

The interrelationship structure of the composition of exports and trade liberalization Against economic growth: the application of fixed effect GLS Model

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Abstract

This research aims to study the linkages between trade liberalization and against the composition of economic growth in the long term by using data analysis pooling with applying the fixed effect model GLS. This research was conducted towards Indonesia, Singapore and Thailand in the year 1995-2017. The results showed the presence of the influence of economic openness towards trade, domestic investment and foreign investment. The results of the study also yielded that the structure of the trade effect on economic growth. Research shows that the implications of the structure of the composition of exports and trade liberalization policies contributing to long-term economic growth.

Keywords: economic growth, trade Structure, fixed effect

Introduction

An open economy has had the linkages with higher economic growth compared to the more closed. This is proven in for developed countries with a high income. Feridhanu Setyawan studies and Rizal (1998) States that that with the opening of trade between countries will add to the well-being of the economy. But the benefit of different each State, including the State organization of trade liberalization.

The purpose of the business deal between countries to amend the high growth by researchers primarily to research that supports the positive relationship between the two variables such as research Sachs and Warner (1995), Frankel and Romer (1999) and Lewer and Van Den Berg (2003). The trade sector contribution towards economic growth many done by previous researchers using a diversity of theories and examples, such as the neoclassical, Keynesian growth model to the theory of endogenous growth of new (endogenous growth theory). The research of Sohn and Lee (2003) uses the analysis of the industrial sector, such as the SCP Paradigm (Structure-Conduct-Performance) to clarify this matter.

Granting to the theory, trade between countries seeks to be the motor driving economic development through multiple channels. Among them, the growth of the export sector as a positive force against a sector not exports, through the management are done from various efficiency done that will increase expenditure. Export growth also increases productivity through economies of scale in exporting companies and increase the efficiency of income and competitiveness Dynamics (Ghatak et al., 1997). The effects of their research also produces export increase long-term growth. In increase, the growth of exports also reduces barriers for foreign exchange values. Increase the adoption of export will reduce growth by way of import restriction goods to intermediaries and capital.

Next, trade between countries also provide country information to the knowledge of more modern applied science, especially if states are building trade with developed

countries, such as product development and offer access to inputs recently. For instance, trade between countries by providing investment and intermediate goods, facilities that are vital to the growth operation. This stands for trade between countries is one of the primary informants for the dissemination of technology (Yanikkaya, 2003).

The researchers of several examples and hypotheses do give effect on the openness of trade between countries, the strategy-oriented out and also activate the increase of export or export-led growth hypothesis. Not much research done around the influence of the social organization of the trade itself towards the country's economic development. Specifically the focus of this inquiry is to study the social organization of trade between countries towards economic growth, with more concentration to export and openness to trade and foreign investment. This article also uses a combination of data pooling analysis by using the fixed effect model GLS.

THEORY AND LITERATURE REVIEW

The influence of the authorship of the export structure towards the economic development of a nation, the less well studied compared to the influence of export (the export led growth hypothesis) and the liberalization of economic openness or against trade between countries from one side There are researchers who examined the utilization ratio of export income of the country as a proxy of openness. Except research done as Feder (1983), Fosu (1990), Ghatak et al. (1997), Greenaway et al. (1999) and Crespo Cuaresma and Worz-(2003), Lewer and Van den-Berg (2003).

Dowling and Ray (2000) analyzed the pattern of foreign direct investment and trade in Asian nations. The effects of research, he incorporates the elements that induce alterations in the condition of the next challenge facing development and spurred by exports in the short and long term time. This inquiry resulted in the economic growth of Asian nations, among others, characterized by an openness to trade between states, the procedure of rapid industrialization and foreign direct investment inflow that acts promoting growth and modify the composition of exports. The study also concludes the exports, Asian countries tend to bend to the manufacturing sector, in particular industry that holds a high-tech world and demand. This is caused by a reduction in the price of out of State compared to manufactured goods that embody the down trend, especially for a nation that depends on exports. In increase it also existed in the diversion of trade for manufactured goods are oriented to human resources. The subject area also explains his trend of an increase in competition between countries are making. Hazel research concludes long-term growth in the Asian countries need to provide the capability of the technology and the social organization of incentives for the utilization of novel technologies.

The research of Chen and Gupta (2006) as well as Chang et al. (2009) establish the existence of the positive influence of trade openness towards economic growth marked repair of infrastructure and sustaining elements. Chen and Gupta (2006) also produce research that sustains an impingement on the training level of openness of trade and sustained economic growth in the rural areas of southern Africa (The Southern African Development Community, SADC), through science and technology.

Research Lucas (1988) which indicates trade between states can bear upon the country's growth rate by correcting factor deficiency against different sectors of use of engineering. Economic development depends on the content of technology utilized by countries. The research of Pinna (1996) examines the relationship between trade and economic development. He forged the one country specializing its expenditure in low-tech

sectors give negative influences to the economic development. This means the export capacities of a single state cannot be a systematic source of economic development. As a consequence, the size of the receptiveness of the trade relationship-one generating growth that causes incorrect specifications (misspecification). The consequences of his inquiry are also encouraged to use the indexes of openness, according to sectoral trade composition when researching the relationship between trade and economic development. Their use as discern by Levine and Renelt (1992) against the theoretical account of theories used in research by Fosu (1990). Decision analysis of 87 states shows the coefficient influence the export manufacturing sector towards growth is important and positive. While the manufacturing sector is not a coefficient indicating the value is negative and pregnant. This show, the survey examined the relationship between craft and growth needs to consider the constitution of a country's exports.

Research the Crespo Cuaresma and Worz-(2003) investigated the influence of indirect exports, as against the influence of economies of scale, increased productivity, and so on against economic growth. This research uses data export manufacturing based on the strength of the different technologies. The conjecture of the research model was proven against the developed research Feder (1983) utilize the information to build the country and 45 states were built in 1981-1997. By practicing the method of random effects, his research to formulate the export of high-tech industry has a substantial contribution towards economic growth than low-tech industries because the State benefit from openness such. This field confirms the hypothesis of export sectors against the influence of economic growth depends on applied science.

Next, Lewer and Van den-Berg (2003) also examined the influence of the composition of trade towards economic growth 28 OECD countries and countries is building. This field examined the hypothesis that done by Mazumdar (1996), the composition of trade is the decisive power of development. Lee and Van den-Berg (2003) in his research have formed a trade by identifying the makeup of the forefinger is that it is the net exporting countries researched capital goods or employment of the goods by using methods of the data panel and the SEM method. The outcomes of his research support the hypothesis that countries importing capital goods and export usage experience a faster growth compared to a net exporter of capital goods.

Subsequent research, Sohn and Lee (2003) and Lederman and Maloney (2003) analyzes the empirical relationship structure of patronage and economic growth against the 60 nations of the globe. The social organization of patronage in the analysis described the varied natural resources, exports, and foreign direct investment. The research use of cross section and panel data, by using the method of the smallest squares (OLS) and linear generalized methods of moment (GMM). Research to formulate the variables in natural resources and exports showed a negative relationship with economic development. Meanwhile, two variable structures of trade and foreign direct investment has a confident relationship with economic development.

Frankel and Romer (1999) analyze the linkages between trade and economic growth using the geographic component of the variable and its effects on the research results of the income get a carry trade has a positive effect toward economic development. These solutions are reinforced by research Wacziarg and Welch (2003) as well as Raff (2004). Wacziarg and Welch (2003) that States carry trade liberalization will lead to a boost in foreign investment and economic growth, is in the main determined by the variable control and variable determinant of economic development.

Ghatak et al. (1997) did against the empirical research of the linkages between the increase of production and exports. Previous research, but generally only test the relationship of aggregate exports and economic growth, and ignoring some assumptions in the econometric estimation process. This research only distinguishes between economic variables influence the export towards economic development, see export growth in the aggregate influence and dividing the export variable to the export sector and traditional manufacturing sectors. By applying the analysis of the structural break, Granger and causal relationships in a Malaysia country year 1955-1990. The outcomes of his research support the hypothesis of export increases economic development. Only when data export to the traditional sector and solved the manufacturing, decision analysis shows there is a significant variety. The export of traditional sectors also has a relationship with Granger cause economic growth, but the results were negative and pregnant. Further research results concluded that the manufacturing sector to turn the driving engine of Malaysia's economic development.

Research Cuadros et al. (2001), analyzed the relationship between economic openness and economic development by studying the relationship between the trade or export and foreign direct investment with the turnout. The effects demonstrated the influence of openness towards economic development is not enough focusing to export variables and ignore the influence of foreign direct investment. Only in the procedure of trade liberalization is expected not only increased, but also the flow of foreign direct investment. Foreign direct investment played a significant role towards economic development. Research Cuadros et al. (2001) examined the relationship between causes of the output with the incoming flow of foreign direct investment and trade using vector autoregressive models (VAR) in the lands of Latin America. The survey results also demonstrate the hypothesis foreign direct investment, economic growth boosters, but fail to sustain a confidential relationship between exports and increase.

METHODOLOGY

This study examined the relationship of the structure of trade and the economic growth of the three countries, Indonesia, Singapore and Thailand with time of year 1995 research until 2017. The variables used are terms of trade ratio of export goods using a proxy against the GDP. The openness that is, the proportion of the number of trades against the GDP. The investment ratio as a proxy investment, GDP ratio (DINV) and Government spending (GOVB) against GDP ratio as a placeholder. Foreign direct investment (FDI), exchange rates (KURS) and investment in the country (DINV). The work also employs the data pooling by applying the fixed effect model GLS and all the information in the course of a log. The data sources that are used are obtained from the International Financial Statistics (International Monetary Fund).

Empirical Model

Research analysis using a combination of time and sequence data of cross section, or addressed the data panel. As empirical research, Barro (1991), Easterly and Levine (1997) and Sachs (1997), Greenaway et al. (2002), the specification of the model is used;

$$y_{i,t} - y_{i,t-1} = (\alpha - 1)y_{i,t-1} + \beta Z_{i,t} + \gamma X_{i,t} + \eta_i + \varepsilon_{i,t} \quad (1)$$

Y is for real GDP per capita, Z is a variable structure of trade, the X variable control (not including the initial real per capita GDP), η represents the influence of the country-specific (unobserved), ε Term error and subscripts I and t describe the State and time. So that equation (1) can be described as follows

$$y_{i,t} = \alpha y_{i,t-1} + \beta Z_{i,t} + \gamma X_{i,t} + \eta_i + \varepsilon_{i,t} \quad (2)$$

In the operation of data estimation research data, panel controls the limited nature of the nation may not be able to be observed (unobserved) differences, such as the expenditure function, technology and State policy can avert the problem of biased specifications not included (excluded). To manipulate the specific characteristics of rural areas that are not able to be observed (country-specific unobservable), research using the fixed effects model. This model also helps cut the problem of heteroscedasticity that may exist are examined (Green, 1997). To find out the existence of the upshots of the estimation used the F-test constraint (restricted F test). The survey concluded, if successfully reject the theory of zero on a significant tier of 5%, this signifies that the form of nation specific.

The survey did not employ a random effects model because it assumes no specific country Term is correlated with the variables describing the other. This resulted in the estimation of this model bias and inconsistent (inconsistent) (Green, 1997). The purpose of fixed effects models fix the problem because it alone can be correlated with other regressors. To perform the estimation using the fixed effect model.

Specification model

Established on the specification of the model that has been said by Barro (1991), Easterly and Levine (1997) and Sachs (1997), Greenaway et al. (2002), then the research do the development of the model. Then the models examined are as follows:

$$\text{LnGDPit} = \beta_0 + \beta_1 \text{LnSTRADEit} + \beta_2 \text{LnOPENit} + \beta_3 \text{LnFDIit} + \beta_4 \text{LnKURSit} + \beta_5 \text{LnGOVBit} + \beta_5 \text{LnDINVit} + vt \quad (3)$$

Where is GDP, economic growth; STRADE is trade terms. OPEN is openness, FDI is foreign direct investment, the EXCHANGE RATE is the exchange rate, the GOVB is a Government budget and domestic investment is DINV.

THE RESULTS OF THE ESTIMATION

The fixed effect model estimation decisions are shown in table 1. In General, any variables being estimated, indicate the relationship as anticipated, except for the variable investment (DINV). But the variable is not important at the level of signification, 1%, 5% and 10%. For variable GOVB, STRADE, OPEN EXCHANGE RATE and FDI, generate the anticipated but significant relationship.

In especial, the per-capita GDP growth variables for the consequences of the estimation describes more slowly, and their relationship was negative and important at the confidence level exceeds 90%. Meanwhile, the State increased spending (GOVB) will yield a positive impact against economic development.

TABLE 1: The Estimation Results Model Of Fixed Effects GLS Model

Dependent Var	Coefficients ^a			
	(1)	(2)	(3)	(4)
STRADE	-0.6488*** (-7.1356)	-0.4737*** (-7.6663)	-0.4644*** (-7.2334)	-0.4435*** (-7.5756)
OPEN	0.3775*** (3.5432)	0.2642*** (3.3667)	0.24457** (3.4420)	0.2343*** (3.3164)
FDI	0.0657*** (3.2656)	0.0424*** (2.7643)	0.0334*** (3.3328)	0.0583*** (3.0155)
KURS	0.0523** (3.0225)	0.0342*** (2.8635)	0.0425*** (3.2535)	0.0417 (3.2145)
GOVB	0.0535** (3.3244)	0.0374*** (2.8654)	-	-
DINV	0.0223 (0.2154)	-	-0.0552 (-1.3643)	-
R ² adjusted	0.9423	0.9547	0.9564	0.9529

Note: a value in brackets is the value t statistics
 Significant at the 1% level of confidence

The outcomes indicated that the trade structure variables (STRADE), OPEN, FDI, this variable indicates the relationship or as expected. In particular, the results in table 1 shows the variable STRADE, OPEN, FDI is significant at the 1% point of confidence and the positive is checked off. It can be inferred the openness towards foreign investment and trade between countries encourage the country's economic growth, respectively 37% and 6% based on the value of the calculated coefficients. As well as for significant FDI variables at the confidence level exceeds 99%. The value being estimated coefficient suggests stimulating FDI inflow of 6% economic growth. While the substitution rate of merely 5% economic growth against this decision supports previous research results, like Greenaway et. Al (2002) and Basu et. Al (2003). The results of the research concluded are if countries that mean high growth rates need to implement policies that are more open trade between countries and also foreign investment.

Furthermore, this research also produced the STRADE, variable into a State surplus to the proxy of natural resources. As the research of Sachs and Warner (1995 and 1997), Sohn and Lee (2003) and Lederman and Maloney (2003), the effects of the survey as well established a negative relationship with STRADE have economic growth and significant at the 1% point of assurance.

CONCLUSION AND RESEARCH IMPLICATION

The primary aim of this inquiry was to examine empirically the relationship trade structure gives the effect on economic growth. Some variables were selected to illustrate the trade structures based on the concept of trade between nations. Research using a sample of three countries, Indonesia, Singapore and Thailand with time research between 1995 until 2017.

The decision comes after research results bring the inquiry does not controvert the theory with the deductions drawn from previous research. Mainly, for two variables that often draws the attention of researchers, namely trade liberalization between countries and foreign direct investment. Trade liberalization can be looked to stir economic development, primarily in the country are ramping up. This means openness of trade between countries through export or import activity and attract foreign direct investment into the nation able to stimulate economic development. Policy implications of the inquiry was that the country needs to improve its capabilities and the competitiveness of export countries to engage the possibility of benefits derived from export activity, particularly for long-term economic development. Related policies such as encouraging foreign direct investment the customer driven export economy and investment environment, a stable and a conducive regulatory and management efficiency. In addition, encourage the import of high-tech inputs, capital goods and items of use to increase the competitiveness of export goods through the same activity, applied science transfer and information diffusion.

Pay attention to foreign direct investment to increase economic development, one investment strategy needs to build a more attractive investment location and competitive ability. For example the economic and investment environment stable, efficient management and regulation and policy pertaining to the more liberal like privatization, renewal of the financial sector and the taxation system as well as liberalization and deregulation in the industry certain. Like previous research, this study to formulate a state that most natural resources are facing weak economic growth. To overcome these drawbacks, several steps need to be taken to ensure increased productivity, particularly in the natural resource-oriented spending so that capable of competitive power and become the driving engine of economic growth in addition to other sectors.

References

- A. Cuadros, V. Orts and M.T. Alguacil. 2001. Openness and Growth: Re-Examining Foreign Direct Investment, Trade and Output Linkages in Latin America. *CREDIT Research Paper*. No. 01/04.
- Amable, B. 2000. International Specialization and Growth. *Structural Change and Economic Dynamics*. 11(4): 413-432.
- Antweiler, Werner dan Trefler, Daniel. 2002. Increasing Returns and All That: A view from Trade. *American Economic Review*. 92(1): 93-119.
- Auty, Richard M. 1998. Resource Abundance and Economic Development. Helsinki: UNU World Institute for Development Economic Research.
- Basu, Parantap, Chakraborty, Chandana and Reagle, Derrick. 2003. Liberalization, FDI, and Growth in Developing Countries: A Panel Cointegration Approach. *Economic Inquiry*. 41(3): 510-516.
- Chou, Win Lin And Wong, Kar-Yiu (2001). Economic Growth and International Trade: The Case of Hong Kong. *Pacific Economic Review*. 6(3): 313-329.
- Crespo-Cuaresma, Jesus dan Worz (2003). On Export Composition and Growth. University of Vienna, Department of Economics, Vienna Economics Papers: 0309
- Chen, P. And R. Gupta. 2006. *An Investigation of Openness and Economic Growth Using Panel Estimation*. Working Paper: 2006-22, November 2006.
- Dowling, Malcom dan Ray, David. 2000. The Structure and Composition of international Trade in Asia: Historical Trends and Future Prospects. *Journal of Asian Economics*. 11:301-318.

- Feridhanusetyawan, T. dan Y. Rizal. 1998. Liberalisasi Perdagangan Dunia: Bagaimana Manfaatnya bagi Association of Southeast Asian Nations (ASEAN)? Analisis Centre for Strategic and International Studies (CSIS) Vol. 27 No. 3, pp: 258-278.
- Frankel, J.A. And D. Romer. 1999. *Does Trade Cause Growth?*. American Economic Review, 89: 379-399.
- Feder, G. 1983. On Exports and Economic Growth. *Journal of Development Economics*. 12:59-73.
- Fosu, A. K. 1990. Export Composition and the Impact of Exports on Economic Growth of Developing Economies. *Economics Letters*. 34: 67-71.
- Ghatak, Subrata, Milner, Chris dan Utkulu, Utku (1997). Exports, Export Composition and Growth: Cointegration and Causality Evidence from Malaysia. *Applied Economics*. 29: 231-223.
- Greene, W. H. 1997. *Econometric Analysis*. 3rd edition. New York: Prentice-Hall International Inc.
- Grossman, G.M. And Helpman, E. (1991). *Innovation and Growth in the Global Economy*. MIT Press. Cambridge. MA.
- Jeffrey, Frankel dan Romer, David. 1999. Does Trade Cause Growth? *American Economic Review*. 89(3): 379-399.
- Lederman, Daniel dan Maloney, William F. 2003. Trade Structure and Growth. *World Bank Policy Research Working Paper*. No. 3025.
- Lewer, Joshua J. And Yan den Berg, Hendrik. 2003. Does Trade Composition Influence Economic Growth? Time Series Evidence for 28 OECD and Developing Countries. *Journal of International Trade and Economic Development*. 12(1): 39-96.
- Levine, Ross And Renelt, David. 1992. A Sensitivity Analysis of Cross Country Growth Regressions. *American Economic Review*. 82(4): 942-963.
- Lucas, Robert E. 1988. On the Mechanics of Economic Development. *Journal of Monetary Economics*. 22:3-42.
- Pinna, Anna. 1996. Sectoral Composition of Trade and Economic Growth: Some New Robust Evidence. *CRENOS Working Papers*. No. 96/3.
- Prebisch, Raul. 1959. Commercial Policy in the Underdeveloped Countries. *American Economic Review, Papers and Proceedings*. 49(21): 251-273.
- Rivera-Batiz, Luis A. dan Romer, Paul M. 1991. Economic Integration and Endogenous Growth. *Quarterly Journal of Economics*. 106: 531-555.
- Ruffin, Roy J. (1999). Economic, Financial Review. Federal Reserve Bank of Dallas. www.dallasfed.org/research/efr/1999/efr9904a.pdf
- Raff, H. 2004. *Preferential Trade Agreements and Tax Competition for Foreign Direct Investment*. *Journal of Public Economics*, May 2004, pp. 2745-2763
- Sachs, J.D. And Warner, A.M. 1995. Natural Resource Abundance and Economic Growth. *NBER Working Paper 5398*.
- Sachs, J.D. And Warner, A.M. 1997. Sources of Slow Growth in African Economies. *Journal of African Economies*. 6(3): 335-376.
- Sachs, J.D. And Warner, A.M. 1999. The Big Push, Natural Resources Booms and Growth. *Journal of Development Economics*. 59: 46-76.
- Sachs, J.D. And Warner, A.M. 2001. The Curse of Natural Resources. *European Economic Review*. 45: 827-838.
- Sadequl Islam (2001). Concentration of International Trade in High Technology Products. *Applied Economics Letters*. 8:95-97.

- Santos-Paulino, Amelia dan Thirlwall, A.P. (2002). The Impact of Trade Liberalization on Export Growth, Import Growth, the Balance of Trade and the Balance of Payments of Developing Countries. www.kent.ac.uk/economics/staff/at4/Tradelib
- Sohn, Chan-Hyun dan Lee, Hongshik (2003). Trade Structure and Economic Growth. Paper Presented at the 2003 Seoul Conference on Structural Reforms and Economic Development: Experiences of the Northeast Asia. <http://kdea.re.kr/event/event0309/5.PDF>
- Temple, J. 1999. The New Growth Evidence. *Journal of Literature*. 37: 112-156. Wacziarg, R. And K.H. Welch. 2003. *Trade Liberalization and Growth: New Evidence*. NBER Working Paper 10152. Yanikkaya, Halit (2003). Trade Openness and Economic Growth: A Cross-Country Empirical Investigation. *Journal of Development Economics*. 72: 57-89.