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Analysis of the effect of international trade openness on inequality between districts/cities in Indonesia's provinces

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ABSTRACT

This study aims to determine the impact of international trade openness on regional inequality in Indonesia's provinces by using the concept of economic geography. Other factors such as geographic accessibility, labor share in the manufacturing sector, population, and government expenditure are also estimated. This study uses panel econometric analysis. The data used from 33 provinces in Indonesia from 2003-to 2018 was obtained from Statistic Indonesia (BPS). The result shows that international trade openness has a positive effect on increasing inequality between regions. However, openness to international trade hurts increasing inequality between regions if it is supported by geographic accessibility. The economic dispersion causes this due to cost efficiency and competitive forces. In addition, the share of labor in the manufacturing sector has no effect. However, the population and the government expenditure have a positive and significant effect on regional inequality. Positive exports tend to reduce regional inequality. Each province's exports and imports also affect this result.

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Introduction

The economic gap in various countries is getting higher. The highest income is only owned by a few individuals with a disproportionate share (BBCNews, 2015). The IMF stated that 20 developed countries worldwide experienced regional inequality in one-fifth of the total sample area. This condition impacts national economic growth that ignores regional economic developments (Long & Ascent, 2020). One of the effective ways a country can support its economy is through foreign relations. In this era of globalization, all countries cannot avoid relations with other countries, including trade between countries. According to Autor et al. (2016), the inequality in various countries is caused by free trade. Chinese imports evidences this opinion in the United States, which impacts the decline in the manufacturing industry in small cities in the United States. On the other hand, free trade benefits Germany, which can increase industrial competitiveness in various regions (Dauth et al., 2017).

Kuncoro (2010) explained that the regional disparity in Indonesia is described by dividing the western region and the eastern region. The more you go to the Western part of Indonesia, the more the modern industrial sector and non-indigenous groups that dominate the economy will be found. On the other hand, the closer to the Eastern part of Indonesia, the more traditional agricultural sectors and indigenous groups dominate the economy. The differences in technology and population between these regions impact faster regional development in the Western Indonesia Region compared to the Eastern Indonesia Region.

International trade relations and regional inequality tend to increase income inequality between regions. This happens because trade will consider the passed access (Brülhart, 2011). However, Krugman stated differently in his new geographic, economic theory, which states that trade openness to the international world will cause the central metropolis to lose its dominant position. In other words, new metropolises in various regions will emerge because of economic efficiency due to the country's liberalization policy (Montgomery et al., 2013).

According to Krugman (1992) in Rodrigue (2020), international trade has a role in the level of inequality of a region through agglomeration and dispersion processes. Agglomeration is formed due to forward-backward linkages that occur between consumers and producers.

The economy tends to agglomerate in economically efficient areas. The international trade openness will weaken the role of forward-backward linkages because the number of producers is greater and the number of consumers is wider. This market expansion encourages industries with low competitiveness to move away from global market access or move to rural areas. Meanwhile, industries with high competitiveness tend to remain in the city center or areas close to global market access. The new geographic economic theory (NEG) states that weakening this role will cause economic dispersion. The dispersion process will be more efficient if it is supported by good accessibility so that inequality between regions experiencing international trade openness will decrease (Brülhart, 2011).

International trade in Indonesia was marked by the signing of AFTA (ASEAN Free Trade Area) in 1992 and realized in 2003. Although this policy is under the central government's authority, each province has a contribution to the international trade carried out. In addition, each province will also have implications in terms of economic growth and regional inequality in the province. The following is a graph of trade openness and regional inequality (Gini Index) of islands in Indonesia in the last five years.

Figure 1 shows the openness of international trade and regional disparities between regions in the islands of Indonesia. In the figure, regional inequality is measured using the Gini index. In general, international trade has fluctuating results with an increasing trend. Meanwhile, inequality between regions in Indonesia has a downward trend. In the last five years, Kalimantan Island has become the island with the highest trade openness in Indonesia and has the lowest level of inequality. Different things are experienced by the island of Java, which has a high contribution to trade openness, but it also has a high inequality.

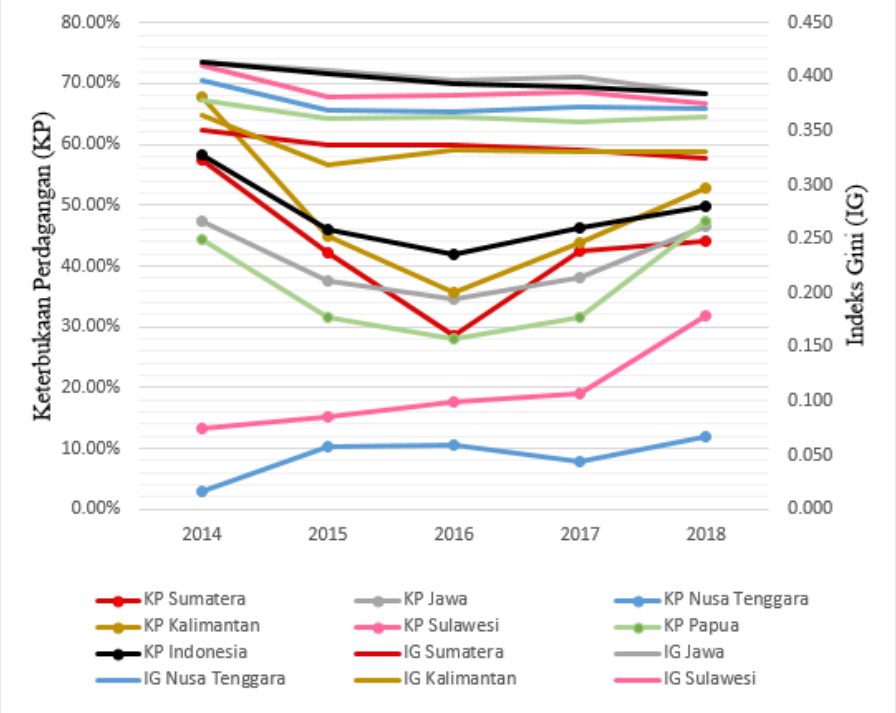

Figure 1. Openness of international trade and inequality in Indonesia 2014-2018
Source: BPS (2019), processed

There have been many studies on the effect of trade openness on regional inequality. Ezcurra & Rodríguez-Pose (2014), Hirte & Lessmann (2014), and Lessmann & Seidel (2017) found that international trade openness has a positive effect on regional inequality. The higher the level of trade openness of a region, the greater the

regional inequality. However, research giving different results was carried out by G.C. Lim & Paul D. McNelis (2014), Kis-Katos & Sparrow (2015), and Nazarczuk & Umiński (2018). They found that international trade openness hurts regional inequality. The higher the level of inequality in an area, it will cause the decrease in inequality in that area.

Based on this description, both theory and empirical studies, international trade openness has pros and cons. This study tries to look deeper into the relationship between international trade openness and regional inequality in terms of scope province by involving variables still often ignored by previous research. International trade openness is measured by considering trade costs through geographical accessibility. Inequality between regions was measured using the Williamson index. In addition, the government as a provider of policies and facilities is also measured by using government spending for the public sector. As a result, the purpose of this study is to determine the effect of international trade Openness on inequality between districts/cities in Indonesian Provinces.

Method

This study uses panel econometric analysis. The data used from 33 provinces in Indonesia from 2003-to 2018 was obtained from Statistic Indonesia (BPS). This study examines the effect of international trade openness in provinces in Indonesia on regional disparities between regencies/cities in the province. The period used is from implementation of the AFTA cooperation policy, namely 2003 to 2018. This research was conducted using a quantitative approach with an econometric panel or pool data estimation analysis. The data used is secondary data obtained from the Central Statistics Agency (BPS) and the Ministry of Public Works and Public Housing (PUPR). Inequality between regions in provinces in Indonesia is measured using the Williamson index (Gluschenko, 2018):

$$IW = \frac{\sqrt{\sum(Yi - Y)2\, fi/}}{NY}$$

Yi is the income per capita of the district/city, Y is the average income per capita of the province, fi is the total population of the district/city, and n is the total population of the province. The model used to estimate the effect of international trade openness on regional inequality refers to research conducted by George Hirte, Christian Lessmann, and Andre Seidel (2020). The following is the model in this research:

$$INEQ_{i,t} = \beta_0 + \beta_{1.} TRADE_{i,t} + \beta_{1.} TRADE_{i,t} + GEO_i + TKM_{i,t} + POP_{i,t} + GOV_{i,t} + \acute{\epsilon}_{i,t}$$

INEQ is the inequality between regions as measured by the Williamson index. TRADE is the openness of international trade as measured by a province's exports and imports to the province's GDP. Geographical accessibility (GEO) is used to measure the ease of access between regions in each province by comparing the length of the road to the area. The proportion of labor in the manufacturing sector in each province is used to see the accumulation. Total population (POPULATION) is used to see the size of each province. And government spending (GOV) is used to see the government's role in providing public facilities that support equity between regions.

Results and Discussions

The measurement of inequality between regencies/cities in Indonesia is divided into several sections based on islands, expansion provinces, and provinces based on the mining and quarrying sector (Appendix). Inequality between districts/cities in provinces in Indonesia between 2003-2018 was in the low and medium inequality groups. There were two provinces at very high levels of inequality with a trend that tends to decrease. Provinces in Indonesia with very high disparities between districts/cities are East Java and Papua, with a Williamson index >1. Meanwhile, provinces with mining and quarrying sectors have disparities between districts/cities in the medium and high groups.

After knowing the inequality trend in the specified period, this study estimates the effect of international trade openness on regional inequality. The equation used shows that the best model used is the fixed effect. However, the classical assumption test results show an autocorrelation problem that needs to be corrected using HAC (Heteroskedasticity and Autocorrelation). The estimation results show that the independent variables used have a significant effect on inequality between districts/cities in the studied province. This is indicated by the statistical F value of 0.000, and the coefficient of determination is 21.27%. This means that the variables in the model can only explain 21.27% of inequality between districts/cities in Indonesia. In contrast, the rest is explained by other variables not included in the model. The complete estimation results can be seen in Table 1.

From table 1, it can be seen that the trade openness variable has a significant positive effect on regional inequality in provinces in Indonesia. This proves that international trade openness will form agglomerations in certain areas that are considered profitable for the global market. However, the moderating variables of international trade openness and geographic accessibility showed opposite results.

Table 1. Final Estimate

Sample : 1.528
Included observation: 519
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed
Bandwidth: 6000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	41.99564	7.277610	5.770526	0.0000
TRADE	0.061030	0.024996	2.441592	0.0150
TRADE*GEO	-0.014466	0.003398	-3.618378	0.0003
TKM	-0.439438	0.328825	-1.336450	0.1820
LOGPOP	7.304260	3.362985	2.170043	0.0305
LOGGOV	11.43010	4.687437	2.438455	0.0151
R-squared	0.220344	Mean dependent var		54.82894
Adjusted R-squared	0.212745	S.D. dependent var		35.70090
S.E of regression	31.67647	Akaike info criterion		9.760519
Sum squared resid	514743.5	Schwarz criterion		9.809674
Log likelihood	-2526.855	Hannan-Quinn criter.		9.779776
F-statistic	28.99564	Durbin-Watson stat		0.275987
Prob (F-statistic)	0.000000	Wald F-statistic		13.11414
Prob (Wald F-statistic)	0.000000			

Sumber: *Eviews9, viola*

Easy access to geography between regions has a significant negative effect on inequality between regions. The economic concept of geography explains that international trade accompanied by easy access to geography will facilitate economic dispersion between regions. Adequate geographical accessibility will support the movement of industries from the main economic centers to new economic centers in various areas within the province. For example, the distribution of economic development in Central Java, which was initially only centered on Semarang, Kudus and Cilacap, is now starting to emerge as new economic centers such as Rembang and several other areas. The selection of these cities took into account the geographical distance from the main city centers in Indonesia (Ministry of Industry, 2016). Although the coefficient of regional inequality reduction due to international trade openness and geographic access is relatively small, it is very. It affects provinces with many remote or underdeveloped areas, such as North Sumatra, East Java, NTB, NTT, West Kalimantan, Central Sulawesi, Maluku, North Maluku, and West Papua, and Papua.

The variable proportion of labor in the manufacturing sector does not affect regional inequality. This is probably due to the ease of migration between provinces, so the accumulation cannot be described. The population has a significant positive effect on regional inequality. These results indicate that the distribution of the population is not entirely evenly distributed in the districts/cities of each province. Government spending also has a significant positive result. This means that the higher the government spending in the public sector, the higher the regional inequality. This is due to government spending that has not been used efficiently for handling inequality problems. It is evident from the total programs to tackle inequality by local governments that only Java Island has implemented 40%, followed by Sumatra Island and Sulawesi Island with 28% and 24% implementation, respectively. Meanwhile, local government programs to tackle inequality on Kalimantan, The Nusa Tenggara Islands, Maluku Islands, and Papua Island are still relatively limited (BAPPENAS, 2017).

Conclusions

Based on the estimation results that have been carried out, the openness of international trade in provinces in Indonesia has a positive impact on increasing inequality between districts/cities in the province. However, international trade openness can reduce inequality between districts/cities in the province if it is accompanied by easy access between regions. In general, provinces with positive net exports tend to have low regional inequality. In addition, this result is also influenced by the types of commodities exported or imported by each province. Future research is expected to consider the factor of labor migration to see how far the proportion of manufacturing sector workers is on inequality between districts/cities in Indonesia. In addition, it is also

expected to see more specifically the role of exports and imports based on their commodities to regional inequality.

References

BAPPENAS. (2017). *Prakarsa Pemerintah Daerah Dalam Upaya Pengurangan Kesenjangan Wilayah Dan Pembangunan Daerah*. Bappenas.

BBCNews. (2015). *Jurang Kekayaan Negara Anggota OECD Makin Lebar*. BBC News. https://www.bbc.com/indonesia/dunia/2015/05/150521_dunia_oecd_jurang

BPS. (2000). *Proyeksi Penduduk Indonesia Tahun 2000.* Jakarta: BPS Indonesia.

BPS. (2003-2018). *Statistik Keuangan Pemerintah Provinsi Tahun 2003- 2018.* Jakarta: BPS Indonesia.

BPS. (2003-2018). *Statistik Perdagangan Luar Negeri Ekspor 2003-2018.* Jakarta: BPS Indonesia.

BPS. (2003-2018). *Statistik Perdagangan Luar Negeri Impor.* Jakarta: BPS Indonesia.

BPS. (2004-2019). *Provinsi Dalam Angka Tahun 2003-2018.* Jakarta: BPS Indonesia.

BPS. (2010). *Proyeksi Penduduk Indonesia Tahun 2010.* Jakarta: BPS Indonesia.

Brülhart, M. (2011). The spatial effects of trade openness: a survey. *Review of World Economics*, *147*(1), 59–83.

Dauth, W., Findeisen, S., & Suedekum, J. (2017). Trade and manufacturing jobs in Germany. *American Economic Review*, *107*(5), 337–342.

Ezcurra, R., & Rodríguez-Pose, A. (2014). Trade openness and spatial inequality in emerging countries. *Spatial Economic Analysis*, *9*(2), 162–182.

Gluschenko, K. (2018). Measuring regional inequality: to weight or not to weight? *Spatial Economic Analysis*, *13*(1), 36–59.

Hirte, G., & Lessmann, C. (2014). *Trade, integration, and interregional inequality*. CESifo Working Paper Series.

Kis-Katos, K., & Sparrow, R. (2015). Poverty, labor markets and trade liberalization in Indonesia. *Journal of Development Economics*, *117*, 94–106.

Kuncoro, M. (2010). *Dasar-dasar ekonomika pembangunan*. UPP STIM YKPN.

Lessmann, C., & Seidel, A. (2017). Regional inequality, convergence, and its determinants–A view from outer space. *European Economic Review*, *92*, 110–132.

Lim, G. C., & McNelis, P. D. (2014). *Income inequality, trade and financial openness*. Melbourne Institute Working Paper.

Long, A., & Ascent, D. (2020). World economic outlook. In *International Monetary Fund*.

Montgomery, M. R., Stren, R., Cohen, B., & Reed, H. E. (2013). *Cities transformed: demographic change and its implications in the developing world*. Routledge.

Nazarczuk, J. M., & Umiński, S. (2018). The geography of openness to foreign trade in Poland: The role of special economic zones and foreign-owned entities. *Bulletin of Geography. Socio-Economic Series*, *39*, 97–111.

Rodrigue, J.-P. (2020). *The geography of transport systems*. Routledge.