JDE (Journal of Developing Economies)
https://e-journal.unair.ac.id/JDE/index

IMPACT EXPORT DIVERSIFICATION ON EXCHANGE RATE REGIME CHOICE

Eka Putri Mayangsari*[1]
Rosanto Dwi Handoyo[2]

[1,2]Faculty of Economics and Business, Universitas Airlangga, Indonesia

ABSTRACT

The choice of exchange rate regime is the most relevant decision in the economic world that must be faced by the economic authority until now. Exchange rate regime that is applied by one country become a controversial debate after the Asia's crisis in the year 1997-1998, especially for developing countries and emerging economies in Asia. The purpose of this research is to see the impact of export diversification, intensive margin and extensive margin to the choice of the exchange rate regime in nine emerging and developing countries in Asia 1991-2014. This research uses the panel logistic regression model to analyze the two model that are used in the research; they are: model 1 (the impact of export diversification to the exchange rate regime),and model 2 (the impact of extensive margin and intensive margin to the exchange rate regime. To avoid and to lessen the chances of endogeneity problem therefore, all the independent variables and the control variable must be lagged in one period. The results of the regression show that export diversification have a significant positive impact on the exchange rate regime. When export diversification is decomposed into intensive margin and extensive margins, the result shows that the extensive margins also have a significant positive impact towards the exchange rate regime, while the intensive margin does not show any significant impact towards the exchange rate regime choice.

ARTICLE INFO

Received: September 10th, 2017
Revised: November 5th, 2017
Accepted: November 17th, 2017
Online: December 27th, 2017

*Correspondence:
Eka Putri Mayangsari
E-mail:
ekaputry@gmail.com

Keywords: *Exchange Rate Regime, Export Diversification, Intensive Margin, Extensive Margin, Emerging and Developing Countries in Asia.*
JEL: F31, L25, O53

To cite this document: Mayangsari, E.P. & Handoyo, R.D. (2017). Impact Export Diversification on Exchange Rate Regime Choice. *JDE (Journal of Developing Economies), 2(2)*, 81-88

Introduction

Selection of the exchange rate regime is one of the most relevant economic decisions that must be faced up to the current economic authorities (Ondina, et al., 2011). Exchange rate regime which is applied by a country into a controversial discussion following the Asian crisis of 1997–1998, particularly for developing countries and emerging economies in Asia. Countries that embrace that floating exchange rate regime, seen any negative effect if applying the fixed exchange rate regime, such as encouraging speculative capital inflow, moral hazard and overinvestment in the Asian region. On the contrary, the country that adheres to the fixed exchange rate regime emphasizes the positive impact of exchange rate stability on the economies of countries in the Asian region that is the stability of economic growth (Nasution, 2009).

JDE (Journal of Developing Economies) p-ISSN: 2541-1012; e-ISSN: 2528-2018
DOI: http://dx.doi.org/10.20473/jde.v2i2.6812

Liu & Zhang (2015) in his research mentioned that, based on the theory of exchange rate regime, export diversification is a potential determinant of the selection of a country's exchange rate regime. Kenen (1969) argues that diversification of products creating fixed exchange rate be the most appropriate choice for an open economy. Responding to the statement Kenen, McKinnon (1969) argues that the economy has diversified large with small foreign sectors must choose a fixed exchange rate regime, while the country has a less open economy (likely covered) must adhere to the floating exchange rate regime. But from several studies that have been conducted on the effect of export diversification on the selection of exchange rate regimes, there are mixed results (Liu & Zhang, 2015).

in the view of the old trade theory, the flow of trade between countries in terms of comparative advantage, the expansion of existing export products (intensive margin) is the only way to boost trade growth. On the other hand, the new trade theory found their new products or new markets for existing products (extensive margin) is driving trade growth (Chowdhury, et al., 2014). Of the two theories, there developed a new theory of "new trade theory" which argues that a country's trade can grow either through intensive and extensive margin (Melitz, 2003). This theory enriches the empirical literature economists to examine the growth of export diversification by decomposing the export diversification into intensive and extensive margin (Liu and Zhang, 2015).

Based on research that has been done before, Chowdhury, et al. (2014) and Liu and Zhang (2015) states that export diversification effect on the selection of exchange rate regime, which are decompose intensive and extensive margin. The more diversified the exports of a country then the country would prefer to apply a fixed exchange rate regime (Kenen, 1969). Based on research Liu and Zhang (2015), in addition to the diversification of exports, other factors that influence the selection of exchange rate regime in a country include macroeconomic factors, the theory of optimum currency areas, and political factors. While research on Hamano (2013), states that the selection of exchange rate regime adopted by countries affected how margin (intensive or extensive) in response to shock. Based on the description above, the purpose of this paper is to analyze the role of diversification of exports to the exchange rate regime elections in countries with emerging and developing Asia in 1991 through 2014. As well as the influence of intensive and extensive margin against the selection of exchange rate regime (exchange rate regime) in countries with emerging and developing Asia in 1991-2014.

Literature Review

The theory of optimum currency areas that have been submitted by Mundell (1961), McKinnon (1963) and Kenen (1969) states that the potential export diversification is a key determinant of a country decides to choose exchange rate regime applied in the country. This is emphasized in the theory of Kenen (1969) which states product diversification is an important criterion in the selection of exchange rate regime. When a country does not diversify exports could cause a decline in export earnings in the event of negative demand shock. This decline in earnings can be attenuated by a floating exchange rate because a fall in demand for export products will reduce the demand for domestic currency, and in turn will cause exchange rate depreciation. Therefore, Kenen (1969) stated that the diversification of products creating fixed exchange rate be the most appropriate choice for an open economy.

Research Liu and Zhang (2015) which decompose diversification of exports into extensive and intensive margin states that export diversification has a positive impact on the choice of a fixed exchange rate regime. The results of this study in accordance with the theory presented by Kenen (1969). Another study by Chowdhury et al. (2014) states that a low diversified country chooses to apply a fixed exchange rate regime, which is inconsistent with Kenen (1969). Chowdhury et al. (2014) states that countries with high diversification rates experience lower volatility output, thereby reducing fears to implement a floating exchange rate regime. In his research, Chowdhury et al., (2014) also indicate if there is strong evidence that export diversification affecting the implementation of the floating exchange rate regime

in developing countries experiencing a greater shock.

In the theory of optimum currency area, the variables are considered influential on the election of the exchange rate regime in addition to diversification of exports is openness and economic size. Mundell's theory (1961) states that openness influences the selection of a country's exchange rate regime. The theory is supported by the theory McKinnon (1963) which states that the country with the level of openness high had to adopt a fixed exchange rate, and the state with a degree of openness that is lower is advantageous to adopt floating exchange rate regime. The reason is that when the degree of openness of the country's economy is higher, allowing the price of foreign goods will be transmitted to the higher cost of domestic life. This led to a decrease in the money illusion, so that wages and prices are strongly influenced by the exchange rate. Thus, changes in exchange rates led to an adjustment in the variable, implying that changes in the exchange rate is less efficient in changing the terms of trade. Moreover, the theory of Kenen (1969) states that economic size is also a potential determinant in the choice of exchange rate regime. In a study that has been conducted, Kenen (1969) suggests that a large economy with more diversified products should implement a fixed exchange rate regime.

According to Rizzo (1998), and Markiewicz (2006) one of the macroeconomic variables that can affect the selection of a country's exchange rate regime is inflation. Country with low inflation tend to choose a fixed exchange rate regime rather than a floating exchange rate. Other variables that influence the selection of exchange rate regime is the financial development. According to Lin and Ye (2011) financially, developing countries prefer to apply a fixed exchange rate regime, while country with higher degree of financial development will tend to exit from a fixed exchange rate regime and chose to apply a floating exchange rate regime. The reason, countries with high financial development, usually have a strong monetary institution, so it would be advantageous to implement a floating exchange rate regime.

According to Edwards (1996) and Collins (1996) influential political factors in the selection of exchange rate regime applied by a country. This is also supported by the statement of Liu & Zhang (2015) which states that since the mid-1990s, politics has been introduced in the field of exchange rate regime selection. According to Edward (1996) a democratic government is more likely to choose a floating exchange rate. Democratic governments are more easily subject to the influence of interest groups and it is difficult to take action that is not supported by social and political groups to maintain a fixed exchange rate. However, according to Collins (1996) democratic governance is more likely to apply a fixed exchange rate in an effort to become immune to the influence of interest groups in carrying out policies.

Research Method and Models

Model Analysis

In this study, there are two models to see the impact of diversification of exports to the exchange rate regime elections in countries with emerging and developing in the region in the period 1991-2014. The purpose of use two model is to see each intensive and extensive margin effect, as well as overall (export diversification). The model used in this study is panel logit. The econometric equations used can be formulated as follows:

Export Diversification

$$ERR_{it} = \alpha_0 + \alpha_1 exd_{it} + \sum_{j=1}^{t} \beta_j control_{it}^{j} + \varepsilon_{it} \quad (1)$$

Extensive and Intensive Margin

$$ERR_{it} = \alpha_0 + \alpha_1 EM_{it} + \alpha_2 \Im_{it} \sum_{j=1}^{t} \beta_j control_{it}^{j} + \varepsilon_{it} \quad (2)$$

Where ERR_{it} is exchange rate regime, which is a dummy variable equal to 1 if countries i adheres to a fixed exchange rate regime in year t, and 0 if the others, exd_{it} is diversification of exports of country i in year t, EMit is extensive margin of country i in year t, IM it is intensive margin of country i in year t, $control_{it}$ is variable control consists of three parts, namely the optimum currency area (openness, economic size), macroeconomic factors (inflation and financial development) and political factor, and ε_{it} is error term.

Research Methods

The approach used in this study is the econometric approach that focuses on testing the hypothesis with measurable data that produce results that can be generalized. The method used in this research is panel logit regression analysis, that is by using dependent variable which is binary. The intended use of these methods in this study was to determine the selection of exchange rate regimes in *emerging* and developing countries in Asia, namely choosing a fixed exchange rate regime or a floating exchange rate. The period used is an annual period from 1991-2014. The tool used in this research is Stata 13. This study uses three variables consisting of the dependent variable, the independent variable, and control variables.

Operational definition of the variable is a description of the variable definition used in this study in more detail to produce a clearer exposure in order to avoid misunderstanding in the sense of each variable. The operational definition of each variable used in this study are as follows:

1. Exchange Rate Regime, this study uses the dichotomy approach to divide the exchange rate regime become a fixed exchange rate regime and a floating exchange rate regime. According to Reinhart (2014) the classification of exchange rate regimes can be grouped into 15 classification codes. The classification of exchange rate regimes can be grouped into two based on predefined codes. A fixed exchange rate regime consists of four code 1-4, which in this study were given a fixed exchange rate regime dummy code = 1. While the 5-15 code included in a floating exchange rate regime, which in this study were given a floating exchange rate regime dummy code = 0.
2. Diversification of exports, the calculation of export diversification based on research Cadot et al. (2011) where export diversification can be measured using theil index. Measurement is done by decomposed theil index into between group and within group. Changes between the component groups of theil index measures changes in the extensive margin. Greater value on the extensive margin index indicates a decrease in new products and new markets. Changes in theil groups within the index measuring changes in the intensive margin. Greater values on the intensive margin index indicate a decline in the number of existing export products.
3. Openness was calculated by summing the exports and imports divided by GDP.
4. Economic size, based on research Liu and Zhang (2015) economic size is measured using the logarithm of the Gross Domestic Product (log GDP), adjusted by PPP (purchasing power parity).
5. Inflation, in this study used variables measured inflation using the CPI (consumer price index).
6. Financial development calculated using a private loan from financial institution divided by GDP.
7. Political institutions, there are two types of democracy with dummy code = 1 and autarky with dummy code = 0. In this study using polity indicator of Polity IV database as a proxy for democracy developed by Marshall, et al. (2015). Polity indicator is an aggregate index that indicates the openness of the domestic political institutions by using values range from -10 (autarky) to 10 (democracy). The higher the value of the indicator indicates that the higher the level of democracy of a country.

   Data used in this research is secondary data and a panel data and binary. Data panel

is a combination of timeseries data from 1991 to 2014 and across-section consisting of nine emerging and developing countries in Asia, namely Bangladesh, China, India, Indonesia, Malaysia, Pakistan, the Philippines, Thailand, and Vietnam. The data used in this study obtained online. Exchange rate regime classification data used were obtained from Reinhart (Reinhart, 2014). Data export diversification, intensive and extensive margin obtained from IMF (http://www.imf.org). Data openness, economic size, inflation, and financial development was obtained from the World Development Indicators (WDI). Data obtained from the political institutions http://www.systemicpeace.org.

Results and Discussions

Based on the estimation of the two existing models, the results of testing the limits of critical value of 10 percent, the probability of LR statistic in a panel logit regression election exchange rate regimes of both models was 0.051 and 0.011 so that it can be concluded that simultaneous independent variables and control variables in both models are statistically significant affect the dependent variable.

Testing for each independent variable and control variables in each model using panel logit regression can be done by looking at the P> [Z] or p-value for the Z-test. Based on the above test results showed that a statistically significant variable in influencing the selection of exchange rate regime in the model 1 is the diversification of exports and financial development. In model 2 variables have a significant effect in influencing the selection of exchange rate regime is the extensive margin, inflation and financial development.

In model 1 variable probability value of export diversification and financial development respectively 0.013 and 0.006 with a critical value of five percent. In the second model of extensive margin variable probability value 0,000 percent critical value, the value of the probability of financial development critical value of 0.004 with five percent and inflation probability value 0.078 with 10 percent critical value. The value is in the area of H0 rejected, which means the parameters of these variables can be used as an estimator and significantly influence the selection of exchange rate regime in nine emerging and developing Asia in 1991-2014 partially.

Export diversification is regarded as one of the determinants of the selection of exchange rate regimes. Export diversification has three indicators of export diversification index, an index and intensive and extensive index margin, as the reduction of each index showed an increase in export diversification. Based on the results of the panel logit regression that has been done, it was found that the index of export diversification statistically significant effect on the selection of exchange rate regime in nine emerging and developing Asia in 1991-2014. An increase in the export diversification index allows a country to prefer applying a fixed exchange rate regime. This suggests that countries with low export diversification (higher indicator) will tend to apply a fixed exchange rate regime or in other words, countries with high diversification rates tend to prefer applying floating exchange rate regimes.

In accordance with the results of this study, Chowdhury et al. (2014) also stated that high-diversity countries tend to prefer applying floating exchange rate regimes. Where the results of this study are not in accordance with the theory of Kenen (1969) which states that the higher the level of diversification of a country, then the country will prefer to apply a fixed exchange rate regime. According to Rizzo (1998), export diversification has been shown to significantly affect the selection of exchange rate regimes in developing countries, but that factor does not always work in accordance with the theory.

The results of this study are supported by the idea of Chowdhury et al. (2014) which states that countries with high levels of diversification experience lower volatility output, thus reducing fears to implement a floating exchange rate regime. In his research, Chowdhury, et al., (2014) also indicate if there is strong evidence that export diversification affecting the

implementation of the floating exchange rate regime in developing countries experiencing a greater shock. Different research results proposed by Liu and Zhang (2015) which states that export diversification has no significant effect on the selection of exchange rate regime.

In this research, export diversification decomposed into intensive and extensive margin. From the panel logit regression results showed that the intensive margin index is not statistically significant influence on the selection of exchange rate regime. But the extensive margin index has a significant impact on the selection of exchange rate regime. It can be concluded that countries with a high level of extensive margin (decreased extensive index) will be more likely to choose to apply to a floating exchange rate regime.

The results are consistent with research conducted by Hamono (2013) which states that the extensive margin is an effect on the selection of exchange rate regime. Extensive margin in a floating exchange rate regime, contributing welfare because floating exchange rate regime is able to adjust when consumers express a higher preference for product diversification. Chowdhury et al., (2014) also states that the extensive margin is an effect on the exchange rate regime through an interactive relationship with the external shock absorption.

Inflation is an important factor in macroeconomics. Based on the result of panel logit regression, in model 1, inflation is not statistically significant effect on the selection of exchange rate regime. This is possible because the inflation and exchange rate regimes in etiology have an uncertain relationship (Alfaro, 2003). But on model 2, inflation has a significant effect on the selection of exchange rate regime. The results of the study on model 2 in accordance with previous research conducted by Rizzo (1998) which states that countries with low inflation will prefer to apply a fixed exchange rate regime. Markiewicz (2006) also states that statistically significant inflation influences the selection of exchange rate regimes. Countries with high inflation rates would prefer to apply a floating exchange rate regime, as high inflation in a fixed exchange rate regime leads to a loss of competitiveness and resulting in pressure to devaluate.

Based on panel logit regression results for both the existing model, the development of financial variables statistically significant effect on the selection of exchange rate regimes in emerging and developing nine countries Asia in the years 1991-2014. The higher the level of financial development of a country, then the country will tend to apply a fixed exchange rate regime. The results of this study differs from previous studies conducted by Chowdhury et al., (2014) which states that the development of financial influence on the selection of exchange rate regime, and in general the development of financial improvement will make the country to choose to apply to a floating exchange rate regime. However, Chowdhury et al. (2014) adds that the results are not always certain, depending on the analytical techniques used and the group of countries studied.

Research of Lin and Ye (2011) states that financial development is statistically significant influence on the selection of exchange rate regime. Countries with a high degree of financial development tend to prefer to apply a floating exchange rate regime. This usually happens in developed countries that do have a high degree of financial development. But according to Lin and Ye (2011) financially, emerging and developing countries would prefer to apply a fixed exchange rate regime, because usually developing countries have weak monetary institutions.

Based on the result of panel logit regression that has been done, the variables of openness, economic size and political institution have no statistically significant influence in the selection of exchange rate regime in nine emerging and developing countries in Asia from 1991 until 2014.

Conclusion

Export diversification index shows a significant and positive influence on the selection of exchange rate regime, it shows that the higher the level of export diversification in nine

emerging and developing Asia in 1991-2014, the state will tend to adopt a floating exchange rate regime. Countries with a high level of diversification experiencing lower output volatility, thus reducing the fear to implement a floating exchange rate regime. The results of this study are not in accordance with the theory of optimum currency area (OCA), which states that the higher level of diversification, countries tend to prefer to apply a fixed exchange rate regime.

Extensive index margin positive and statistically significant influence the selection of exchange rate regimes in emerging and developing nine countries in Asia in the years 19912014. This indicates that the increase in new products and new markets will encourage countries to prefer applying the floating exchange rate regime. While the intensive margin index is based on the estimation results are not significantly influence the election of the exchange rate regime in nine emerging and developing Asia in 1991-2014.

Reference

Alfaro, L. (2005). Inflation, openness, and exchange-rate regimes: The quest for short-term commitment. *Journal of Development Economics*, *77*(1), 229–249.

Cadot, O., Carrère, C., & Strauss-Kahn, V. (2011). Export diversification: What's behind the hump? *Review of Economics and Statistics*, *93*(2), 590–605.

Chowdhury, M. T. H., Bhattacharya, P. S., Mallick, D., & Ulubaşoğlu, M. A. (2014). An empirical inquiry into the role of sectoral diversification in exchange rate regime choice. *European Economic Review*, *67*, 210–227.

Collins, S. M. (1996). On becoming more flexible: Exchange rate regimes in Latin America and the Caribbean. *Journal of Development Economics*, *51*(1), 117–138.

Edwards, S. (1996). Exchange rates and the political economy of macroeconomic discipline. *The American Economic Review*, *86*(2), 159–163.

Hamano, M. (2013). Extensive and intensive margins and the choice of exchange rate regimes. *CREA Discussion Paper No. 18*.

Kenen, P. (1969). The theory of optimum currency areas: an eclectic view. Monetary problems of the international economy, 45(3), 41-60.

Lin, S., & Ye, H. (2011). The role of financial development in exchange rate regime choices. *Journal of International Money and Finance*, *30*(4), 641–659.

Liu, X., & Zhang, J. (2015). Export diversification and exchange-rate regimes: Evidences from 72 developing countries. *Munich Personal RePEc Archive (MPRA), Paper No. 66448*.

Markiewicz, A. (2006). Choice of exchange rate regime in transition economies: An empirical analysis. *Journal of Comparative Economics*, *34*(3), 484–498.

Marshall, M. G., Gurr, T. R., & Jaggers, K. (2016). Polity IV project: Political regime characteristics and transitions, 1800–2015. *Center for Systemic Peace, 13.*

McKinnon, R. I. (1963). Optimum currency areas. *The American Economic Review*, *53*(4), 717–725.

McKinnon, R.I. (1969). Comment, in *Monetary problems of the international economy*. Conference on International Monetary Problems (1966: University of Chicago).

Melitz, M. J. (2003). The impact of trade on intra-industry reallocations and aggregate industry productivity. *Econometrica*, *71*(6), 1695–1725.

Mundell, R. A. (1961). A theory of optimum currency areas. *The American Economic Review*, *51*(4), 657–665.

Nasution, A. (2009). *Analisis Nilai Tukar Riil, Instabilitas Ekspor dan Pertumbuhan Output Indonesia dalam Rezim Nilai Tukar Mengambang* [Skripsi].

Ondina, P. Á., Rivero, J. L. P., de Vicente Queijeiro, S., & Cuervo, M. R. V. (2011). The determinants of the choice of exchange rate regimes in Latin America: A mixed multinomial logit approach. *Cuadernos de Economía*, *34*(95), 55–61.

Reinhart, C. (2014). *Data Klasifikasi Rezim nilai tukar menurut IMF tahun 1965-2010*. Retrieved November 6, 2014, from http://www.carmenreinhart.com

Rizzo, J.-M. (1998). The economic determinants of the choice of an exchange rate regime: A probit analysis. *Economics Letters*, *59*(3), 283–287.