Interaction of Trade in North Sumatra

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Abstract: The purpose of this study is to analyze the factors that influence the interaction between North Sumatra and Malaysia. The analytical model used in this study is the Gravity Model with export destination country (Malaysia) and uses time-series data during the period 1983 - 2016. The estimation results show that North Sumatra's Export have no effect on Interaction. While Exchange Rate and Malaysia's Economy have positive and significant effect on Interaction.

1 BACKGROUND

One of the prerequisites for strengthening national connectivity is the creation of connectivity between Indonesian regions which is realized in the form of; a) realization of an integrated system between the national logistics system, national transportation system, regional development, and communication and information systems, b) identification of transportation nodes and distribution centers, c) strengthening intra-connectivity and between corridors and international connectivity, and d) improvement of communication networks and information technology.

As an efficient, robust and integrated maritime country the inter-regional linkages are the basis of accelerating the improvement of people's welfare and regional progress. Based on the Review of Maritime Transport 2015 issued by UNCTAD, the index value in 2004 was 25.88 and in 2015 it was 26.98. Sumatra Corridor is one of the economic corridors set out in MP3EI which consists of 11 economic centers, namely Banda Sumatera Utara, Medan, Pekan Baru, Jambi, Palembang, Tanjung Pinang, Pangkal Pinang, Padang, Bandar Lampung, Bengkulu, and Serang.

Increased real national income is often not followed by improving the quality of life of the population. If population growth exceeds or equals the growth of national income, then per capita income can decrease or not change, and this cannot be called economic development. Benchmarks for the success of economic development can be seen from economic growth, economic structure and the smaller income inequality between residents, between regions and between sectors. Development gap (income) between regions will be able to cause serious socio-economic problems.

Sumatra's economic corridor is one of the strategic areas in the Western Region of Indonesia which is geographically located in the Sumatra corridor in the ALKI I sea shipping lane and facing the Malacca Strait directly where most of the world's major shipping passes and utilizes the channel as its shipping lane. to expand the national and international trade network. Sumatra Corridor has high potential in the economic and social fields and has a competitive advantage in the sectors of plantations, marine fisheries, food crops, and trade. All of these potentials are very prospective to be promoted to markets in regional and international scale

2 METODHOLOGY

The Gravity Model was first developed by Newton (1687) to show that the interaction between two particles is influenced by the mass and distance between these particles. Based on this idea, then Jan Tinbergen (1962) and Pentti Poyhonen (1963) used the gravity model in international trade even without a strong theoretical basis. Reinert (2008) suggests that the use of the gravity model in international trade has several alternative developments from the basic form

of Newton's gravitational theory that has been transformed into the following natural logarithms:

$$\ln GF_{ij} = \ln M_i + \ln M_j - \ln D_{ij}$$

The basic formula for calculating the number of trips (trips) between P_i and P_j, namely trips originating from region i and choosing the destination j region is:

$$T_{ij} = G \frac{P_i P_j}{d_{ij}^{\ b}}$$

The functional basic approach of the gravity model was also put forward by Jan Tinbergen in 1962. This model is still relatively rough for use in the flow of international trade. However, the form of function that it proposes has been widely applied so that it is called the function of "social interaction" because it includes migration, tourism and direct investment. The general law of gravity towards the social interactions that he expressed in a notation is stated as follows:

$$F_{ij} = G \frac{M_i^{\ \alpha} M_j^{\ \beta}}{D_{ij}^{\ \theta}}$$

Mathematically, this Newton gravity model can be formulated as follows.

$$G = g . \frac{M_A M_B}{(d_{A.B})^2}$$

Based on the theory review and review of the results of previous studies related to the purpose and focus of the research, the research concept that was built as follows:
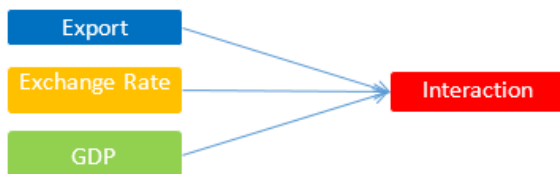

Figure 1 Research Conceptual Framework

This gravity model is based on the theory of export bases which can predict international trade empirically. This model is developed from its name, namely the prediction of trade volume between two countries related in proportion to economic development (in this case GDP or PNB) and negatively related to distance (freight) (Rauch, 1999). Baier and Bergstrand (2001) also made modifications to the gravity model they used

$$X_{ij} = a \frac{Y_i^{\ \beta_1} Y_j^{\ \beta_2} P_i^{\ \beta_3} P_j^{\ \beta_4} ER^{\ \beta_5}}{D_{ij}^{\ \beta_6}}$$

Next it is specified as a model:

$$INTRKSI = \beta_0 + \beta_1 \ EXP + \beta_2 \ KURS + \beta_3 \ PDBM + \varepsilon$$

3 DISCUSSIONS

The estimation of interaction function between North Sumatra and Malaysia can be seen in Table 1.

Table 1: Results of Estimation

Variable	Coefficient	Standard Error	t-statistic	Probability
C	1.40E+09	1.31E+08	10.65802	0.0000
EKSP	0.443074	0.360526	1.228965	0.2286
KURS	104367.2	15869.25	6.576697	0.0000
PDBM	4.362812	0.525006	8.310017	0.0000
R-squared	0.973253			

North Sumatra Export
Based on table 1, the results of partial hypothesis testing are as follows. The test results show that the export coefficient value is 0.443074 and is not significant (sig = 0.2286). These results indicate that the increase in North Sumatra exports to Malaysia had no effect on trade interactions between North Sumatra and Malaysia.

It was found that exports did not have a significant effect on changes in North Sumatra trade interactions to Malaysia. Regions that have grown and developed, their economic activities will expand to all sectors and in the long run the expansion of exports will determine the growth of the region. So that it can be concluded that the export of North Sumatra will increase to show that North Sumatra has experienced an increase in the economy.

Baier and Bergstrand (2001) concluded that the increase in trade was caused by an increase in the rate of economic growth, while the reduction in tariffs and reduction in transportation costs did not have a large influence. When referring to this opinion, of course increasing trade between the two countries will have an impact on increasing interaction because Baier and Bergstrand concluded that reducing tariffs and reducing transportation costs had no impact. But Hegre argues that having to be reviewed is more important is not the relationship between the value of bilateral trade and the size of the economy but rather the efficiency of trade.

In addition, it should be noted that the exports carried out by North Sumatra to Malaysia were also

stranded by exports carried out by companies located in North Sumatra. This condition can cause that the increase in exports does not have an impact on increasing trade interactions between North Sumatra and Malaysia.

The increase in exports can be caused by the weakening of the rupiah so that the products exported become cheaper so that both Malaysia increase demand for products originating from North Sumatra. This condition certainly has no impact at all on the trade interactions between North Sumatra and Malaysia.

Exchange Rate

Based on table 1, the results of partial hypothesis testing are as follows. The test results show that the exchange coefficient value is 104367.2 and significant (sig = 0,000). These results indicate that an increase in the nominal value of the rupiah against US dollars (weakening of the rupiah) will have an impact on increasing trade interactions between North Sumatra and Malaysia.

It was found that the weakening of the rupiah had a positive impact on the increase in North Sumatra trade interactions to Malaysia. For interactions with the weakening of the rupiah, Malaysia has an interaction increase of 104367.2. The gravitational theory applied in this study basically wants to measure the interaction strength between two or more regions. Abbas and Waheed (2015) concluded that in the gravitational theory approach showed an increase in trade caused by an increase in the rate of economic growth. This opinion further confirms that an increase in the weakening of the exchange rate will lead to high trade interactions between North Sumatra and Malaysia.

Malaysia GDP

Based on table 1, the results of partial hypothesis testing are as follows. The test results show that the Malaysian GDP coefficient value is 4.362812 and significant (sig = 0,000). These results indicate that the economic growth of Malaysia in this case an increase in Malaysian GDP will have an impact on increasing trade interactions between North Sumatra and Malaysia.

It was found that an increase in Malaysia's GDP would have an impact on increasing North Sumatra trade interactions to Malaysia at 4.362812. According to Hosseini (2013) in the gravity model, the occurrence of trade between the two countries is more due to the size of the GDP of the two countries and the distance between the two countries. This opinion is in line with the results of research that show that an

increase in GDP will have an impact on trade interactions between North Sumatra and Malaysia in addition to being close enough. However, Hosseini also stated that international trade does not only occur between the two countries but also between the two companies in the country. This also contributed to the increase in Malaysian GDP which had more impact on increasing trade interactions with North Sumatra. Hosseini argues that in addition to the government conducting transactions with other countries, companies in the country also conduct transactions with companies in other countries so that this condition causes factors in international trade no longer the same as the assumption that international trade is only trade between two or more countries but trade between companies in various countries. Differences in transactions between companies in North Sumatra and Malaysia also influence changes in trade interactions.

4 CONCLUSION

Based on the results of the analysis, there are several things that can be concluded from the results of this study, including:
1. North Sumatra exports to Malaysia do not affect the North Sumatra trade interactions to Malaysia
2. Exchange rates have a positive and significant effect on North Sumatra's trade interactions
3. Malaysia GDP has a positive and significant effect on North Sumatra trade interactions to Malaysia

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