or the Ricardo-Viner model is a Hecksher-Ohlin-Samuelson (HOS) neoclassical short-run trading model. Meanwhile, the specific factors referred to in this model are one or more specific factors that do not move in an industry or move between industries due to changes in market conditions. The specific factor model assumes that an economic sector produces two goods using two factors of production, capital and labor, in a perfectly competitive market. One of the two production factors is capital which is considered specific for a certain industry and is immovable. Meanwhile, labor is considered free to move and without costs between the two industries. Capital as an immovable production factor is assumed to be different between the two industries and cannot be substituted. Therefore, in the specific factor model, there are three production input factors including labor, specific capital in industry 1, and specific capital in industry 2.

Furthermore, the specific factor model was developed by RW Jones (1975) by accommodating many factors in many sectors. The development of a specific factor model from RW Jones (1975) was used by Kovak (2013) to analyze the impact of trade openness at the regional level through the Regional Tariff Exposure. Kovak (2013) defines the output of each industry at equilibrium conditions produced by the production input of:Y_i

$$a_{T_i} T_i = Y_i \quad (1)$$

$$\sum_i a_{L_i} Y_i = L \quad (2)$$

Assuming perfect competition, the output price is proportional to the factor price paid where w is wages and R_i the price value of a specific factor that can be written as in equation (3). (T_i)

$$a_{L_i} w + a_{T_i} R_i = P_i \quad (3)$$

Therefore demand for labor between sectors with trade defined by Kovak (2013) is proportional to the change in costs incurred between capital costs and wages as in equation (4), where wages are prices subject to tariffs weighted by the allocation of labor between regions.

$$\hat{L} = \sum_i \lambda_i \sigma_i \left(\hat{R}_i - \hat{w}\right) \quad (4)$$

with

$\hat{w} = \sum_i \beta_{ri} \hat{P}_i$Where ; , is a sector, is a region and is the elasticity of substitution between specific factors and labor.$\beta_{ri} = \frac{\lambda_{ri} \frac{\sigma_{ri}}{\theta_{ri}}}{\sum_j \lambda_{rj} \frac{\sigma_{ri}}{\theta_{ri}}} \lambda_i = \frac{L_i}{L} ir\sigma_i(T_i)(L)$

Equation (4) describes the relationship between the demand for

labor in a sector which is affected by wages that change due to trade. Wages change due to price changes caused by trade liberalization. Changes in prices due to trade liberalization will increase industrial prices in the export sector. Higher export prices will initially increase profits in the export sector because wages and rents take time to adjust. This results in the value of the marginal product in exports rising above the current wage, and this will encourage firms to hire more workers and expand their output. To encourage firms to employ more workers, export firms must increase the wages they have to pay. On the other hand, sectors that are competing with imports must also gradually increase their wages so as not to lose all their workers. Higher wages will encourage expansion of output in the export sector and reduce output in sectors that are experiencing import competition. The adjustment will continue until the wage rises to a level that equates the value of the marginal product in the two industries.

Meanwhile, worker mobilization does not only occur between export and import sectors, but also occurs between regions. This resulted in changes in regional productivity due to changes in labor allocation, so that the specific factor model was developed again by Dix-Carneiro & Kovak (2017) to accommodate these conditions. By usingThe assumptions of productivity, labor, and capital change over time, we get equation (5) which is the basis for the estimation equation in this study.$(A_{ri})(L_r)(K_{ri})$

$$\hat{L}_{ri} = \frac{1}{\varphi\zeta}\hat{P}_i - \frac{1}{\varphi\zeta}.\frac{\eta[(1-\zeta)(1-\varphi)]-\kappa}{\eta((1-\zeta)(1-\varphi))-\kappa+\varphi\zeta}\sum_i \beta_{ri}\hat{P}_i - \frac{\varphi(1-\zeta)}{\eta((1-\zeta)(1-\varphi))-\kappa+\varphi\zeta}\hat{R} \quad (5)$$

where and.$\beta_{ri} \equiv \frac{\lambda_{ri}\frac{1}{\varphi_i}}{\sum_j \lambda_{rj}\frac{1}{\varphi_i}}\lambda_{ri} = \frac{L_{ri}}{L_r}$

The mobility of workers between sectors occurs in the long run and it is assumed that capital mobility between regions tends to have no barriers to moving between sectors and between regions. Therefore, in the long term and the value of, so that the Regional Tariff Exposure in the manufacturing sector is a weighting of the price of manufactured imported goods with the allocation of regional manufacturing labor. Meanwhile, the price of manufactured imported goods is obtained from the addition of one product price unit to the product tariff$\varphi_i = \varphi\beta_{ri} \equiv \lambda_{ri} = \frac{L_{ri}}{L_r}\hat{P}_i = dln(1 + \tau_i)$(Dix-Carneiro & Kovak, 2017).

EMPIRICAL METHOD

Econometric Model

In analyzing the effect of reduced import tariffs in the manufacturing sector on the demand for formal manufacturing labor in the medium term, an estimate is made of the effect of reducing import tariffs at the regional level on the demand for formal manufacturing labor. The basic estimation equation in this study refers to the equation developed by Dix-Carneiro & Kovak (2017) in equation (5). The decline in manufacturing import tariffs as described earlier resulted in lower prices for manufactured imported goods. The manufacturing sector exposed to a decline in the price of manufactured goods according to the factor-specific model theory will experience a decline in output and labor.

Meanwhile, in measuring the impact of the reduction in manufacturing tariffs on the demand for manufacturing labor at the regional level, it is necessary to identify other influences that could potentially confound estimates. Estimation confounding in this study can be divided into two parts. The first part is the possibility of confounding caused by global economic conditions which include conditions of increasing world commodity prices and conditions of national trade. To capture national trade conditions, Dix-Carneiro & Kovak (2017) uses a weighted regional export and import share value approach. The weighted regional export and import share value is the real export and import share value by accommodating changes in the exchange rate between Indonesia and trading partners that are weighted by the allocation of regional labor by sub-sector. Therefore the share value of exports and imports can also describe the conditions of the exchange rate that affect national trade. At the momentthe value of the rupiah has appreciated against the currencies of trading partners, demand for exports will increase and have an impact on increasing demand for labor. This will affect the allocation of labor in the manufacturing sector. and is expected to influence the amount of exposure of regional manufacturing sector tariff reductions to manufacturing labor demand.

In addition, during the period of reducing tariffs in 2000-2015, global economic conditions experienced an increase in commodity demand from developing countries which increased commodity prices. According to Dix-Carneiro & Kovak (2017), this will also affect the allocation of labor between sectors. The increase in world commodity prices will increase the demand for labor

in the agricultural and mining sectors. This can affect the demand for formal manufacturing labor because of the mobility of workers towards the agricultural and mining sectors. Worker mobility does not only occur between sectors but also between regions which affects regional productivity due to economic agglomeration. To accommodate economic agglomeration, this study uses a diversification index of the productive manufacturing sector. The productive diversification index of the manufacturing sector is a measure of agglomeration due to industrial localization and to determine the exposure to tariffs on a diversified area, a variable interaction is carried out between the Regional Tariff Exposure in the manufacturing sector and the diversification index. the manufacturing workforce ratio. As for the possibility of confounding the estimates that have been described, this study uses the specification equation (6) with operational definitions in table 1. between the Regional Tariff Exposure of the manufacturing sector with the diversification index. Meanwhile, to accommodate economic agglomeration due to economic urbanization using the number of population, the ratio of skilled labor and the ratio of manufacturing labor. As for the possibility of confounding the estimates that have been described, this study uses the specification equation (6) with operational definitions in table 1. between the Regional Tariff Exposure of the manufacturing sector with the diversification index. Meanwhile, to accommodate economic agglomeration due to economic urbanization using the number of population, the ratio of skilled labor and the ratio of manufacturing labor. As for the possibility of confounding the estimates that have been described, this study uses the specification equation (6) with operational definitions in table 1.

Meanwhile, according to Autor et.al (2013) in estimating the demand for manufacturing labor, it is necessary to pay attention to the imperfect mobility of labor in the short term and generally occurs in the long or medium term. Several previous studies used a timeframe of 10, 7 (Autor, Dorn, & Hanson, 2013) and 5 (Dix-Carneiro & Kovak, 2017)in estimating the effect of trade on labor demand. This underlies this study to estimate the 5-year period or in the medium term (2000-2004, 2005-2005, 2009-2014). other than thatTo

overcome the indirect effect on labor demand and labor mobility between sectors that require time, a lag period is used on several control variables. Meanwhile, to overcome the endogeneity that causes omitted variables, a difference is made in the span of 5 years, as in equation (6).$t-1$

$$\Delta y_{rt} = \gamma_0 + \gamma_1 \Delta RTEMan_{rt-1} + \delta_1 \Delta Priceman_{rt-1} + \delta_2 \Delta expor\_rer_{rt-1} + \delta_3 \Delta impor\_rer_{rt-1} + \delta_4 \Delta TKboomprice_{rt-1} + \delta_5 Indev_{rt} * \Delta RTEMan_{rt-1} + \delta_6 Indev_{rt} + \delta_7 \Delta Pop_{rt} + \delta_8 \Delta Pop\_sq_{rt} + \delta_9 \Delta RatSkill_{rt-1} + \delta_{10} \Delta RatMan_{rt-1} + Djawa + \lambda_{rt} \quad (6)$$

Table 1. Summary of Research Variables

Variable Name	Concept	Operational definition	Data source
(1)	(2)	(3)	(4)
y_{rt}	Natural logarithm of formal labor	workers who work in the manufacturing sector and have the status of self-employed assisted by temporary or permanent workers and workers who work as workers or employees or employees	Sakernas, BPS
$RTEMan$	$\sum \frac{L_{rit}}{L_{rt}} dln(1+\tau_{it})$	Regional Manufacturing Sector Rates	WTO & Sakernas
$Priceman$	$dln(1+\tau_{it})$	Manufactured goods prices are subject to import tariffs	WTO
$expor\_rer$	$expor\_rer_{rt} = \sum \frac{Expor_{irt}}{Total\ Expor_t} . rer . \beta_{rit}$	*Share* Weighted Regional Exports	PWT 9.1 & Comtrade
$impor\_rer$	$Impor\_rer_{rt} = \sum \frac{Impor_{irt}}{Total\ Impor_t} . rer . \beta_{rit}$	*Share* Regional Import Weighted	PWT 9.1 & Comtrade
$TKboomprice$	$\frac{Jumlah\ TK\ pertanian\ dan\ pertambangan}{Jumlah\ Pekerja}$	Allocation of labor in the agricultural and mining sectors	Sakernas, BPS
$Indev * RTEMan$	Interaction variable between indexes diversification with the level of exposure to tariffs in the manufacturing sector	The smaller the coefficient value, the more diversified the manufacturing sector in a region and the smaller the exposure to tariffs	WTO & Sakernas
$Indev$	$1 - \left\{ \frac{1}{2} \sum_l \left\| \frac{L_{lr}}{L_r} - \frac{L_l}{L} \right\| \right\}$	Manufacturing Sector Productive Diversification Index. The lower the value, the more diversified the manufacturing sector in an area	Sakernas, BPS
Pop	Total population	Individuals who live and stay at least 6 months in an area	BPS

Variable Name	Concept	Operational definition	Data source
(1)	(2)	(3)	(4)
Pop_sq	The number of inhabitants squared	Total Population Squared	BPS
$RatSkill$	$\frac{Jumlah\ TK\ pendidikan\ minimal\ SMA}{Jumlah\ Pekerja}$	Ratio of workers with high school education to total employees	Sakernas
$RatMan$	$\frac{Jumlah\ TK\ sektor\ manufaktur}{Jumlah\ Penduduk}$	Ratio of manufacturing workers to total population	Sakernas
$Djawa$	Dummy Locations: 1 = Java 0 = Outside Java	Locations of Manufacturing Industry Workers are located in Java Island or outside Java Island	BPS

Source: compiled by the author

Meanwhile, various data on the formal manufacturing workforce at the regional level have heteroscedasticity problems that affect the estimated value. Therefore, estimating with multiple linear regression will result in a biased estimate due to the variance of the various data (Wooldridge, 2016). To solve this problem, we use weighted least square estimation with the inverse of the variance as a weight to get the right equation model.

Data

This study uses panel data at the district / city level to see the development of manufacturing jobs in Indonesia. Panel data in this study combines cross section data at the district / city level and annual data or time series for the period 2000 to 2015. The data sources used are from the Central Bureau of Statistics, the World Trade Organization (WTO) and the Penn World Table (PWT). . The number of districts / cities in this study is based on the state of the administrative area in 2000, totaling 303 districts / cities. However, in 2000, not all districts / cities had the availability of data on workers by sector, so that in this study the number of districts / cities that became the unit of analysis was 197 districts / cities.

Data on the number of workers by sector and education in this study were obtained from the National Labor Force Survey (Sakernas) from 2000 to 2015 with aggregation at the district / city level. Sakernas aggregation data at the district / city level were obtained using the inflation factor weighting on individual sakernas data. . With the existence of regional autonomy during the research period resulted in the expansion of districts / cities, so that in order to maintain the characteristics of a city district in accordance with 2000, merging

was carried out to the main district in 2000. Meanwhile, as a control variable used population data from regional publications in numbers published by BPS.

The tariff data used in this study is the Most Favored Nation (MFN) Tariffs which generally apply between countries in the 2000 to 2015 period. Tariff data in this study are sourced from the World Trade Organization (WTO) website at the commodity level with the Harmonized System (HS) code.) 6 digits, which is then carried out the aggregation and concordation at the subsector level with the revised 3 ISIC classification, in two digits. The use of sector aggregation tariff data in the double digit ISIC revision 3 aims to obtain tariffs in the manufacturing sub-sector that are in accordance with available labor data. In addition to tariff data, trade data used in this study were obtained from the United Nation trade. Meanwhile, data on exchange rates between countries used Penn World Table 9 data.

DISCUSSION

Descriptive Analysis

The import tariff policy for the manufacturing sector established by Indonesia not only has an impact on sectoral economic activities but also on regional economic activities, especially on the allocation of regional manufacturing labor. The decreasing import tariffs make competition in the domestic market increase. This is generally experienced by domestic producers who are small and medium industries. Based on table 2, the islands of Bali and NTB experienced the largest decline in formal employment (-36.63%) in a 5 year period from 2000 compared to manufacturing industries on other islands. In general, the largest decline in formal manufacturing workers was experienced by the manufacturing industry outside Java in 2004 and 2009. Meanwhile, the largest increase in the demand for formal manufacturing workers in 2014 occurred in Java and Sulawesi. By comparing the exposure to reduced tariffs between islands and between years, the island of Java was exposed to the largest reduction in tariffs compared to other islands during the study period in 2000-2015. However, in the medium term the island of Java experiences a lower demand for formal labor than other islands. Meanwhile, in 2014, the exposure to reduced tariffs was evenly distributed across all islands and was proportional to the increasing demand for formal manufacturing labor

in all islands in that year. However, in the medium term the island of Java experiences a lower demand for formal labor than other islands. Meanwhile, in 2014, the exposure to reduced tariffs was evenly distributed across all islands and was proportional to the increasing demand for formal manufacturing labor in all islands in that year. However, in the medium term the island of Java experiences a lower demand for formal labor than other islands. Meanwhile, in 2014, the exposure to reduced rates was evenly distributed across all islands and was proportional to the increasing demand for formal manufacturing labor in all islands in that year.

The different characteristics of industrial areas are thought to influence the demand for manufacturing labor. Java Island, as the center of Indonesian government, is the choice for Large and Medium Industries to build their companies. Due to the ease of licensing and the location close to the end product market, the industry in Java is more diverse than other islands since the early period of trade liberalization (Henderson & Kuncoro, 1996). The diversity of the manufacturing industry encourages the mobilization of workers between sectors and regions and results in economic agglomeration in the form of concentration of workers. Therefore, workers in the manufacturing sector who are affected by the tariff reduction can move more quickly to other manufacturing sectors on the island of Java than on other islands. The mobilization of workers between sectors who are absorbed quickly is illustrated by the manufacturing sector productive diversification index approach. The productive diversification index of the manufacturing sector is a measure of economic agglomeration due to Industrial localization(Viladecans-Marsal, 2004). The manufacturing sector's productive diversification index describes the level of distribution of manufacturing workers that is evenly distributed among the manufacturing sub-sectors in a region. Table 2 is presented to describe the characteristics of the manufacturing sector according to the productive diversification index of the manufacturing sector, the level of exposure to reduced rates and the demand for formal manufacturing labor by island.

Table 2 Percentages Manufacturing and Formal Labor Demand

Regional Tariff Exposure for Manufacturing by Island in the 5 Year Period (2004,2009, 2014)

Island	Percentage of Formal Manufacturing Labor Demand			Regional Tariff Exposure Manufacturing			Manufacturing Productive Diversification Index		
	2004	2009	2014	2004	2009	2014	2004	2009	2014
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Sumatra	-18.86	-8.93	25.99	-0.82	-0.89	-5.50	0.953	0.936	0.940
Java	-5.46	-12.51	37.78	-12.75	2.46	-15.14	0.759	0.804	0816
Bali-NTB	-36.63	-20.41	20.45	-2.09	0.19	-2.20	0878	0.884	0.915
Borneo	-10.94	-30.72	4.77	-0.02	-0.51	-1.76	0.916	0.958	0.954
Sulawesi	-27.71	5.42	37.45	-0.33	-0.36	-2.46	0.904	0.930	0.935

Source: Sakernas and WTO (reprocessed)

Based on table 2, the reduction in manufacturing import tariffs is greater in regions that have a more diverse manufacturing sector than those in the manufacturing sector that are not diversified. However, it is in contrast to the percentage change in the demand for formal manufacturing labor in the medium term which is lower than in regions with a non-diversified manufacturing sector. The productivity diversification index of Java Island according to table 2 columns (8), (9) and (10) is smaller than the other islands. The smaller value of the manufacturing productive diversification index indicates that the manufacturing sector in these regions is more diverse with an even distribution of workers and is not concentrated in one sub-sector. (Autor, Dorn, & Hanson, 2013). This can be seen in the demand for formal manufacturing labor outside Java, which experienced a greater decline during the 5-year period in 2004 and 2009.

The level of productive diversification of manufacturing workers that is more diverse on the island of Java can be a solution to accelerate the mobilization of the movement of manufacturing workers from sectors exposed to reduced import tariffs to sectors that experience trade or export benefits, so that the decline in formal

workers on the island of Java is not too large compared to other islands. . This illustrates the condition of industrial localization with a diversified manufacturing sector that affects changes in labor allocation and the amount of exposure to reduced tariffs on imported goods. Industrial localization is a form of economic agglomeration caused by the presence of industry in the area. To find out the magnitude of the effect of reducing import tariffs on the demand for formal manufacturing labor with the possibility of other confounders such as economic agglomeration,

Estimation Results Identification of the Effect of Tariff Reduction on Manufacturing Labor Demand

With the decreasing import tariffs, the price of domestic manufactured goods in the domestic market becomes cheaper due to price competition with imported goods. This is thought to have a relationship with the demand for formal labor in the manufacturing sector, which is exposed to reduced tariffs. Figure 1 shows a scatter plot between formal labor demand and regional tariffs each year. Based on the fitted value line in Figure 1, it is known that the relationship between formal labor and regional rates in the short term has a positive relationship. This positive relationship illustrates that the reduction in import tariffs is proportional to the decline in formal manufacturing workers. Manufacturing sectors that suffer losses due to lower import tariffs will react by reducing their workforce. In accordance with the theory of the specific factor model, in the short term, sectors that experience exposure to imports will experience a reduction in output and production input. Therefore, the production input of the manufacturing sector that is exposed to reduced tariffs will move to sectors that experience trade advantages, in this case the export sector, until it reaches a balance point.

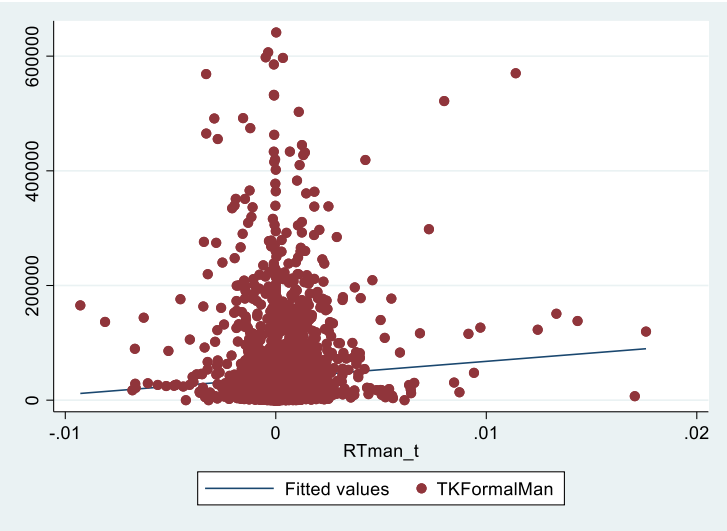

Image 1. Two Way Scatter Plot of the Number of Formal Manufacturing Workforce and Regional Tariff Exposure in the Manufacturing Sector
Source: Sakernas, WTO, reprocessed

Meanwhile, according to Autor et.al (2013) the response of labor due to trade occurs in the long and medium term to switch between sectors. The labor force to change sectors is faced with the cost of mobilization between sectors and between regions, so that workers who experience cost constraints will tend to remain in the same manufacturing sector or the same area. Therefore, the relationship between formal labor demand and regional manufacturing sector tariffs in the short term has not accommodated any barriers to labor mobilization between sectors that can be confounding in analyzing the relationship between tariff reduction and formal manufacturing labor demand. To accommodate this, a medium-term analysis in a 5-year period was carried out (2000-2004, 2005-2009,2010-2014).

Figure 2 shows that in the 5-year or medium-term period, the demand for formal labor and the regional tariff exposure of the manufacturing sector is negatively related. This is represented by the fitted value line. In contrast to the previous graph, where the decline in tariffs in the medium term will further increase the demand for formal manufacturing labor. Then to determine the magnitude of the influence of the regional tariff exposure in the manufacturing sector, an estimate is carried out with the estimation results as shown in table 3

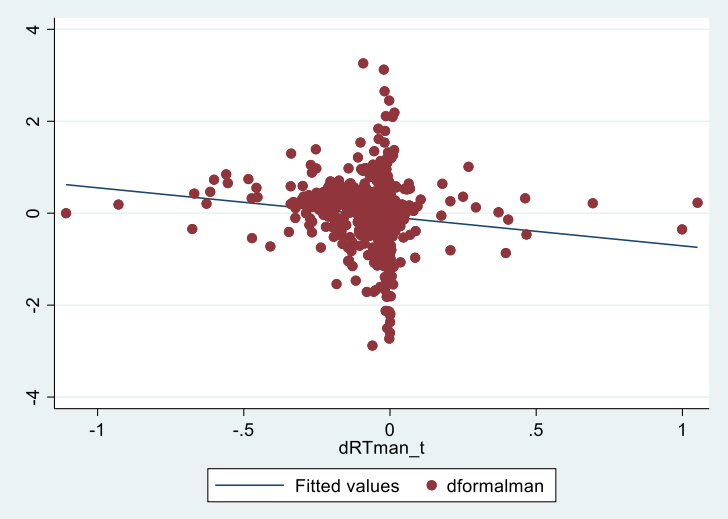

Figure 2. Two Way Scatter Plot of Changes in the Number of Formal Manufacturing Workforce and Regional Tariff Exposure for the Manufacturing Sector in a 5 year period
Source: Sakernas, WTO, reprocessed

Table 3 shows the estimation results of the relationship between the regional tariff exposure of the manufacturing sector to the demand for formal manufacturing labor in the medium term using weighted regression. Based on columns (1), (2) and (3) in table 3, it is known that the regional tariff exposure in the manufacturing sector in the medium term has a negative effect on the demand for manufacturing labor. Every one percent reduction in tariffs in the medium term will increase the demand for manufacturing labor in the medium by 0.4 percent. The increase in demand for manufacturing labor in the medium term is due to changes in prices due to exposure to reduced rates. Lower prices for manufactured imported goods reduce input costs of production for the export sector,

Tabel 3 Hasil Estimasi Pengaruh Regional Tarif Exposure Sektor Manufaktur Terhadap Permintaan Tenaga Kerja Formal dalam periode 5 tahun 2004, 2009, 2014

	(1)	(2)	(3)
RTMan	-0.412***	-0.366***	-0.510***
	(0.090)	(0.092)	(0.111)
PriceMan		-0.790**	0.135
		(0.322)	(0.336)
Impor_rer			-0.031**
			(0.013)
Expor_rer			0.082***
			(0.016)
TKboomprice			0.039
			(0.007)
RTMan*Indev			-0.030***
			(0.010)
Indev			-0.026***
			(0.005)
Pop			0.001***
			(0.000)
Pop_sq			0.000*
			(0.000)
Ratskill			0.008***
			(0.002)
Ratman			0.040***
			(0.004)
_cons	0.002	-0.029	-0.150***

	(0.046)	(0.048)	(0.048)
N	570	570	570
Adjusted R-squared	0.033	0.042	0.365
F	10.837	9.292	28.201
P	0.000	0.000	0.000
Djawa	ya	ya	ya

Keterangan : Variabel dependen yang digunakan adalah logaritma natural dari perubahan permintaan tenaga kerja formal dalam 5 tahun. Standard error ditampilkan dalam angka di dalam kurung. Estimasi dilakukan dengan menggunakan regresi tertimbang dengan inverse dari varians sebagai penimbang.
*signifikan pada tingkat 10%,
**signifikan pada tingkat 5%,
***signifikan pada tingkat 1%

Harga barang manufaktur pada estimasi penelitian ini menggunakan pendekatan seperti pada kerangka teori Dix-Carneiro & Kovak (2017), dimana harga barang impor manufaktur merupakan logaritma natural dari penambahan satu satuan harga dengan tarif yang dikenakan pada produk manufaktur tersebut. Dengan menggunakan kontrol harga barang impor manufaktur, nilai estimasi pengaruh regional tariff exposure sektor manufaktur terhadap logaritma natural tenaga kerja formal dalam jangka menengah tetap bertanda negatif dan meningkat sebesar 0.046 menjadi 0.366 persen seperti pada kolom (2). Sedangkan dengan menggunakan kontrol variabel seperti pada kolom (3) diperoleh setiap penurunan 1 persen tarif dalam periode 5 tahunan mengakibatkan kenaikan permintaan tenaga kerja manufaktur sebesar 0.5 persen. Nilai ini tidak jauh berbeda dibandingkan dengan dampak penurunan tarif terhadap permintaan tenaga kerja di negara Brazil yang juga berstatus sebagai negara berkembang dengan nilai sebesar 0.6 persen. Penurunan tarif menguntungkan bagi sektor yang mengalami perluasan ekspor dan meningkatkan pemintaan tenaga kerja

Hasil estimasi pada kolom (3) setelah mengakomodir kondisi perekonomian global, aglomerasi ekonomi wilayah dan karakteristik wilayah, regional tariff exposure sektor manufaktur tetap konsisten berpengaruh negatif terhadap permintaan tenaga kerja formal manufaktur sebesar 0.5 persen. Kondisi perekonomian global seperti kenaikan harga komoditas yang terjadi selama periode penelitian diduga berpotensi menjadi perancu dalam memengaruhi permintaan tenaga kerja manufaktur. Kenaikan harga komoditas pada awal tahun 2000an pada penelitian ini diakomodir melalui alokasi tenaga

kerja di sektor pertanian dan pertambangan dengan asumsi sektor pertanian dan pertambangan pada saat kenaikan harga komoditas mengalami kenaikan ekspor dan meningkatkan permintaan tenaga kerja di bidang pertanian dan pertambangan. Kenaikan permintaan tenaga kerja di bidang pertanian dan pertambangan ikut menaikkan permintaan tenaga kerja formal manufaktur karena hubungan keterkaitan antar sektor. Akan tetapi pada hasil estimasi ditunjukkan alokasi tenaga kerja di sektor pertanian dan pertambangan tidak menunjukkan hasil yang signifikan. Hal ini berkesuaian dengan penelitian Henstridge et.al (2013) dimana kenaikan harga komoditas pada tahun 2000 tidak berpengaruh terhadap perubahan struktural perekonomian ekonomi Indonesia karena kenaikan harga komoditas hanya terjadi pada batubara dan minyak sawit dan tidak untuk produk sektor pertanian lainnya (Henstridge, et al., 2013).

Sedangkan untuk kondisi nilai tukar serta ekspor dan impor sektor manufaktur, diakomodir melalui proporsi ekspor dan impor menurut negara tujuan dengan penimbang alokasi tenaga kerja manufaktur menurut subsektor manufaktur. Pada tabel 3 kolom (3), ditunjukkan bahwa pengaruh ekspor lebih besar dibandingkan impor terhadap permintaan tenaga kerja di sektor manufaktur. Oleh karena itu dapat disimpulkan dalam rentang waktu lima tahun, penurunan permintaan tenaga kerja manufaktur pada sektor manufaktur yang terpapar impor dapat diatasi dengan penyerapan pada sektor ekspor sebesar 0.051 persen.Sesuai dengan teori model faktor spesifik dimana tenaga kerja pada sektor manufaktur yang terpapar impor akan terserap pada sektor manufaktur yang terpapar ekspor dengan melihat nilai dari koefisiennya dimana impor berdampak negatif dan ekspor berdampak positif terhadap permintaan tenaga kerja manufaktur dalam jangka menengah.

Mobilisasi pekerja dari sektor manufaktur yang terpapar impor ke sektor manufaktur yang terpapar ekspor dalam jangka menengah dikontrol dengan menggunakan indeks diversifikasi produktif dan variabel aglomerasi ekonomi dari sisi urbanisasi ekonomi. Hal ini dapat ditunjukkan pada tabel 3 kolom (3). Berdasarkan tabel 3 kolom (3) perubahan jumlah penduduk, proporsi tenaga kerja terampil, serta proporsi tenaga kerja manufaktur berdampak positif dalam jangka

menengah. Kondisi ini menggambarkan adanya mobilisasi tenaga kerja dalam jangka menengah dan mengakibatkan pemusatan pekerja atau aglomerasi ekonomi di wilayah industri yang memengaruhi perubahan alokasi tenaga kerja dan permintaan tenaga kerja dalam jangka menengah. Pemusatan pekerja karena lokalisasi industri dapat dibedakan menjadi wilayah yang terdiversifikasi dengan pekerja manufaktur yang terdistribusi merata dan wilayah dengan tidak terdiversifikasi dengan pekerja manufaktur yang terpusat di salah satu subsektor. Semakin terdiversifikasinya sektor manufaktur di suatu wilayah semakin banyak peluang terciptanya lapangan pekerjaan di wilayah tersebut dan menarik pekerja untuk melakukan mobilisasi ke daerah tersebut (Viladecans-Marsal, 2004). Hal ini berkesesuaian dengan nilai koefisien dari indeks diversifikasi yang bertanda negatif terhadap permintaan tenaga kerja manufaktur.

Adapun untuk mengetahui dampak penurunan tarif pada wilayah industri yang terdiversifikasi, dilakukan interaksi antara indeks diversifikasi produktif manufaktur dengan regional tariff exposure sektor manufaktur. Berdasarkan interaksi kedua variabel tersebut, diperoleh besarnya pengaruh regional tariff exposure sektor manufaktur di wilayah dengan sektor manufaktur yang terdiversifikasi, terhadap permintaan tenaga kerja manufaktur dalam periode lima tahun-an sebesar 0.03 persen. Nilai estimasi ini lebih kecil dibandingkan pengaruh langsung dari regional tariff exposure sektor manufaktur terhadap pemintaan tenaga kerja formal manufaktur. Hal ini menunjukkan bahwa pada wilayah dengan sektor manufaktur yang terdiversifikasi dimana penurunan harga barang impor manufaktur dapat ditekan, mengurangi persaingan harga barang manufaktur di pasar domestik terhadap harga barang impor (Astiyah, Hutabarat, & Sianipar, 2005). Selain itu pada wilayah yang terdiversifikasi, paparan penurunan impor yang menurunkan permintaan pekerja akan lebih cepat menyerap tenaga kerja di sektor manufaktur lainnya karena kemudahan mobilasi pekerja antara sektor. Oleh karena itu paparan penurunan tarif dapat lebih rendah di wilayah dengan aglomerasi ekonomi yang tinggi dengan sektor manufaktur yang terdiversifikasi dan semakin meningkatkan permintaan tenaga kerja di sektor manufaktur dalam jangka menengah

Robustness Check

Untuk menghindari terjadinya kesalahan estimasi dan kemungkinan perancu dalam mengestimasi permintaan tenaga kerja manufaktur dalam jangka menengah, penelitian ini melakukan robustness check. Robustness check dilakukan dengan dua tahapan. Pertama dilakukan perbandingan estimasi antara hasil regresi linear berganda (OLS) dengan regresi tertimbang. Hal ini dilakukan untuk mengatasi adanya isuheteroskedasitas pada data tenaga kerja antar daerah dalam jangka menengah. Kedua dilakukan regresi terhadap kombinasi kemungkinan perancu yang memengaruhi permintaan tenaga kerja manufaktur. Tabel 4 menampilkan hasil robustness check tahap pertama, dan tabel 7 menampilkan hasil robustness check tahap kedua. Pada tabel 4 ditunjukkan adanya perbedaan hasil estimasi jika dilakukan dengan regresi tertimbang dibandingkan dengan regresi OLS pada periode 5 tahunan. Regional tariff exposure sektor manufaktur dalam jangka menengah konsisten bertanda negatif dengan nilai koefisien yang lebih besar pada hasil estimasi regresi OLS.

Sementara itu dengan melihat nilai Adjusted R-squared dari masing-masing persamaan, regresi tertimbang (WLS) memiliki nilai 37.8 persen dan lebih besar dibandingkan persamaan dengan estimasi OLS. Nilai Adjusted R-squared yang lebih besar menggambarkan model lebih baik diestimasi dengan WLS dibandingkan dengan OLS. Selain itu dengan membandingkan hasil test heteroskedasitas yang terdapat pada tabel 5, model estimasi dengan OLS mengalami permasalahan heteroskedasitas yang lebih besar dibandingkan model WLS pada tingkat signifikansi satu persen. Oleh karena itu penelitian ini menggunakan regresi tertimbang (WLS) dengan inverse dari variansnya sebagai penimbangnya. Sedangkan untuk mengatasi adanya endogenitas dan melihat perubahan jangka menengah dilakukan selisih antar tahun dalam selang waktu 5 tahunan. Selanjutnya dengan menggunakan uji Ramsey test, diidentifikasi apakah masih adanya endogenitas. Pada tabel 6 dapat ditunjukkan bahwa dalam periode 5 tahunan Regional tariff exposure sektor manufaktur konsisten berpengaruh negatif terhadap permintaan tenaga kerja formal manufaktur dengan menggunakan estimasi WLS. Selain itu, persamaan masing-masing periode 5 tahunan pada tingkat signifikansi 1

persen baik persamaan dengan estimasi OLS dan WLS menunjukkan tidak terdapat endogenitas di setiap periode 5 tahunan kecuali pada periode 2000-2004 pada estimasi WLS. Dengan demikian dapat disimpulkan tidak ada endogenitas pada masing-masing periode.

Tabel 4 Perbandingan Hasil Estimasi Regional Tarif Exposure Manufaktur Terhadap Logaritma Natural Tenaga Kerja Formal dalam periode 5 tahun 2004, 2009, 2014

Dependent Variabel :log pekerja formal	(1) OLS	(2) WLS
RTMan	-0.666***	-0.510***
	(0.247)	(0.111)
PriceMan	-0.206	0.135
	(0.594)	(0.336)
Impor_rer	-0.018	-0.031**
	(0.020)	(0.013)
Expor_rer	0.109***	0.082***
	(0.026)	(0.016)
TKboomprice	-0.005	0.039
	(0.169)	(0.070)
RTMan*Indev	-0.057**	-0.030***
	(0.027)	(0.010)
Indev	-0.020**	-0.026***
	(0.010)	(0.005)
Pop	0.001**	0.001***
	(0.000)	(0.000
Pop_sq	0.000	0.000*
	(0.000)	(0.000)
Ratskill	0.011***	0.008***
	(0.003)	(0.002)
Ratman	0.045***	0.040***
	(0.006)	(0.004)
_cons	-0.301***	-0.150***
	(0.057)	(0.048)
N	570	570
R-squared	0.193	0.378
Adjusted R-squared	0.176	0.365
F	11.128	28.201
P	0.000	0.000
Djawa	ya	ya

Keterangan : variabel dependen yang digunakan adalah logaritma natural dari perubahan permintaan tenaga kerja formal dalam 5 tahun. Standard error ditampilkan dalam angka

di dalam kurung. Kolom (1) menggunakan regresi linear berganda dan kolom (2) menggunakan regesi penimbang dengan inverse dari varians sebagai penimbang.
*signifikan pada tingkat 10%
**signifikan pada tingkat 5%
***signifikan pada tingkat 1%

Tabel 5. Perbandingan Konsistensi Estimasi *Regional Tariff Exposure Sektor Manufaktur, Uji Heteroskedasitas dan Endogenitas Untuk Keseluruhan Periode*

Keterangan		**2004,2009.2014**	
		OLS	WLS
(1)		(2)	(3)
Koefisien RTman		-0.6655***	-0.5103***
		(0.2469)	(-0.111)
Uji Heteroskedasitas Breusch-Pagan / Cook-Weisberg test	chi2(1)	15.53	4.66
	Prob > chi2	0.0001	0.0308
Uji Endogenitas Ramsey RESET test	F	12.97	8.72
	Prob > F	0.0000	0.0000

Keterangan : variabel dependen yang digunakan adalah logaritma natural dari perubahan permintaan tenaga kerja formal dalam 5 tahun. Standard error ditampilkan dalam angka di dalam kurung. Kolom (2) menggunakan regresi linear berganda dan kolom (3) menggunakan regesi penimbang dengan inverse dari varians sebagai penimbang.
*signifikan pada tingkat 10%
**signifikan pada tingkat 5%
***signifikan pada tingkat 1%

Tabel 6. Perbandingan Konsistensi Estimasi Regional Tariff Exposure, Uji Heteroskedasitas dan Endogenitas Menurut Periode 5 tahunan

Keterangan		**2000-2004**		**2005-2009**		**2010-2014**	
		OLS	WLS	OLS	WLS	OLS	WLS
(1)		(2)	(3)	(4)	(5)	(6)	(7)
Koefisien RTman		-0.7705	-0.9943**	-0.2753	-0.2861*	-0.0836	-0.1864**
		(0.5553)	(0.3819)	(0.4159)	(0.1455)	0.2231	(0.07561)
Uji Heteroskedasitas Breusch-Pagan / Cook-Weisberg test	chi2(1)	14.37	4.70	0.06	11.77	1.44	29.02
	Prob > chi2	0.0002	0.0302	0.8017	0.0006	0.2298	0.0000
Uji Endogenitas Ramsey RESET test	F	0.22	4.23	0.37	0.30	0.40	2.46
	Prob > F	0.8808	0.0064	0.7744	0.8243	0.7513	0.0641

Selanjutnya pada tahap kedua dilakukan perbandingan estimasi dengan kemungkinan variabel yang menjadi perancu dalam mengestimasi permintaan tenaga kerja formal manufaktur dengan regresi tertimbang. Berdasarkan tabel 7 hasil estimasi dengan beberapa kombinasi dari kolom (1) sampai kolom (8) menunjukkan Regional tariff exposure sektor manufaktur konsisten bertanda negatif dengan nilai signifikansi paling rendah sebesar 5 persen pada kolom (6) dan besaran nilai koefisien semakin meningkat. Sementara itu, berdasarkan persamaan dasar dari kerangka teoritis Dix-Carneiro & Kovak (2017), harga barang manufaktur bertandapositif dan tidak signifikan. Harga barang manufaktur yang bertanda positif berkesuaian dengan kerangka teoritis Dix-Carneiro & Kovak (2017) setelah dilakukan kontrol dengan menggunakan keseluruhan variabel. Sedangkan untuk alokasi tenaga kerja sektor pertanian dan pertambangan menunjukkan pengaruh yang signifikan ketika dilakukan kontrol dengan variabel aglomerasi dan karakteristik wilayah industry manufaktur. Berdasarkan beberapa tahapan robustness check dapat disimpulkan Regional Tariff Exposure sektor manufaktur konsisten berpengaruh negatif terhadap permintaan tenaga kerja formal manufaktur.

Tabel 7. Perbandingan Hasil Estimasi Logaritma Natural Jumlah Pekerja Formal Menurut Kombinasi Variabel Kontrol yang digunakan

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
RTMan	-0.412***	-0.366***	-0.367***	-0.464***	-0.465***	-0.207**	-0.379***	-0.510***
	(0.090)	(0.092)	(0.092)	(0.088)	(0.088)	(0.086)	(0.114)	(0.111)
PriceMan		-0.790**	-0.803**	0.068	0.079	-0.068	-0.181	0.135
		(0.322)	(0.322)	(0.368)	(0.369)	(0.315)	(0.318)	(0.336)
TKboomprice			-0.286		0.142			0.039
			(0.287)		(0.281)			(0.070)
Impor_rer				0.020	0.02			-0.031**
				(0.014)	(0.014)			(0.013)
Expor_rer				0.030*	0.031*			0.082***
				(0.016)	(0.017)			(0.016)
Indev						-0.025***	-0.024***	-0.026***
						(0.005)	(0.005)	(0.005)
Ratskill						0.004**	0.005**	0.008***
						(0.002)	(0.002)	(0.002)
Ratman						0.042***	0.043***	0.040***
						(0.004)	(0.004)	(0.004)
Pop						0.001***	0.001***	0.001***
						(0.000)	(0.000)	(0.000)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pop_sq						-0.000	-0.000	0.000*
						(0.000)	(0.000)	(0.000)
RTMan*Indev							-0.023**	-0.030***
							(0.010)	(0.010)
_cons	0.002	-0.029	-0.041	-0.035	-0.029	-0.089*	-0.110**	-0.150***
	(0.046)	(0.048)	(0.049)	(0.046)	(0.047)	(0.049)	(0.049)	(0.048)
N	570	570	570	570	570	570	570	570
R-squared	0.037	0.047	0.049	0.134	0.134	0.299	0.305	0.378
Adjusted R-squared	0.033	0.042	0.042	0.126	0.125	0.289	0.294	0.365
F	10.837	9.292	7.218	17.469	14.581	29.852	27.316	28.201
P	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Djawa	ya	ya	ya	ya	ya	ya	ya	ya

Keterangan :Variabel dependen yang digunakan adalah logaritma natural dari perubahan permintaan tenaga kerja formal dalam 5 tahun. Standard error ditampilkan dalam angka di dalam kurung.
*signifikan pada tingkat 10%
**signifikan pada tingkat 5%
***signifikan pada tingkat 1%

KESIMPULAN DAN SARAN

Berdasarkan hasil penelitian yang telah disampaikan sebelumnya dapat disimpulkan sebagai berikut :

1. *Regional Tariff Exposure* sektor manufaktur memiliki hubungan postif dalam jangka pendek dan negatif dalam jangka menengah.
2. Dengan menggunakan metode estimasi regresi tertimbang, setiap penurunan satu persen tarif sektor manufaktur dalam periode 5 tahun mengakibatkan kenaikan permintaan tenaga kerja formal manufaktur sebesar 0.5 persen dalam 5 tahun.
3. Penurunan tarif mengakibatkan penurunan harga barang impor manufaktur yang menurunkan biaya input produksi untuk sektor ekspor, sehingga meningkatkan permintaan tenaga kerja formal manufaktur. Hal ini sejalan dengan besarnya berpengaruh ekspor regional tertimbang dibandingkan impor regional tertimbang.
4. Aglomerasi ekonomi dengan ukuran diversifikasi produktif sektor manufaktur memengaruhi permintaan tenaga kerja formal manufaktur.
5. Daerah dengan sektor manufaktur yang terdiversifikasi atau pekerja manufaktur yang terdistribusi merata menurunkan paparan tarif dan meningkatkan permintaan tenaga kerja manufaktur. Hal ini dapat menjadi solusi untuk mengatasi dampak perdagangan terhadap permintaan tenaga kerja dalam jangka pendek dengan membangun

lokalisi industri yang terdiversifikasi dibandingkan terspesialisasi yang saat ini dilakukan oleh Indonesia.

6. Untuk itu, diharapkan penelitian selanjutnya dapat menggunakan data ketenagakerjaan dengan jumlah observasi yang lebih banyak, sehingga dapat diperoleh hasil estimasi yang lebih baik dalam periode yang lebih panjang.

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