

Implementing Of The Harold Hotelling Theory Model In Empirical Evidence Whether Natural Rubber Latex Export And Food Animals Export Role A Play To The Economic Increase

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Abstract: This research aims to know the effect of Natural Rubber Latex Export and Food and Animals Export on the Economic Increase. Types of research are causal research and secondary data collected from Government Statistics Agency of North Sumatera Province, Indonesia. The analysis using Smart PLS software. This research findings is the Food and Animals Export effect to the Economic Increase and show that Natural Rubber Latex Export does not influence the Economic Increase. The implications of this research have an impact on the policy of natural rubber development which is currently shrinking and it is expected that the development of new rubber industry so that the impact on Economic Increase is more real. This research originality is observed the downstream of natural rubber products whose results have scientific findings that have an impact on the economic increase.

Keywords: Natural Rubber Latex, Food and Animals, Economic Increase.

Introduction

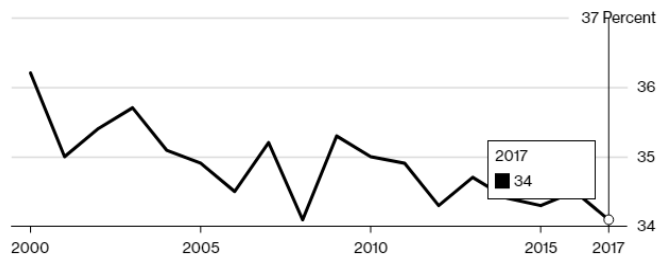
Economic activities that process raw materials, raw materials, intermediate goods and/or finished goods into higher value goods for their use, including engineering and engineering activities. Raw materials are all ingredients derived from natural resources and obtained from human effort to be further utilized, for example cotton for textile industry, limestone for cement industry, iron ore for iron and steel industry. Industrial raw materials are processed or unprocessed raw materials which can be utilized as production facilities in industry, such as iron or steel sheets for pipe, wire, bridge, zinc, telephone pole, yarn cotton for cotton industry, coconut oil, margarine industry raw materials (Root and Ahmed, 1978). Half-finished goods are raw materials or raw materials that have undergone one or more industrial process stages which can be further processed into finished goods, such as fabrics made for clothing, processed wood for furniture and paper industries for printed materials. Finished goods are ready-made industrial goods for final or ready to use consumption as a means of production, such as clothing, furniture, cement, and fuel industries (Zhou et al., 2017). Rubber is a commodity of natural raw materials used in many products and equipment throughout the world ranging from industrial products to households. There are two types of rubber that are widely known, natural rubber and synthetic rubber. Natural rubber is made from latex from rubber trees, while synthetic types are made from crude oil. These two types can replace each other and therefore affect the demand for each commodity; when crude oil prices rise, demand for natural rubber will increase. But when the supply disruption of natural rubber makes the price go up, the market tends to switch to synthetic rubber. Indonesia is one of the largest producers and exporters of natural rubber in the world. Largest Natural Rubber Producing Countries in 2017 show in Table 1 as a follows:

Sources : Association of Natural Rubber Producing Countries (2017).

Table 1. The Biggest Natural Rubber Manufacturer in the World

Based on Table 1 show that the largest natural rubber producer is Thailand and followed by Indonesia. This shows that rubber is a natural commodity that can be a mainstay of exports and domestically as a driver of domestic industries that can contribute industry to a country. Value added of upstream rubber products seeks to develop rubber as one of the main commodities in national economic development by developing integrated efforts in the framework of developing and providing technology, information, certification in the rubber field, including technology formulation, innovation and technology transfer. natural rubber cannot compete with synthetic rubber derived from petroleum. With the rise in oil prices, natural rubber will be excellent. The main driver for the global rubber market is the Asia-Pacific region. The demand for rubber is the largest in China and is estimated to consume nearly 40 percent of the world's total rubber consumption in 2021 (mostly used in the tire manufacturing industry). Meanwhile, strong growth in rubber consumption is also expected to occur in Indonesia, India, Vietnam and Thailand because of the growing automotive industry in these countries (Indonesia Investment. 2018). Like most other major commodities, international rubber prices have come under pressure from 2011 when global economic activity was weak (which had a negative impact on the automotive industry) and the abundant supply of natural rubber. In addition, low crude oil prices make synthetic rubber very competitive, so the price of natural rubber fell significantly between early 2011 and the end of 2017. Meanwhile, progress in developing bio-based tires is also a threat to the rubber industry. In addition, Indonesia has export opportunities for Food Animals Export against the background of the declining production of Food Animals (protein Cursb) in the United States. This is presented in the following Figure 1:

No.	Country	Production (in Tons)
1.	Thailand	4,070,000
2.	Indonesia	3,200,000
3.	Malaysia	1,043,000
4.	Vietnam	1,043,000



Sources : U.S. Department of Agriculture. (Retrieved from Bloomberg Data, 2018).

Figure 1. Declining Protein Curbs U.S

Based on Figure 1, the production of Food Animals (protein Curbs) has decreased. This is due to the increasing needs within the United States. This is an export opportunity for countries producing Food Animals products (protein Curbs) including Indonesia. Industrial design is industrial activity related to planning of establishment of industry and factory as a whole or its parts. Engineering industry is an industrial activity related to the design and manufacture of machinery/plant equipment and other industrial equipment. Increase economic increase gradually, transform the economic structure into a better, progress, healthier and more balanced direction as an effort to realize a stronger and broader basis for economic increase in general, and provide added value for industrial growth in particular. International competition is a new perspective for all countries, so the focus of future industry development strategy is to build the competitiveness of sustainable manufacturing industry in the international market (Haraguchi et al., 2017). To build a sustainable competitiveness. The essence of sustainable competitiveness lies in mobilizing and organizing all potential productive resources to produce innovative products that are cheaper, better, easier to obtain in order to meet market needs and demands (Haraguchi et al., 2017). The development strategy of the manufacturing industry in the future by adapting the latest ideas that develop today, namely the development of industry through cluster approach in order to build sustainable industry competitiveness. In the medium term, the improvement of industrial competitiveness is done by building and developing priority industry clusters while in the long term it is more focused on integrating the cluster approach with efforts to manage demand and build core competencies in each cluster.

LITERATURE REVIEW

Harold Hotelling Model

The efficient exploitation of non-renewable and non-augmentable resources will lead to unstable economic conditions and lead to depletion of resources (Stokes, 1963). Mineral resource development takes place in five stages, namely: (1) the current operating limit (production level) is regulated by the proportion of reserves (resources) that have been used up; (2) the limit of intensive development is regulated by a trade-off between an increase in investment and the speed of realization of

income; (3) wide development limits starting from previous deposits that are not economical; (4) the exploration limit for new deposits (sources) is carried out with uncertain cost per unit and the cost of failure must be balanced with marginal costs not higher than in the first three stages above; and (5) technology boundaries that interact with the first four stages. Economic development is one measure of the amount of output produced by a country and Natural Resources role in Economic Increase. The more number of outputs produced shows the higher growth or economic development. Economic development also shows changes in improving living standards, which are reflected in the ability to consume more, in addition to increasing output

Rubber Latex Natural Resources

Rubber includes biotic natural resources from rubber tree sap as solid material. Rubber is a limited natural resource. Rubber is also a commodity with high economic value and non-oil and gas export commodities (Ismail et al., 2018). Natural rubber can be beneficial for human needs and can be processed as raw material in tire industry, electrical equipment and health equipment, besides the benefits of rubber tree plants in the form of wood barriers can also be used for fuel wood.

Protein Curbs

Animal food, namely food derived from animals. Some types of food items that fall into the animal category, including meat, fish, eggs, and others. Natural resources of this type have characteristics such as renewable natural resources because they can be repaired at any time, provided there is maintenance to protect them and their use according to their supplies and needs (Beestermöller et al., 2018 and Kohler & Ferjani, 2018). In certain times these natural resources can be classified into non-renewable natural resources, namely when they become very reduced in growth as a result of wasteful and less responsible use.

Materials and methods

The purpose of research is comparative research to investigate the possibility of causal relationships in a way that is based on observing the consequences and recovering factors that may be the cause through certain data. This is in contrast to the experimental methods that collect data at the present time under controlled conditions. Type of data is Secondary Data from North Sumatera In Figures by Central Bureau of Statistics 1999-2015 (Central Bureau of Statistics, 2017). The main disadvantage of any ex post facto design is the absence of control over the independent variables. Within the limits of election that can be done, the researcher must take the facts he or she encounters without the opportunity to regulate the conditions or to manipulate the variables affecting the facts it encounters. In order to reach a healthy conclusion, the researcher should consider all possible reasons or possible rival hypotheses that may influence the results achieved (Van Stel et al., 2005; Tiganasu et al., 2014; Sawaengsak and Gheewala, 2017; Zhou et al., 2017 & Stano et al., 2017). To the extent that the researcher can successfully justify his conclusions on these alternatives, he is in a relatively strong position.

RESULT AND DISCUSSION

Result

The result tes is presented in the following Figure 2 & Table 2:

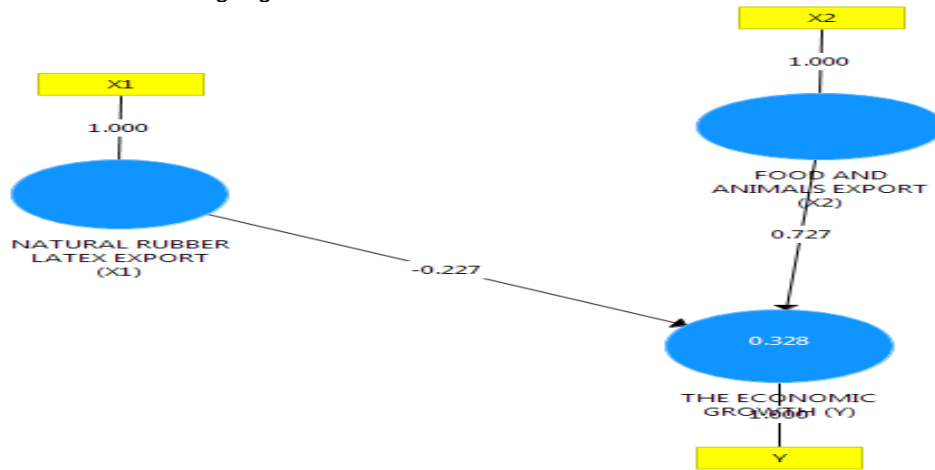


Figure 2. Overall Model with Coefecient

The effect test can be seen in the following Table 2:

	Sample Mean	t Statistics	p Values
FOOD AND ANIMALS EXPORT (X2) -> THE ECONOMIC INCREASE (Y)	0,715	2,196	0,029
NATURAL RUBBER LATEX EXPORT (X1) -> THE INCREASE (Y)	-0,215	0,721	0,471

Sources: SMART PLS Result (2018).

Table 2. The result of Bootsraping

The results show in Figure 2 and Table 2 shows that Food and Animals Export are significant variables on The Economic increase. In addition to hypothesis testing through the bootstrapping menu that produces t-statistics, inner model evaluation is also done by reviewing the R-Square value (Yahya et al., 2017). The R² value generated from the inner model evaluation is presented in the following Table 3 & Figure 3 :

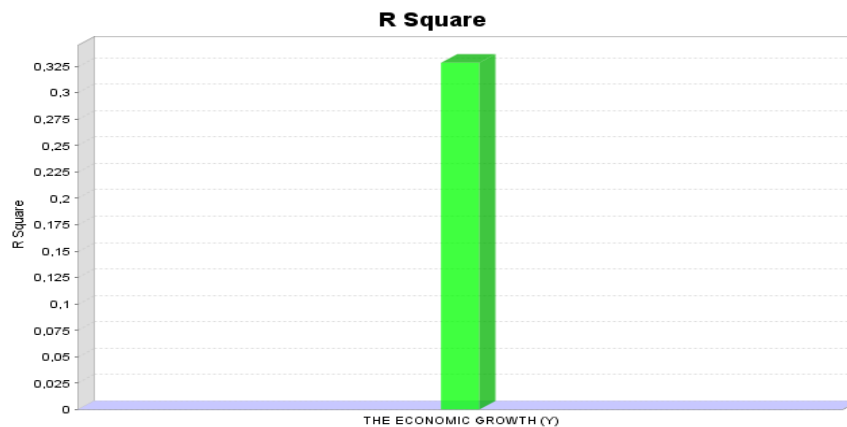


Figure 3. F Square

Sources: SMART PLS Result (2018).

	Adjusted R ²
THE ECONOMIC INCREASE (Y)	0,225

Sources : SMART PLS Result (2018).

Table 3. R-Square Value

Based on Figure 3 and Table 3 show is the existence of Manufacture of Textiles, Clothing and Leather also has a great contribution on economic development of a region, Industry is a livelihood field that uses skill and work persistence and the use of tools in the field of crop processing and its distribution as a basis. While the industry is the order and all activities related to industrial activities (Easterly and Levine, 2003; Bahmani et al., 2012 & Cole et al., 2017). Assembling or assembling and repairs are part of the industry.

Discussion

The results of the industry are not only in the form of goods, but also in the form of services. an economic activity undertaking the activity of converting a base goods mechanically, chemically, or by hand into a finished product, and/or a less valuable item into a higher value item, and being closer to the end user. Included in industrial activities are industrial services and assembling work (Mankiw et al., 1992; Haraguchi et al., 2017; Henderson et al., 2017; Holtz-Eakin and Lovely, 2017). In addition, the industrial definition according to the law concerning industry is an economic activity which processes raw materials, raw materials, semi-finished materials and/or finished goods into higher value goods for its use, including engineering and engineering activities. The industry is generally known as the next link of economic endeavors, that is, after agriculture, plantations and mining that are closely related to the land. The industrial position is further away from the land, which is the economic, cultural and political base. Indonesia as the second largest producer of natural rubber in the world must seize opportunities from the advantages of natural rubber. Bright opportunities for national marriages can only be achieved if Indonesia is able to improve the performance of its rubber plantation management by increasing the quantity and quality of its rubber products. so that in the future it has a considerable opportunity to become the world's largest producer of natural rubber, which can significantly improve Indonesia's economic growth towards a better. According to data compiled by Indonesian financial analysts, the sector that contributes the largest state income is still held by the agricultural sector. With a percentage of more than 50% of agriculture with a variety of products, it dominates the biggest contributor to foreign exchange compared to industrial products. The Intersional Rubber Study Groups in 2015 stated that during the six-year period the world rubber consumption began to increase by 25%. This shows that consumption of the world's rubber is greater than the increase in rubber production itself. Opportunities for downstream export product lines for countries that have potential in the field of rubber plantations to increase production which will ultimately contribute to the development of the world rubber market.

Conclusions

The results show that Food and Animals Export influence to the Economic increase and show that Natural Rubber Latex Export not influence to the Economic increase. The recommendation of this study is that the downstreaming of the rubber industry is important for creating value added products. The potential for rubber makes Indonesia a great opportunity to dominate the world market in terms of rubber

trading. Currently many derivative products rely on raw rubber as raw material, Limitations of this study only observed in the region of North Sumatra Province while other provinces in Indonesia are not observed. The implications of this research have an impact on the policy of natural rubber development which is currently shrinking and it is expected that the development of new rubber industry so that the impact on economic increase is real.

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