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The Spatial Concentration of Manufacturing Industry Workforce: Is There a Change?

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ABSTRACT

The purpose of this paper is to describe the spatial concentration of manufacturing industry and examines the factors that influence it. The method of analysis using entropy theil index and pooling of data with the object of manufacturing industry employment as a means of measuring the concentration of spatial and time series data during the study period, namely from 2008 to 2016 and the cross section with 9 industry sectors according to the two-digit industrial classification ISIC Revision 3 in 30 provinces of Indonesia. The data was collected using secondary data from the Central Statistics Agency (BPS), Data and Information Center (Pusdatin), and the Agency for Industrial Research and Development (BPPI) Ministry of Industry and related literature. Spatial gaps between islands manufacturing industry clearly visible where the Theil entropy index value in Java is very high which means the manufacturing industry is concentrated on the island, while on other islands are very low. While the calculation of theil index for spatial gaps in the island shows that the island of Sumatra occurred in a larger gap than the other islands. This happens due to the island of Sumatra, manufacturing industry workers accumulate only in some provinces, that is most dominant in the provinces of North Sumatra and South Sumatra and Lampung. While the level of the lowest spatial concentration is the islands of Bali and Nusa Tenggara, which means the manufacturing industry employment relative spread (dispersion). Regression results show that the model of spatial concentration was significantly affected by variables that are used, except for human capital variables. And this model is rejected in part the hypothesis of neoclassical theory (NCT), but supports the new trade theory (NTT) and the new economic geography (NEG).

Keywords*: Theil Entropy index, pooling data, spatial concentration, neoclassical theory, new trade theory*.

INTRODUCTION

Clustering spatial industry many met in developing countries following the distribution of industry and population concentrated around major cities as Bangkok, New Delhi, Shanghai, Manila, and Jakarta especially Jakarta, Bogor, Depok, Tangerang and Bekasi, and around Surabaya that marks the spatial based on capital and labor accumulation in agglomeration cities [1]. Spatial pattern of industrial development in Indonesia shows gap distribution of geographical industry. The main industrial areas in Indonesia are located in Java. Interestingly agglomeration in Java occurs only in the western and eastern islands of the most populous. This shows evidence of two poles of industrial spatial concentration.

The phenomenon of economic activity that has a tendency to cluster and concentrated in certain areas, especially around the city is considered as a natural process that arises for various reasons, among others, is to minimize costs, such as transportation costs, production costs, and transaction costs with

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consumers. Its population and its activities concentrated around the urban areas will lead to agglomeration [2][3]. Economic agglomeration is the concentrated condition of economic activity to the urban and the surrounding area naturally without a comprehensive plan resulting from increased proximity of the city [4], [5].

The industrial spatial concentration that occurs is believed to affect the economic growth of a country. [6], [7] mentions that the industrialization strategy adopted in London by relying on industrial spatial concentration, at least before the 1960s proves that concentration can be an engine of economic growth. It can also be seen in the development of Indonesian industry which tend to experience development. The industrial development policy pursued focuses on saving the industry through industrial revitalization programs with industrial cluster development strategies or spatial concentration approaches to promote product specialization and improve efficiency and productivity in the context of building sustainable industrial competitiveness (KPIN, Ministry of Industry).

The role of the manufacturing industry in Indonesia has grown rapidly even beyond the contribution of the agricultural sector in the early 1970s to more than 25 per cent of Indonesia's GDP, but in the year 2017 manufacturing it has contributed more than 28 per cent (see table 1). It cannot be denied that industrialization in Indonesia is beginning to show the expected results. At least industrialization has resulted in structural transformation in Indonesia. The pattern of sectoral economic growth in Indonesia seems to be in line with the trend of structural transformation processes occurring in various countries, where there is a decrease in the contribution of the agricultural sector (often called primary sector), while the contribution of the secondary and tertiary sectors tends to increase.

Table 1. Distribution of Produk Domestic Bruto (PDB) Indonesia (in percentage)

Year	Agriculture(1)	Manufacture(3)	Service (9)	Others (2+4+5+6+7+8)
1971	25,04	9,61	10,01	55,34
1980	22,26	14,3	10,51	52,93
1990	18,51	21,55	10,61	49,33
2000	15,61	27,75	9,34	47,30
2010	15,82	27,32	10,01	46,85

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2017*	15,61	28,57	10,72	45,10

Source : BPS a few years of publication
Note : 1. Agriculture, 2.Mining, 3. Manufacture, 4. Electric, gas, and water, 5. Construction, 6. Trade, hotel dan restauran, 7. Transportation and Communication, 8. Finance,hire and service company , 9 .Services.

Concept and Theory

[8] to see the pattern of specialization and concentration in Europe using the defined Herfindahl index where sij represents the industry share i against the country's total exports j. If the value is close to 1 then implies the existence of a perfect specialization in one industry, and if close to zero then implies that the level of diversification is very high. Meanwhile, to see the specialization in two different countries can be used Finger-Kreinin index where Amiti uses production and export data to 28 manufacturing industry with its formulation. Where subscripts k and j refer to differences between two countries. Range this index between 0 and 1, if the share distribution in both countries are identical then the index is equal to one. But if the pattern of production is not the same then the index is equal to 0. This FK index can be used to measure the relative specialization that compares the share of state distribution with other productions. Meanwhile, to see inter-industry specialization, Balassa index is used which will measure comparative advantage with definition where sij is industry share to total production in country j, and wi represents industry share to total world production of manufacturing industry, in this case EU.

Stuart Holland (1976) in [5] says that in general the analysis of the factors that cause the concentration of economic activity (agglomeration) is the worker factor. The role of workers can be seen from two sides, namely for producers due to the availability of production factors, and for workers because of the availability of employment in the city. Holland says that between agglomeration and urbanization are mutually supportive. This opinion is in line with [9], who argue that the main reason for urbanization is higher incomes in the industrial and service sectors (in cities) than in agriculture, which in some cases even seasonal unemployment in the agricultural sector (in the village).

[10] in the definition of agglomeration said that agglomeration is a process of concentrating economic activity to certain cities. Agglomeration is motivated by the city factor as an economic location, both in terms of revenue and from the supply side [11]. As for the factors behind the agglomeration, first, economies of scale, that is doing the production activities in the city can apply large-scale production by choosing the optimal production scale associated with the purpose of efficiency. Economies of scale at least have an impact in meeting the minimum sales volume for new plants (minimum threshold). Second, Comparative advantage of producing in town lower production cost. For example, because of the availability of infrastructure /

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facilities that are available and cheap (amenities) on a large scale (economies), as well as having a business environment that is closely related and close so as to result in low average cost (unit cost). And the third is the proximity of proximity to the various input and output markets that will be able to reduce transport costs in production at an optimum scale.

High industrial concentrations in several urban areas on the island of Java and partly on the island of Sumatra are an indication of inequality in the spread of manufacturing industries in Indonesia. The industrial concentrations characterized by industrial clusters have different levels of diversity and degree of specialization, both between clusters and between regions. These differences and discrepancy will be seen using Theil's entrophy index which will analyze how big the gap is between provinces, between islands and also in one island in Indonesia. The understanding and discussion of the spatial concentration of the manufacturing industry is closely related to the theory of location that is the reasons that an industrial company runs its business and also about industrial agglomerations and clusters [12].

The phenomenon of inequality in distribution of spatial manufacturing industry activity tends to occur in urban areas. This is partly due to the fact that more than half of the world's population lives in this region, both small towns, cities and metropolitan cities [13]. The flow of urbanization and the increasing number of people in urban areas is also happening in the region of developing countries. Industrialization has been the driving force behind the rapid urbanization of Asia and the developing world. Except in the case of resource-based industries, manufacturing industries tend to be located within and around towns that lead to agglomeration. Industries tend to agglomerate in areas where the potential and ability of the region can meet the needs of its people, and benefit from the location of adjacent companies. Cities generally offer a variety of advantages in the form of higher productivity and income that attract new investments, new technologies, highly skilled and educated workers than in rural areas. Factors Affecting Spatial Concentration of Manufacture Industry

Economic of scale

Naturally, economies of scale are one barrier to entry. Assuming the price of various factors is fixed, firms that are able to reach economies of scale have a smaller unit cost as a result of a larger proportion of output increases than the proportion of input increases used. Such a situation causes the new company to have difficulties entering the market, if not able to outperform or at least the same in terms of cost per unit achievement of the surviving company. There are 3 possible economies of scale in firms, which are economies of scale constant, economies of scale are increasing and economies of scale are declining. The

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scale of this economy will determine the decision for the company whether they continue their business or not, and also determine the company whether they remain clustered (close to other companies) or not. In the case of constant economic scale the clustering will not last long. On the contrary on an increasing scale the economies of grouping will continue.

Human Capital

To support the industrialization process is needed human resources (human capital) is reliable and high quality, in addition to technology. The importance of human capital has been proven not only in advanced industrial countries in Europe and North America, but also in Asia such as South Korea, Taiwan, Singapore, Hongkong and Japan. Although it has no natural resources, its manufacturing and export sectors in these countries since the 1960s to date have shown a rapid growth. One of the reasons why a country can be so advanced is because it has human capital with good quality. While many in developing countries have a large workforce and labor force but accompanied by low levels of education, they are still experiencing weak manufacturing export growth. Highly educated human resources tend to mobility to industrial locations that require their skills and skills [14].

Resources Intensity

Raw materials reflect the strength of agglomeration emphasized by neoclassical economists such as Hechscher-Ohlin. This theory predicts that the specialization of a region and its industrial distribution depends on the characteristics of the region. However, if there is no difference in endowment factor then the competition will be perfect (perfect competition) and the distribution of the industry will be evenly distributed. Trade liberalization will make the region increasingly specialized in producing products that use excess resources as the region can exploit its full comparative advantage, and the industry remains concentrated on the excess resources [15]. So it can be said that the use of raw materials (resources) in intensive industries will be higher localization or the level of concentration considering the raw material is relatively not easy to move.

Labor

The use of labor greatly affects the resulting output. Of the commodities produced will be known whether these commodities include the category of natural resources intensive (NRI), unskilled labor intensive (ULI), physical capital intensive, PCI, human capital intensive, HCI, and technology intensive, IT.

Intermediate Resources

The use of intermediate inputs is an interaction between the characteristics of

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input use between (intermediate goods) with characteristics of the market size of a region. The intermediate input is used as input to produce the final goods and is the output of the use of raw materials (resources) which is said also as an input-output link in producing the final goods. The existence of intermediate inputs will lead to industrial spatial concentration patterns associated with the use of intermediate inputs as there is a tendency to cluster at a common location. The results of showed that the use of input between positive effect on the spatial concentration of manufacturing industry. The concentration patterns that occur are industries with high economies of scale and industries with a high proportion of use between inputs will be close to large markets [16].

Final Goods

The pioneer of new trade theory (NTT) and the new geographical economy (NEG) say that the greater demand for final goods will heighten industrial spatial concentration. This is an emerging view among international economic experts, where trade reflects arbitrary specialties on the basis of increased results, rather than the exploitation of exogenous differences in resources or productivity [17]. Empirical studies in Taiwan show an industry with a higher end-to-end demand rate likely to accelerate productivity advancements in an enterprise rather than an industry where the level of demand intensity is ultimately low. Other evidence from the Brazilian industrial cluster in the Sino's valley indicates that the growth in end-product demand increases the demand for local input and resource use, contributing to the development of the cluster.

Investment

Investment is one determinant that determines economic growth and the development of a company. The decision to invest is highly dependent on the opportunity to invest and the positive value of net present value. Investment theory in its evolution can be classified into models: neoclassical, model of acceleration, Tobin's model q and Euler-equation model. The neoclassical model says that the relative cost of capital is the determinant of investing [18].

Research Method

The first problem research model uses Theil's entropy index in identifying the spatial gap in manufacturing industry concentration in Indonesia. This can be done using the equation formulated by Theil 1967 where Theil Index has several different formulations. In his paper Sala-i-Martin Theil index is lowered to a more general entropy index: [19]

$$T_t = \frac{1}{N_t} \sum_{i=1}^{m} \sum_{j=1}^{Nit} \frac{y_{ijt}}{\bar{y}} \ln\left(\frac{y_{ijt}}{\bar{y}}\right) \qquad (1)$$

Where y is income per capita, N represents population, i is country, j is individual, t is

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time, ȳ is per capita income on average. To make it easier then transformed:

$$T = \sum_{i=1}^{m}\sum_{j=1}^{N_i} \frac{y_{ij}}{N\bar{y}} \ln\left(\frac{y_{ij}}{\bar{y}}\right) \qquad (2)$$

The weight of this index is the share of individual income j in country i to the total income per capita of the world average. It is possible to decompose the Theil index in the form of beetwen components and within (within a country) components of the world income distribution, can be accomplished by the addition and subtraction of algebraic manipulations.

Result of expression addition and reduction of index Theil:

$$\sum_{i=1}^{m} \frac{N_i y_i}{N\bar{y}} \ln(y_i) \qquad (3)$$

so :

$$T = \sum_{i=1}^{m}\sum_{j=1}^{N_i} \frac{y_{ij}}{N\bar{y}} \ln\left(\frac{y_{ij}}{\bar{y}}\right) + \sum_{i=1}^{m} \frac{N_i y_i}{N\bar{y}} \ln(y_i) - \sum_{i=1}^{m} \frac{N_i y_i}{N\bar{y}} \ln(y_i) \qquad (4)$$

with $\ln\left(\frac{y_{ij}}{\bar{y}}\right) = \ln y_{ij} - \ln \bar{y}$ so T can be

expressed :

$$T = \sum_{i=1}^{m}\sum_{j=1}^{N_i} \frac{y_{ij}}{N\bar{y}} \ln y_{ij} - \sum_{i=1}^{m}\sum_{j=1}^{N_i} \frac{y_{ij}}{N\bar{y}} \ln \bar{y} + \sum_{i=1}^{m} \frac{N_i y_i}{N\bar{y}} \ln(y_i) - \sum_{i=1}^{m} \frac{N_i y_i}{N\bar{y}} \ln(y_i) \qquad (5)$$

To be simply, so : $s_{ij} = y_{ij} / N\bar{y}$ share income percapita j di nation i respect to total income in the world. Then :

$$T = \sum_{i=1}^{m}\sum_{j=1}^{N_i} s_{ij} \ln y_{ij} - \sum_{i=1}^{m}\sum_{j=1}^{N_i} s_{ij} \ln \bar{y} + \sum_{i=1}^{m} s_i \ln(y_i) - \sum_{i=1}^{m} s_i \ln(y_i) \qquad (6)$$

The second algebra by adding from the right side. The number of sections (which value the total world income) of all individuals in a country that are part of the national income for total world income, can be said that:

$$\sum_{i=1}^{m}\sum_{j=1}^{N_i} s_{ij} \ln \bar{y} = \sum_{i=1}^{m} s_i \ln \bar{y} \qquad (7)$$

The same transformation can be done for the addition of the first algebra

$$\sum_{i=1}^{m}\sum_{j=1}^{N_i} s_{ij} \ln y_{ij} = \sum_{i=1}^{m} s_i \ln(y_{ij}) \qquad (8)$$

So obtained :

$$T = \sum_{i=1}^{m} s_i \ln(y_{ij}) - \sum_{i=1}^{m} s_i \ln \bar{y} + \sum_{i=1}^{m} s_i \ln(y_i) - \sum_{i=1}^{m} s_i \ln(y_i) \qquad (9)$$

The combination of the second and third

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$$-\sum_{i=1}^{m} s_i \ln \bar{y} + \sum_{i=1}^{m} s_i \ln(y_i) = \sum_{i=1}^{m} s_i \ln\left(\frac{y_i}{\bar{y}}\right)$$

(10)

Combination first and fourth

$$\sum_{i=1}^{m} s_i \ln(y_{ij}) - \sum_{i=1}^{m} s_i \ln(y_i) = \sum_{i=1}^{m} s_i \ln\left(\frac{y_{ij}}{y_i}\right) \quad (11)$$

Conclusion :

$$T = \sum_{i=1}^{m} s_i \ln\left(\frac{y_i}{\bar{y}}\right) + \sum_{i=1}^{m} s_i \ln\left(\frac{y_{ij}}{y_i}\right)$$

(12)

Results and Discussion

Indonesia is an archipelagic country that has different resources in its respective areas, both natural resource ownership as well as human resources, infrastructure and also regional facilities so this is also one of the causes of the inter-island gap that occurred.

Table 2.
The Gap Between Islands in Indonesia

Islands	2008	2009	2010	2011	2012	2013	2014	2015	2016
Sumatera	0,247	0,257	0,244	0,237	0,236	0,228	0,232	0,232	0,237
Jawa	0,455	0,473	0,480	0,472	0,469	0,477	0,470	0,469	0,462
Bali&NT	0,066	0,069	0,062	0,058	0,059	0,057	0,058	0,058	0,063
Kalimantan	0,067	0,064	0,065	0,063	0,070	0,069	0,074	0,076	0,078
Sulawesi	0,084	0,097	0,085	0,085	0,085	0,086	0,086	0,084	0,085
Maluku & Papua	0,039	0,032	0,03	0,034	0,032	0,031	0,033	0,033	0,036
Jumlah	**0,927**	**0,961**	**0,967**	**0,948**	**0,951**	**0,948**	**0,954**	**0,953**	**0,961**

Source : result of processing data

From table 2. above can be seen that there is a high spatial concentration on the island of Java whose average value is above 0.47. This is much different from the result of spatial concentration in other islands which tend to be relatively more evenly distributed. The inter-island spatial disparity is due primarily to the significant difference in the share of manufacturing industry labor among the islands during the 2008-2016 study period.

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It is interesting to note that inter-island gap patterns consistently also show a pattern that tends to flatten and increase slowly, which is similar to the spatial gap pattern for the whole of Indonesia. The inter-island entropy index slightly differed slightly from the spatial gap pattern for all of Indonesia at the beginning of the 2008 to 2010 study year. Where 2008 and 2009 the inter-island index decreased and then rose again in 2010, while the spatial gap for all of Indonesia in 2008 to 2009 index rose and then decreased in 2010 and then the pattern is uniform. The declining index reflects a spatially increasing trend of dispersion of the manufacturing industry, while the rising index indicates an upward trend in the spatial concentration of the manufacturing industry.

Gap in one of The Island

The trend of the spatial concentration of the manufacturing industry can be seen from the gap trends in an island that tends to flatten to the end of the study period. Entropy in one island shows that the highest gap is on the island of Sumatra that ranges from 0.047 to 0.076. While the lowest entropy is shown by the island of Bali and Nusatenggara about 0.002 to 0.009. This reflects that the spatial concentration of the manufacturing industry on the island is likely to be dispersed or relatively more diffuse.

The most unique thing is on the island of Java, where the dominant labor is on this island and the inter-island entropy and entropy all over Indonesia is highest on this island. But for the gap in one island, the island of Java is relatively more dispersed which means that the territory of each province as a whole is the same average there is not too high concentration in this island. On the contrary it is different from Sumatra Island which has gap in one island is relatively high, because it consists of 10 provinces and labor is concentrated only in some region only that is North Sumatera, South Sumatera and Lampung. While other areas are relatively low absorption of manpower and also the labor of manufacturing industry. It also shows that on the island of Sumatra there are many natural resources that can be processed not only into raw materials or intermediate materials, but can be developed into the final product. This explanation will be explained in the following section on regional characteristics.

Table 3.
Gaps In The Major Islands of Indonesia

Islands	2008	2009	2010	2011	2012	2013	2014	2015	2016
Sumatera	0,060	0,058	0,059	0,055	0,057	0,049	0,047	0,047	0,048
Jawa	0,019	0,019	0,019	0,019	0,017	0,019	0,019	0,019	0,018

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Bali&NT	0,003	0,003	0,007	0,003	0,004	0,003	0,005	0,004	0,009
Kalimantan	0,007	0,013	0,014	0,012	0,017	0,018	0,021	0,023	0,024
Sulawesi	0,027	0,029	0,024	0,026	0,026	0,026	0,024	0,021	0,022
Maluku & Papua	0,012	0,013	0,012	0,015	0,013	0,012	0,013	0,013	0,015
Jumlah	**0,129**	**0,136**	**0,134**	**0,129**	**0,135**	**0,128**	**0,129**	**0,128**	**0,137**

Source : result of processing data

Furthermore, to know which method is better to estimate the model built whether using FEM or REM method and or both. There are several criteria that can be used, the first by comparing the number of time-series with the cross-section. If the cross-section data is larger than the time-series, then it can use a random effect approach. The second criterion is to use Hausman Specification Test, provided that if Hausman statistic > Chi square, then the choice is by using FEM method. Conversely, if Hausman statistic is < Chi square, then the choice is by using REM method. Since the observational data of this study amounted to between individuals.

1899 with its cross-section 211 and time-series 9, the REM method can be used, as well as the FEM method.

The FEM method consists of four approaches, first, estimates that show the whole coefficient constant either by time or by individual (unit of analysis); second, estimate with constant slope coefficient but intercept differ between individuals or known as least square dummy variable regression model; third, estimate with constant slope coefficient, but intercept differs between individuals and between times; and fourth, all coefficients differ

Table 4.
Estimation Result of Manufacturing Industry Spatial Concentration Model

Variabel	FEM	REM
Log (C)	-3,119976***	-3,340349***
Log (scale)	0,814480***	0,893465***
Log (hucap)	0,009957	0,021053**
Log (resource)	-0,069830***	-0,067209***
Log (labor)	0,135799***	0,130842***
Log (intermediate)	-0,073158***	-0,072998***
Log (final)	0,128027***	0,127371***
Log (invest)	-0,004517**	-0,004366*
R^2	0,990458	0,681998
Adjusted R^2	0,988997	0,680673
F-statistic	677,9415	514,7112
Prob F	0,00000	0,00000

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Total of Obs	1899	1899

Note : ***) significant in α = 1%, **) significant in α = 5%, *) significant in α = 10%

If the spatial concentration coefficient of the manufacturing industry is estimated using FEM approach, the result shows that economies scale (scale), labor intensity (labor), final goods intensity have positive and significant influence to spatial concentration represented by specialization of manufacturing industry labor Indonesia. Meanwhile, the intensity of human capital has a positive but insignificant effect on the spatial concentration of Indonesia's manufacturing industry. While the intensity of raw materials (resource), the intensity of intermediate goods and investment have a negative and significant impact on the spatial concentration of manufacturing industries in Indonesia. For more details can be seen in table 4.

The estimation results summarized in Table 4. can be written by the following equation :

$$\text{Log } C_{irt} = -3{,}119976 + 0{,}814480 \log skala_{irt} + 0{,}009957 \log hucap_{irt} - 0{,}069830 \log resource_{irt} + 0{,}135799 \log labor_{irt} - {,}073158 \log intermed_{irt} + 0{,}128027 \log final_{irt} - 0{,}004517 \log invest_{irt} \quad (1)$$

$$\text{Log } C_{irt} = -3{,}340349 + 0{,}893465 \log skala_{irt} + 0{,}021053 \log hucap_{irt} - 0{,}067209 \log resource_{irt} + 0{,}130842 \log labor_{irt} - 0{,}072998 \log intermed_{irt} + 0{,}127371 \log final_{irt} - 0{,}004366 \log invest_{irt} \quad (2)$$

The result of equation (1) shows the estimation result by using FEM method while equation (2) is the result by REM method. The regression coefficient of estimation by FEM method indicates that if there is variation of 1% increase of economies scale that depict company scale it will raise 0.814480% to spatial concentration of manufacturing industry. While on REM method variation of 1% increase of company scale will raise spatial concentration of manufacturing industry equal to 0,893465%. This shows a positive and highly significant relationship between economies of scale (firm size) of spatial concentrations with both FEM and REM methods. This means that the scale of the company is able to explain regional localization throughout the observation period. These results support the predictions of NEG and NTT where manufacturing firms in Indonesia tend to prefer to be located in crowded and heavily populated areas to enjoy the benefits of localization, associated with certain industry sizes and agglomeration savings reflected by firm size in an area, especially urban areas.

Conclusion

Spatial gap patterns tend to be uniform and stable which is similar to the spatial gap conditions among main islands

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in Indonesia. The spatial gap between inter-island manufacturing industry (between) is very clear where the value of theil entropy index in Java is very high which means that the manufacturing industry is concentrated in this island, whereas in other islands very little. This happens because Java Island has all kinds of ISIC 2 digit manufacturing industry, which is different from other islands. The lowest level of spatial concentration is the islands of Bali and Nusatenggara which means the labor of the manufacturing industry is relatively diffuse (dispersion). The archipelago has only a few items out of 9 manufacturing industries 2-digit ISIC. By econometric analysis it can be seen that the increased spatial concentration of the manufacturing industry seen from the regional specialization index in each region, contributed from the economies of scale effects represented by firm size, labor usage, final goods, and human capital. The results of this estimate show that some hypothesis of neoclassical theory (NCT) were rejected in this study. The Low of the significance of the use of human capital, the negative coefficient of the intensity of use of raw materials (resource) and negative investment prove this. However, neoclassical theory proved to be positive and significant coefficient of labor intensity (labor). This study supports new trade theories (NTT) and new economic geography (NEG). Supporters of NTT argue that increased industrial output (the final or final goods demand coefficient) results in spatial concentrations in large markets, as well as economies of scale measured by positive and significant firm sizes [20]. While NEG has found that large market linkages, knowledge spillover and other external savings are the main forces driving industry to urban areas. The results of this study also show a synergy between market size and agglomeration forces that show companies tend to be spatially concentrated [21].

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