Suitability and Prospective of Implementing the ASEAN Single Currency

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Abstract: The rapid global development in recent decades in the field of economy, culture, social, information technology, education and free trade area, making cross borders between countries are increasingly blurred and lost (nations borderless). The process of globalization in the economic and trade cause of occurrence of fundamental changes to the map of the world economy, which includes three main dimensions, namely: the ideological dimension (shown by the emergence of capitalism), economics dimensions (shown by the establishment of a free market economy), and technology dimension (see Friedman, 2002). Free market economy already made the realization of the regional or blocks of economic market. The emergence of regional economic integration which is characterized by the formation of specific blocs or economic zone, resulting the need to establish a single currency in these areas, such as EURO currency in European Economic Area. This is aim to create the smoothing of trading process at that area.

This research was conducted to observe the feasibility and prospects of implementing the single currency in the ASEAN Region for all ten-member states, by analyzing seven macro economic variables such as: GDP, inflation, government debts, exports, imports, exchange rate differences and government reserves. This research uses a VAR (Vector Auto Regression) model, Williamson Index and Beta Convergence (β-Convergence) and Panel Data Regression and the period data of year 2004 until year 2012.

To complete the research method, statistical description and a series of tests were performed into the macro economic variables that have mentioned previously, start with unit root test (integration, co-integration and engel-granger test) up to classical assumptions test (normality, autocorrelation, multicollinearity and heteroscedasticity test).

The results proved that the VAR model already shown that the independent variables was able to demonstrate the diversity shown by the high value of R-Square, while the Forecasting Error of the Variance Decomposition (FEVD) respectively able to explain the relationship between variables according to macroeconomic theory. Furthermore, Williamson index test described the economic disparity occurred between states member, as well as the Beta Convergent Test able to explain the feasibility of implementing the single currency in the ASEAN region. The Panel Data Regression Test for the seven variables has been tested partially. All variables such as inflation, government debt, exports, imports, exchange rate differences and government reserves, except for GDP had no significant effect at the level of 1%, 5% and 10%, for the establishment of a single currency. However, overall, the dependent variable 98.22% was influenced by all independent variables, which was recognized by Adjusted-R-Square value and the rest were affected by others variables which not included in the study.

Agarwal, et al., (2004), discovered that the possibility of the integration of the ASEAN single currency (ASEAN Dollar) is sufficient if the Government Deficit to GDP is not greater than 3%, the ratio of government debt to GDP should be less than or equal to 60%, exchange rate relatively stable with the normal fluctuations of 15% for two years and have never experienced a devaluation, and the inflation rate does not exceed 1.5% compared to the average inflation of the three best-performing member states. And the vice versa if it does not meet the criterion, the application of the single currency is not feasible.

Keywords: exchange rate, exports, government debt, imports, inflation.

Introduction

The process of globalization has occurred in the economics, social, culture and information technology, particularly since the Bretton Woods system collapsed in the early 1970s. The collapse of Breeton Wood system has made across borders between countries experienced reduced (see: Bordo & Barry, 1993; Dammasch, 2000; Hall, et al., 2010; Hubbard&O'Brien, 2013). Economic globalization has led to fundamental changes of the world's economic condition. These changes consists of three main aspects such as: the formation of capitalism ideology; the economic dimension with the creation of a free market; and technology. These phenomenon have not only experienced by developed countries but also in developing countries. This condition has prompted the formation of regional economic blocs and trade blocs (see among others: Friedman,2002; Cavusgil, Knight&Riesenberger 2008; and Islami, 2010).

The formation of GATT (General Agreement on Tariffs and Trade), the GATT liberalization, the transformation process from the GATT into the WTO (World Trade Organization) up to the establishing of NAFTA (North American Free Trade Area), forming of EU (European Union) as well as the forming of EFTA (European Free Trade Area) and another form of economics alliances is one of the change caused by globalization in the economic field. (see also: Gantz, 1999; Ford, 2002; Steffek, 2003; Agarwal, et.al., 2004; Boddewyn, et.al, 2004 in Guedes&Faria, 2007; Ohmae, 1990:35 in Guedes&Faria, 2007; and Dewi, 2011).

The establishment of a common currency system in the European countries, called EMU (European Monetary Union), was aimed to create and strengthen the economic, financial and political in the European region. The idea of forming a common currency has launched since 1956, referred to the Treaty of Rome, with the establishment of the European Economic Community, EEC. The main concern was particularly to identify the differences in currency exchange rates in the region. Although it was postponed due to the collapse of the Bretton Woods system in the early of 1970s, ultimately the single European currency system, ECU (European Currency Unit) introduced on January 1, 1999 in 11 EU Member States (see: Bordo& Barry,1993; Bordo and Jonung, 2000). Although there are large differences in per capita income between the member states of the EU (between US$13,000 - US$82,000), related to issues such as inflation, debt and foreign trade, along the economic crisis that hit the EU in 2007, which started from Greece, Ireland, Portugal, Spain and Italy, that led to the decline of sovereign ratings debts of these countries (see also: www.cia.gov; Anand, Gupta & Dash, 2012). EU has over taken the US position as the world's biggest economic power to generate US$14.4 trillion of goods and services in 2007, while the GDP of the United States of US$13.86 trillion (CIA Factbook, GDP Rank Order 2008; in Islami, 2010).

Asia-Pacific region including ASEAN (Association of South East Asian Nation) is an area of bilateral trade which will grow rapidly in the early of the 21st century (Aggarwal and Urata, 2006). ASEAN region is covering an area of land approximately 4.46 million km² with a total population approaching 600 million peoples, equivalent to 8.8% of the total world population. Asean has been forecasted as a one of the biggest economic power in the world. In 2010, the combined of nominal GDP of ASEAN has been growing rapidly that if the analogy with a single entity, ASEAN will sit as the ninth largest economy after the United States, China, Japan, Germany, France, Brazil, England, and Italy (Yi, 2005 in Islami 2010), with a GDP of US$3,139 billion, equivalent to US $ 3.2 trillion (see also: IMF, World Economic Outlook Database, October 2013).

ASEAN Economic Community (AEC) 2015 is one of the ideas that emerged from the ASEAN members that was purposed to strengthen the integration of ASEAN in facing global challenges and internally reinforce the position of ASEAN in all fields; including economic, social culture, technology, education, health, political and security and have a competitiveness in 2020. Shortly, the AEC will make ASEAN region as: (a). A single market and production base; (b). A highly competitive economic region; (c). The fairness economic development; and (d). An areas integrated into the global economy. However, the exchange rate differentiation between countries, require an adjustments to equalize the Purchasing Power Parity (PPP). Hence, in order to achieve the goal of the ASEAN integration and referred to the EU unification, a unified monetary system, such as the possibility of implementing the ASEAN single currency should be considered.

Literature Review

ASEAN Regional Integration

Since the early of the 1990s, some experts have begun to debate according to establish a regional economic integration in ASEAN, such as Frankle (1991, 1993), Frankel and Wei (1994), Goto and Hamada (1994), Bayouni and Eichengreen (1994) in Ramayandi (2004), Bayoumi and Mauro (1999) and Agarwal et al, (2004). Furthermore, Dean and Wignaraja (2007) said that the unification or integration of ASEAN aims to accelerate the economic growth, also cultural and social development in the region. Hence by 2020 the region will achieve a secure, stable in economics, social, cultural and defense.

AEC will including cooperation in human resource development and capacity building of human resources, recognition of professional qualifications, and more focused on macroeconomic and financial policies, by

improving the infrastructures in finance, trade, communications connectivity and also the development of electronic transactions through e–ASEAN. Beside, integrated industries across the region in order to promote regional sources, and increasing involvement of the private sector, would be the goal of AEC. Shortly, the AEC will transform ASEAN into a region with free movement of goods, services, investment, skilled labor, and free flow of capital. With the formation of regional economic integration in ASEAN, AEC has been planned to be achieved in 2015. ASEAN will become a single market and production base in which to bring ASEAN into a prosperous and competitive region with equitable economic development, and reduced levels of poverty and socio-economic disparities in the ASEAN region. Implementing of the ASEAN Single Window (ASW) intended to reduce bureaucracy and cut customs in order to efficiency.

ATIGA (ASEAN Trades in Goods Agreement) is an overall agreement in the liberalization and facilitation of trade in goods in a comprehensive and integrated way that related to free flow of goods, as one of the elements in forming a single market and regional basis. According to the AEC Blueprint, ATIGA consist of the general principles and guidelines of international trade, liberalization of tariffs, non-tariff provisions, rules of origin, trade facilities, customs, standards, regulations, policies restoration of trade, etc. Elimination of tariffs throughout the intra-ASEAN products specified in ATIGA (exception for goods listed into Sensitive List/SL and Highly Sensitive List/HSL) outlined in the Roadmap of ASEAN Integration (RAI). In which it was implemented in 2010 for ASEAN 6 (Indonesia, Malaysia, Thailand, Singapore, Philippines and Brunei), and 2015 for the CLMV (Cambodia, Laos, Myanmar, and Vietnam). In addition, ATIGA also liberalize 12 Priority Integration Sector (PIS), those are: agricultural products, air transport, automotive, e-ASEAN, electronics, fisheries, apparels, healthcare, rubber products and textiles, tourism, logistics products and wood products.

European Union and the Common Currency

Geographic location is one of the economic benefits in determining the implementation of the single currency in a region, beside macro-economic factors and socio-political, inflationary policies, cross-border trade between countries and free markets caused by the process of globalization. (Baldwin, 1989; Anderson&Reitchert, 1996; Gabel, 1998; Butch&Hansen, 2002 in Allam &Gorres 2008). Disparities in income level between countries and exchange rate differentiation were considered as factors influenced the integration in the European region.

The formation process of EMU was initiated in 1957 in the Treaty of Rome, which was followed by the establishment of the EMS (The European Monetary System) in 1979 by using the ERM (Exchange Rate Mechanism). This mechanism was defining the average exchange rate of the participating countries against the ECU, prevented the exchange rate volatility between countries in the region. The first stage of EMU begun in 1990, aimed to shrinkage the gaps of the ERM and economic policy between banks. The second stage performed in 1999, create the planning of establishing of the ECB (European Central Bank) and to identify the economic convergence and monetary policies of member countries. In 1995 at the European Council meeting in Madrid, the Euro has set as single European currency. By the 1998, the European Council approved the 11 European countries to joint for the first time in European unification (Belgium, Germany, Spain, France, Italy, Ireland, Luxembourg, Netherlands, Austria, Portugal and Finland) and began stately the Euro as the single currency on January 1, 1999. Meanwhile, ECB was established in Frankfurt to maintain the stability of exchange rates and interest rates in the Euro zone. The last stage of EMU also conducted in 1999 and the Euro currency was launched as an electronic currency used by banks, foreign exchange dealers, major companies and the stock market. Greece began to join in this unification in 2001, and followed by the launch of Euro Coin and Euro Notes in 2002.

In 2004, 10 new EU members (including Poland) that use currencies other than the Euro has prompted by Accession Treaty to join the EU. Some of them joined, so-called ERMI II (European Exchange Rate Mechanism II). Some European countries then joined via ERMI III, among others: Slovenia in 2007, Cyprus in 2008, Estonia, Latvia and Malta in 2009, Slovakia and Lithuania in 2010, Bulgaria and the Czech Republic in 2011, and were followed by Hungary, and Romania. However, concerning the impact of implementing and adoption a single currency in a region, each country that has decided to joint into a common currency must recognize that each member country would lose its direct fiscal policy and in determining its monetary economic policies in order to stabilize the economic conditions in their own. In addition, when the economic crisis occurred, countries that are relatively has strong economic conditions will take the responsible to assist countries with lower economic growth.

Macro Economics Indicators and Its Impact towards Single Currency

A. Gross Domestic Product (GDP)

GDP is defined as the value of goods and services produced in a particular region of a country for a one year period, and does not take into account whether the goods or services produced by the country's own citizens or foreigners. GDP is an indicator of the level of public welfare within a country or a particular region. Because the underlying thing is that GDP measures two things at once at the same time; the income of all citizens in the country's economy and the total expenditure for the purchase of goods and services results from the economy.

Because it is assumed that the revenues will be equal to expenses (Mankiw, 2006: 5 in Santoso, 2011). Increasing in commercial integration in context of implementing a single currency in a region was determined increased the GDP primarily to countries that have experienced that the GDP growth lower than other member countries. Income convergence can be perceived from the decline in income dispersion by calculating the coefficient of variation or standard deviation of the logarithm of real per capita income (real GDP) between countries from year to year. Convergence occurs when the poor country's economy is able to grow faster than rich economies. Thus, poor economy is able to catch per capita income of the rich countries (see: Baxter&Kouparitsas, 2004; Barro&Martin, 2004; and Chowdhury, 2004). The common currency also has experienced widely affected to influence economic activities such as trade and foreign direct investment and will ultimately affect the revenue (income) of an area or region. Baldwin et al., 2008). Bagella et al., (2004) in Ca'Zorzi et al., (2005) stated that the implementation of the EMU in the Euro zone has provided direct positive impact on the region. Enforcement of the single currency managed to reduce the level of volatility among currencies of each member country, reducing the gaps to the quality of inter-institutional rules, as well as the achievement of macroeconomic stability conditions of the region.

B. Inflation

Inflation is one of the macroeconomic factors that has a correlation with the unemployment rate and the Consumer Price Index (CPI) and GDP deflator in a country. Changing in inflation rates was also triggered by a change in the money supply. Conversely, if the money supply less or slower than real GDP, there will be deflation. If the money supply is equal to the rate of GDP growth in the prices of goods and commodities in the country will stabilize and there will be no inflation or deflation (see: Hubbard & O'Brien, 2013:728 & 907. The depreciation of the currency will lead to an increase in external balance, where the prices of local goods will be cheaper in the international market, but the price of the goods to be more expensive in the local market, so it will allow more goods imported and cause inflation. Dziuda&Mastrobuoni (2008) explained that the adoption of the single currency Euro had no particularly experienced a significant impact on overall of inflation. Inflation only had an impact on the increase in the price of the goods but did not provide a noticeable effect on the single currency in the Euro zone. Furthermore, Duarte (2003) said that the countries that are members of the single currency system using the same currency, but does not have to apply the same price level for a product or service, because different regions apply different levels of price. Roger (2001) in Duarte (2003) proved that the differences in price levels stated in the CPI in the euro zone contributed to the rate of inflation in each member. Furthermore, with increasing in the percentage of GDP of each member since the introduction of the single currency, inflation rate of each euro member arose relatively to GDP (see: Duarte, 2003). At the country level, the implementation of a regional single currency has given an inefficient response to the shocks that occurred both from within and outside the country, as well as causing loss of control of government to the average inflation in a country (Ca 'Zorzi et al., 2005)

C. Government Debts

Government Debts defined as the overall debt of the government of a country, which include government debts and private debts. Data of the Government debt position obtained through the conversion process to the foreign currency in local currency. Plan on payments are made based on payment terms and debt position, which has been agreed in advance. Government debt of a country could be one of the triggers of vulnerability the economics condition in a country. If it is not been treated properly, can lead to serious conflicts or problems. (Hubbard&O'Brien, 2013). In an area that will implement a system of common currency, Agarwal et al., (2004) stated that the ratio of government debt to GDP should be less than or equal to 60% or may not exceed 60%. Furthermore the government's deficits maximum 3% of GDP and the currency of the country will participate in the unification is in normal conditions for two years and have never experienced a devaluation against other currencies. While the economic crisis hit European Union, due to sovereign debts were defaulted, had led the European Union downgraded the sovereign debts in the region. As consequences, debt crisis will impact on the region and as the result; Germany and France, the largest economic power in the European Union took the responsibility of the debts (Anand, Gupta, &Dash, 2012). This situation afterwards has given a domino effect to the region, whereas Hungary has experienced the highest inflation rate at a peak of 5.7% in December 2012, and it was then influenced on the high-unemployed rate (see: Kiiver&Hijman, 2010 and Euro Indicator Report, 2013).

D. Import and Export

Import and export is one of the forms of international trade between countries, in the form of transactions between the two countries (bilateral), three countries (trilateral) or involving many countries (multilateral). Import activity itself related to the purchase or procurement of goods or commodities and services from two or more countries with an agreement approved by the two parties legally, and resulted in the release of foreign exchange from one country to another. Export activity will increase the production of goods or services in a country, where it will help increase state revenues due to increased production of goods and services. In a free trade area, trading between countries; either export or import not through the mechanism of direct government

restriction. The role of the government in this case is to determine the tariff policy, subsidies, trade quotas or Voluntary Export Restraint (VER), which is a negotiated agreement between the two countries to specify the type, quantity of goods and services that allowed be imported by one state against another (Hubbard&O'Brien, 2013). There is an evidence and positive impact that occurred in trade (import and export) when a country decides to join in an economic integration that implements the single currency system. Furthermore, it is suggested that a country should joint in a common currency system before full economic integration applied. (see: Rose (2001, 2002, 2004) in Ca'Zorzi et al., 2005).

E. Exchange Rate

Foreign currency or foreign exchange means of payment in the form of foreign currency that used in an international trade or international economic and financial transactions between countries, with a particular exchange rate officially recorded in a central bank of each country. Each country has its own policy in manage the exchange rate system, and it is highly depends on the monetary policy of the government and the central bank of the country itself. Based on the exchange rate, it can be classified into stronger currencies (hard currency), in which the exchange rate is relatively stable. Usually coming from the some advanced industrial countries like: US, EU, UK, and Japan. These currencies frequently used in international economic and financial transactions. Instead currency whose value is relatively weak (soft currency) usually come from developing countries such as some countries in Asia, Latin America and Africa and relatively rarely used in international financial transactions.

Fix Exchange Rate System, is a system in which exchange rate of a country maintained at a value/a certain level against foreign currencies. If the value of the currency movement is too significant, then the government in this case the central bank will intervene. Floating Rate System, is a system in which the value of the currency of a country allowed to move freely against the currencies of other countries, or left floating controlled (managed floating), In this case the exchange rate determined by the magnitude of the amount of demand and supply of a currency against foreign currencies. While Pegging Exchange Rate System is a system of exchange rate policies that tied the value of a currency that is usually done with a major trading partner countries. (see: Berlianta (2004) in Abimanyu, (2004) and Hubbard and O'Brien, (2013).In a modern exchange rate system, the exchange rate of a currency more emphasized on financial asset markets, where the value of a currency associated towards the conditions of international trade in financial assets. The impact is that, exchange rate movements will be very volatile or exchange rate of a country against other countries will move and change quickly even in a matter of minutes as the supply and demand of financial assets that are traded. (see: Taylor, 1995). It is fundamentally will cause an alteration in trading foreign currency and its exchange rate, due to the rapid movement of the exchange rate and the market response. Furthermore it is said by Hubbard and O'Brien (2013), that the value of the currency will appreciate when in financial markets increased the value of the currency relative to other currencies, and the vice versa, it will depreciate when the exchange rate of a currency experienced decreased relatively to other countries. Additionally, Hubbard and O'Brien (2013) explained that the implementation of the single common currency in the Eurozone area triggered by conditions that, since 1973 the US dollar has experienced sharply fluctuate and widely has given impact to another hard currency, including the implication in the Eurozone. Nevertheless, since common currency has implemented in the Euro region, the member of the Eurozone had no longer constrained exchange rate differences and trading between countries has become easier. The single currency may increase labor cost in every state of production. (Cukierman&Lippi (2001) in Ca'Zorzi et al., (2005).

F. Government Saving/Government Reserve

Rachbini (2001) and Hubbard & O'Brien (2013), defines the central bank's foreign exchange reserves is a tool of foreign payments, including monetary gold, special drawing rights, reserve position in the IMF, reserves in foreign currency (foreign exchange reserves), as well as other forms of other bills (other claims). Theoretically, reserves are external assets that should meet the criterion such as, liquid, denominated in principal foreign currency, under the control of the monetary authority (in this case, the central bank), and can be immediately used for the settlement of international transactions, and able to finance imports at least for the next three months. On the contrary, if the reserves are not sufficient to finance imports for three months, it can be said, that reserves are vulnerable or at risk. If this condition persists in long term the country will be experiencing economic difficulties. While a region has decided to implement a common currency system, the mechanism will be set up in a joint central bank, as the ECB in the European Union, which is the only region in the world that already implemented single currency system. ECB in this case consists of all the central banks of countries in the EU membership. The major task of the ECB was to maintain monetary stability and to set up monetary policies in the EU. Including maintaining the stability of foreign reserves, to buy bonds of countries in crisis, set short-term interest rates and so on, In addition, in establishing and maintaining the operational of financial market infrastructure in order of payment and technical platform that has established in the region. ECB has a right to issue banknotes or other financial instrument. EU member states can issue a euro coin respectively, but

the number and the amount must be approved by the ECB. (See: Economics Commonwealth Bank, June 2012; ECB, January 2014 and Allesi et al., 2014).

Research Methods

The research is a quantitative research. Data used in this research was the secondary data, collected from some sources like: www.worldbank.org; www.imf.org and www.CIA *factbook*, during the period of 2004-2012 (see table 1). The sample population was taken from 10 Asean state members: Indonesia, Malaysia, Thailand, Philipines, Singapore, Brunei Darrussalam, Laos, Cambodia, Myanmar and Vietnam.

Table 1. Operational Variable Definition

Variable	Measurement	Scale	Data Source
GDP percapita	Based on PPP	Ratio	Secondary IMF World Indicator)
Inflation	Consumer Price	Ratio	Secondary (World Bank)
General Government Gross Debts	Percent of GDP	Ratio	Secondary (IMF World Indicator)
Import	Index	Ratio	Secondary (World Bank)
Export	Index	Ratio	secondary (World Bank)
Exchange Rate	Annual Percent to GDP	Nominal	Secondary(CIA-US)
Gross National Saving	Percent of GDP	Ratio	Secondary (IMF World Indicator)

Source : Data processed by the authors (2014)

1. Technical Data Analysis

Prior to the testing of the hypothesis, firstly is performed the unit root test which aims to test whether a time series data (just look at the per-variable within a certain period of time) stationery or not stationery. The test used is the Augmented Dickey-Fuller test (ADF), Phillips-Perron test (PP) and Hadri Z-stat. All indicate the presence of a unit root as a null hypothesis (hypothesis allegations that the data was not stationer). If: α <1%, α <5%, α <10% means that the data is stationery and vice versa. The next step is co-integration test aims to determine whether two or more data/variables that exist have long-term equilibrium relationship. According to Gujarati (2004) if two variables have co-integration, then the result will not be spurious regression and the results of the t test and F test will be valid. To recognize if between variables co-integrated, can be viewed from a stationary or absence of data. If the data is stationer, it is said that there is co-integrated among variables. Furthermore, Engel Granger test performed to determine whether there is causality between the variables with other variables. And whether the relationship between these variables to provide specific information that could be used in the following year (forecast).

a. VAR – Test (Vector Auto Regression) Model:

VAR test used to analyze the dynamic multivariate stationary time series data. Additionally, VAR-Test is useful to identify and explain the dynamics of the data series of financial factors in order to make long-term forecasting for specific variables such as the exchange rate, which would be helpful in making an economic/financial decision. (Wang, 2009).

b. Classical Assumption Test:

There are several assumptions that must be met in performing linear regression, which should not diverge from the BLUE assumptions (Best, Linear, Unbiased, Estimator), and must pass the deviation assumption of serial correlation, normality, linearity, heteroscedasticity, and multicolinearity (Rahmanta, 2009)

c. t-Test

It conducted to test the regression coefficients of each independent variable on the dependent variable and the significance of the effect that occurs between the independent variables and dependent variable. T-test performed by comparing the results of the t-test with t-table. If t <t table, then Ho is accepted, Ha rejected. If t> t table then Ho is rejected, Ha accepted. Ho: a1: a2 = 0. This means that there is no significant positive relationship and the influence of the independent variable on the dependent variable.
Ha: a1: a2 $\neq$ 0. This means that there is a positive correlation and significant influence of the independent variables to the dependent variable.

d. F-Test

F test or Annova test is a statistical test that was conducted to determine whether the independent variables (X1, X2 ... .Xn) mutually significant influence the dependent variable (Y) or to determine whether the regression model can be used to predict the dependent variable or not. If F calculation > F table, (rejected Ho and Ha accepted) then the model is significant at α 10%, or 5% or 1%. If F calculation< F table, then the model is not significant.

e. Adjusted R-Square

Conducted to determine the percentage contribution of the influence of independent variables (X1, X2, ... Xn) as simultaneously against dependent variable (Y). Adjusted R-Square is the value of R Square that has been adjusted. This value is always smaller than R Square ranges between 0 and 1 and can have a negative value. According to Santoso (2001), that for regression with more than two independent variables used Adjusted R^2 as the coefficient of determination. Adjusted R-Square test is used on a large random sample (population).

2. Convergence Analysis and Williamson Index:

Income convergence can perceived from the decline in income dispersion between countries by calculating the coefficient of variation or the standard deviation of the logarithm of real per capita income (real GDP) from year to year, the so-called sigma convergence (σ) convergence). Therefore, to determine the sigma convergence in 10 members of ASEAN, will be calculated the standard deviation of the logarithm of real per capita income (Barro and Martin, 2004) in the ASEAN countries from year to year. B Convergence calculated from the factors that is predicted can determine the level of the convergence. According to Barro and Martin (2006), taken from Gama (2008) β Convergence is calculates as follows:

$$\beta = \left(\frac{\ln (b-1)}{T} \right) \qquad \text{.....1)}$$

whereas:

β : beta convergence

b : coefficient of the predictor variable

T : duration / period

The procedure done to test the β convergence is to find out in advance whether there is absolute convergence, and then to test the conditional convergence.

Absolute Convergence calculated by the following formula:

$$\text{Log (Yt)} = a + b \log Yn \qquad \text{.....2)}$$

whereas:

Yt : GDP per capita for each country during the period of 2004–2012.

Yn : GDP of initial per capita for each country during the period of 2004-2012.

Multiple regression analysis used to determine which variable is causing the disparity of GDP per capita in the 10 ASEAN countries. Furthermore, by using the method of least squares (Ordinary Least Square) and panel data regression as well as Williamson Index, is to determine which variables are most influence the convergence of the GDP between countries.

Previous research by Agarwal, et al., (2004), said that the possibility of integration the single currency in ASEAN (ASEAN Dollar), focused on several convergence criteria, as well as the Euro. Each member state should meet some criterion such as; Government Deficit to GDP should not be greater than 3%; the ratio of government debt to GDP should be less than or equal to 60%. Also, currency of the country must be concerned in a stable condition within normal fluctuation of 15% for a period of at least two years, without ever experienced a devaluation. The inflation rate of the country should not exceed 1.5% of the average inflation of 3 members who demonstrates the best performance; and the member state should have an average nominal value of long-term interest rate not exceeding 2% compared to three member countries with the best performance.

Analysis And Discussion

1. Statistical Analysis

A. Descriptive Statistic

Descriptive statistical analysis is intended to provide a descriptive overview according to variables of Log GDP, GDP, Inflation, Debt, Import, Export, ER (Exchange Rates) and Saving. The results shown in Table 2.

Table 2. Descriptive Statistic

	LOG_GDP	GDP	INFLATION	DEBT	IMPORT	EXPORT	ER	SAVING
Mean	3.509324	9329.10900	5.303668	45.87186	320.1391	321.5406	7287.444	321.02650
Median	3.277833	1896.14000	4.268200	43.81450	285.8286	292.0151	44.05425	301.89750
Maximum	4.732452	54007.3000	24.99720	110.9960	727.6660	793.0556	90904.00	1203.6340
Minimum	2.608460	405.937800	-0.845700	1.230000	123.9025	101.7992	1.249600	13.196000
Std. Dev.	0.611009	14516.4600	5.381209	25.84641	142.2502	167.1441	15918.83	331.04450
Skewness	0.759960	1.670474	2.204709	0.750053	1.030734	1.207728	3.857027	1.047579
Kurtosis	2.265602	4.357565	8.245638	3.786981	3.558038	3.823627	19.42650	3.352795
Jarque-Bera	5.224076	23.84234	86.09274	5.261036	8.361932	11.94012	603.7836	8.275948
Probability	0.073385	0.000007	0.000000	0.072041	0.015284	0.002554	0.000000	0.015955
Observations	44	44	44	44	44	44	44	44

Source : data processed, E-Views 7.0

Based on the table above, it can be seen that from 44 the number of variables observations, Log_GDP has a minimum value of 2.608460; maximum value of 4.732452, and average value of 3.509324 with a standard deviation of 0.611009. This means that the standard deviation value approximately1, therefore there are varies in Log_GDP variable. Hence, it can be said that, there is disparity between ASEAN countries. GDP variable has a minimum value of 405.937800; maximum value of 54.007,3000 and average value is 9.329,1090 with standard deviation of 14.516.4600. Standard deviation of GDP is exceed 1, means that there is a diversity between ASEAN member states.

Inflation variable has a minimum value of -0.845700 with maximum value of 24.99720 and the average value of 5,303668. The standard deviation is 5.381209 and the value exceeds 1, means that variable inflation is differs between ASEAN countries. Variable Debt has a minimum value of 1.230000, with the maximum value of110.9960 and the average value of 45.87186, then the standard deviation of 25.84641. The standard deviation value exceeds 1 therefore the debt among ASEAN countries varies significantly. Import variable has a minimum value of 123.9025; maximum value of727.6660 and the average value of 320.1391 with standard deviation value of 142.2502; standard deviation value exceeds 1 therefore imports between ASEAN countries are differs significantly. Export variables have a minimum value of 101.7992; maximum value of 793.0556 and the average value of 321.540 with the standard deviation value of 167.1441; standard deviation value exceeds 1, therefore it can be said that, there is a diversity in exports among ASEAN countries. ER Variable has a minimum value of 1.249600; maximum value of 90.904.00the average value of 7.287.444dengan standard deviation value of 15918.83; standard deviation value exceeds 1 means that, the exchange rate difference between the ASEAN countries is very high. Saving variable has a minimum value of 13.196000; with the maximum value of 1.203,6340 and the average value of 321,02650. The standard deviation value is 331.04450; and it is exceeds 1, therefore Saving between ASEAN countries varies significantly.

Overall, it can be said that, if the standard deviation value approximating0, means that the nature of the data is in normal fluctuation. In contrast, if the standard deviation value is far from 0, means that the data varies. Skewness and Kurtosis can also specify whether the data distributed normally or not. If the Skewness value is 0 then the data is normally distributed. If the Kurtosis value equal to3, means that the data normally distributed. Jarque-Berra probability value to GDP, Inflation, Import, Export, ER and Saving rate is below 0.05 (5%) level of error test, means that all the variables are not normally distributed. This is because there are quite a large number of extreme values in a set of data tested, therefore the standard deviation far-off 0 and causes data not normally distributed.

B. Unit Root Test

Problems faced in conducting research using secondary data were stationary problem. For that reason, first step is to perform Unit Root Test, which aims to determine whether the data is stationary or not (Winarno, 2011: 112). This study used Augmented Dickey Fuller test (ADF), Phillip Perron (PP) and Hadri Z-stat in unit root test. Unit root test results were seen from the ADF, PP and Hadri Z-stat value and required to have a significance value which is smaller than a critical value. Variable Debt and Inflation on the level and individual intercept by using the ADF, PP and Hadri Z-stat has a decision that the data has been stationary, because it has a significant value smaller than alpha 1%, 5% and 10%. Variable ER, Export, GDP, Import and Saving at the

level and individual intercept by using ADF, PP and Hadri Z-stat has a decision that the data is not stationary, yet, because the significant value is greater than alpha 1%, 5% and 10%.

Variable ER and Inflation at the level test of level, individual, trend and intercept using the ADF test, PP and Hadri Z-stat has a decision that the data has been stationary, because it has a significance value smaller than alpha 1%, 5% and 10%. Variable Debt, Export, GDP, Import and Saving at the level and individual intercept by using ADF, PP and Hadri Z-stat has a decision that the data is still not stationary yet, because the significance valueis is greater than alpha 1%, 5% and 10%. This shows that the variables used are not stationar yet, at zero degrees (level) while using the ADF and PP test. But when tested using the Hadri Z-stat all variables have been stationary at zero degrees level of test. Therefore, data testing continued at the level of first degree (test of the degree of integration), in order to avoid fake regression (Spurious Regression). The results of testing at the first degree is identifed from the ADF, PP and Hadri Z-stat, required to have a significance value smaller than critical value. The variable Debt (using ADF and PP test), ER (usingHadri Z-stat test) and GDP (using ADF and PP test) at the level of individual intercept and 1stdifference, have a decision that the data is not stationary, because the significant value is greater than alpha 1%, 5% and 10%. The variable ER, Export, Import, Inflation and Saving at the individual intercept and 1stdifference using ADF test, PP and Hadri Z-stat has a decision that the data has been stationary, because it has a significance value smaller than alpha 1%, 5% and 10%. Variable Inflation at 1st difference, individual, trend and intercept using the ADF test, PP and Hadri Z-stat has a decision that the data has been stationary, as it has significance value smaller than alpha 1%, 5% and 10%.

Variable Debt, Export, GDP, Import and Saving the level 1st difference and individual intercept using the ADF test, PP and Hadri Z-stat has a decision that the data is still not stationary, yet, because the significance value is greater than alpha 1%, 5% and 10%. It shows that the variables used are not stationary at the first degree level of test (1st difference). Therefore, to avoid fake regression (Spurious Regression) testing continued at second degrees of integration test, although the test with Hadri Z-stat has shown that data has been stationery. ER variable does not appear due to insufficient data or data ER varies extremely greatly between each country. So the ER variable does not appear when using the ADF and PP test but the data still exists when using the test Hadri Z-stat. Second-degree test results showed that all the research variables Debt, ER, Export, GDP, Import, and Saving Inflation has been statitioner on the second degree of integration. Thus the data used in this study are derived data from 2nd degrees test. The next step is to do to the cointegration test.

C. Optimum Lag Determination

An important step that must be done in using the VAR model is to determine the optimal number of lag used in the model (Enders, 2004). In determining the optimal lag VAR model is very useful to eliminate autocorrelation. Determination of the optimal lag conducted in this study are based on the value of Akaike Information Criterion (AIC). Optimal lag test results can be seen in Table 3. Based on the calculation of the value of AIC, the optimal lag is the lag two.

Table 3. Optimum Lag

Lag	AIC
0	96,64459
1	75,06213
2	72,23110*

Source : data processed, E-Views 7.0

D. Result of Co-integration Test

Co-integration test was done to determine whether there is a relationship or not between the independent variable and the independent variable in the long run. Engle and Granger (1987) argued that if there is co-movement, means that the model must have at least one co-integrated equation. Co-integration test results as shown in Table 4. below. It shows that eight equations are not co-integration relation.

Continued next page

Table 4. Co-integration Test Result

Equation / Formula	*Trace Statistic*	*Critical Value*	Decision
*DEBT*AND *ER*	11.41746	15.49471	Non Co-integration
*DEBT*AND*EXPORT*	19.67207	15.49471	Co-integration
*DEBT*AND*GDP*	25.57806	15.49471	Co-integration
*DEBT*AND*IMPORT*	12.93786	15.49471	Non Co-integration
DEBT AND *INFLATION*	14.29896	15.49471	Non Co-integration
DEBT AND *SAVING*	1.764889	15.49471	Non Co-integration
ER AND *EXPORT*	49.85882	15.49471	Co-integration
ER AND *GDP*	9.876192	15.49471	Non Co-integration
ER AND *IMPORT*	45.61575	15.49471	Co-integration
ER AND *INFLATION*	15.76059	15.49471	Co-integration
ER AND *SAVING*	11.95121	15.49471	Non Co-integration
EXPORT AND *GDP*	25.22462	15.49471	Co-integration
EXPORT AND *IMPORT*	27.96402	15.49471	Co-integration
EXPORT AND *INFLATION*	30.94074	15.49471	Co-integration
EXPORT AND *SAVING*	18.39680	15.49471	Co-integration
GDP AND *IMPORT*	22.96263	15.49471	Co-integration
GDP AND *INFLATION*	20.63443	15.49471	Co-integration
GDP AND *SAVING*	23.33337	15.49471	Co-integration
IMPORT AND *INFLATION*	21.34759	15.49471	Co-integration
IMPORT AND *SAVING*	11.78662	15.49471	Non Co-integration
INFLATION AND *SAVING*	8.336405	15.49471	Non Co-integration

Source: data processed, Eviews 7.0

All variables have been stationary at the second level differences, there for co-integration test through the Johansen Co-integration Test can be performed. If Trace Statistic> Critical Value, means that the equation co-integrated. Thus, H0 = not co-integration with the alternative hypothesis H1 = co-integration. If Trace statistic> Critical Value, means that H0 is rejected or H1 accepted. (Eden, 2011).The test results in Table 4.3 shows that by using a 5% significance level, there are thirteen co-integrated equation. This can be seen when the value of Trace statistic> Critical Value. As seen in Table 4.3. Johansen co-integration test (1988) showed significant results. Most of the OCA bivariate models have more than one co-integration equation. In fact, Johansen co-integration test only requires that the test results have been significant if one equation has co-integrated. Information on the presence of this co-integrated equation will continue using Vector Auto-Regression Model (VAR).

E. Engle Granger Causality Test

In this test, the researchers wanted to observe if there is any causal relationship between GDP, Inflation, Debt, Import, Export, ER and Saving. Causality test results can be perceived by looking at the probability value. Decision criteria used is Ho rejected if the probability is less than 5% (test level used in this study was 5%). If Ho is rejected, then there is a causal relationship. The lag length used accordance to the test lag results that has been done before. In this study, causality test is intended to determine the variables of GDP, Inflation, Debt, Import, Export, ER and Saving. Based on the test results it can be concluded that the Debt has a causal relationship with Inflation, Inflation with Export, GDP by Debt, Export to Import, Import at Export (error rate of 10%), Saving the Import, Export Saving with, and ER with Saving.

F. *VAR* Model Analysis

Based on the methodology described previously, the next step is to perform a VAR modeling. The models that forming a bivariate models were estimated using the least squares method. In the VAR model, Inflation would be predicted based on the movement itself in the past (Lag Inflation) and the information about the movement of predictor variables in the past (lag predictor variable). The smallest AIC value as a basic for selecting the amount of lag can identified on Optimal Lag (AIC). Based on the test results with the VAR method (vector auto regression estimates), it is recognize that endogenous variables (independent variables) in equation 1, equation 2, equation 3, equation 4, equation 5, equation 6 and equation 7 respectively was able to explain diversity. As noticed from the adjusted R-square value 35.96%; 99.44%; 97.32%; 94.74%; 99.76%; 37.41% and 99.96%, while the rest was influenced by other variables.

G. Forecasting Error of Variance Decomposition (FEVD)

Analysis FEVD the VAR model aims to predict the percentage contribution of variance for each variable due to changes in certain variables in the VAR system. (Juanda and Junaidi, 2012).

Table 5. Forecasting Error of Variance Decomposition (FEVD)

Period		Inflation	Debt	Import	Export	GDP	ER	Saving
1	Inflation	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
10		33.53843	4.591368	9.094091	**47.53610**	1.115425	3.701742	0.422838
1	Debt	**55.58160**	44.41840	0.000000	0.000000	0.000000	0.000000	0.000000
10		32.51297	2.921415	4.252766	43.79042	**14.49763**	1.969731	0.055066
1	Import	27.89337	7.636340	64.47029	0.000000	0.000000	0.000000	0.000000
10		1.778655	6.555806	72.22257	12.57573	1.521890	5.272868	0.072483
1	Export	20.59317	0.045236	15.80577	63.55582	0.000000	0.000000	0.000000
10		1.784277	4.418660	**68.70848**	19.15307	1.824355	4.101696	0.009464
1	GDP	3.765905	13.53875	3.245206	0.284409	79.16573	0.000000	0.000000
10		30.49964	**17.19734**	0.619420	12.61823	38.83780	0.197358	0.030221
1	ER	11.86882	0.000992	44.33443	5.369227	1.349816	37.07672	0.000000
10		12.64510	1.444991	25.13483	30.60044	2.462859	27.25790	**0.453873**
1	Saving	0.001315	1.396121	12.04876	0.188876	5.191819	47.83070	33.34241
10		12.74223	0.328323	2.541516	14.88976	0.455672	**57.17174**	11.87076

Sourcer: data processed, Eviews 7.0

The results of FEVD against Inflation shown thatin the first period, 100 percent Inflationwas affected by Inflation itself. In the 10th period,Debt variable was the greatest influence on Inflation by 55.58160%. FEVD result of the Debt shown that in the first period, about 44.41840% Debt is affected by Debt itself. Later in the 10th, GDP variable was the greatest influencer on Debt for17.19734%. FEVD on Imports proved that in the first period, about 64.47029% Import was influenced by Import itself, but, in the10th period, Export was the most influence on Import as68.70848%. Results of FEVD on exports seen that in the first period, 63.55582% Export was influenced by export itself. Later in the10th period, Inflation variables that most influence on the Export with value of 47.53610%. FEVD of GDP shown that in the first period, GDP was 79.16573% was affected by GDP itself, but in the10th period, variables Debt was the most influence on the GDP by 14.49763%. FEVD against ER showed that in the first period, 37.07672% ER was influenced by the ER itself. In the 10th period, Saving was the greatest influence on ER by 57.17174%. FEVD results for Saving showed that in the first period, 33.34241% Saving affected by Saving itself. Later in the 10th period, ER variables that most influence on Saving by0.453873%.

Discussion

By recognizing the FEVD result, it can be explained that the relationship between variables has appropriated accordingly to the theory of macroeconomic. This should be a concern in order to implement the feasibility of a single currency. Furthermore, Index Williamson test and β-Convergence particularly aimed to observe the feasibility of implementing a common currency by observing if there is any disparity between countries in Asean region. And Panel Data Regression Test to identify which macro-economic factors are significantly influence the implementation of the single currency.

A. **Williamson Index**

Williamson Index calculation aimed to analyze the gap/disparity/inequality in income level occurred between the area/region/country within ASEAN. The basic calculation is to use per capita GDP in relation to the number of people per area/country. According to Tambunan (2003) in Gama (2008) Williamson Index obtained lies between 0 (zero) to 1 (one). If Williamson Index close to 0, means that the inequality in income level among ASEAN countries is low or economic growth between ASEAN is almost equal. In contrast, if Williamson Index is close to 1, then the distribution in income level among ASEAN countries is low or economic growth between ASEAN countries is differ. The following table is the result of the calculation Williamson Index between ASEAN countries during the period of 2004 to 2012:

Table 6. Williamson Index Result

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012
Williamson Index	0.8507	0.8501	0.8414	0.8397	0.8225	0.8087	0.8066	0.8093	0.8034

Source: data processed MS-Excel 2007

According to Williamson Index calculation result as indicated on table 6, it figured out that during the period of 2004-2012, overall value of Williamson Index was close to one, means that there is a disparity or diversity in economic growth among countries of the ASEAN member states.

B. Beta Convergence

Table 7. Absolut Regression

Dependent Variable: LOG_GDP?

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.135107	0.034312	91.37065	0.0000
GDP?	3.92E-05	2.17E-06	18.04854	0.0000

Source: data processed, Eviews 7.0

Based on the table 7, Beta coefficient values obtained by 3,92.E-05 and significant (probability) at 1%, 5%, 10%s level of test. It can be concluded that ASEAN countries should implement the formation of a single currency, according to R-Square value of 81.02%. It is clear that the single currency feasible in the ASEAN region.

C. Panel Data Regression Test

Panel data is a combination of time series data and cross section. Therefore the Panel Data Regression Testing can provide information that more precise, and able to accommodate the level of diversity and also the dynamics of the observed data. Additionally, Panel Data Regression Test can identify and measure the effects in which can not be seized by a pure cross section data and pure time series data. Therefore the Panel Data Regression Test allows to test models that are more complicated. Table below shows estimated result using a panel regression.

Table 8. Panel Regression Estimate Result

Variable	*Common Effect*		*Fixed Effect*		*Random Effect*	
	Coefficient	*Sig.*	*Coefficient*	*Sig.*	*Coefficient*	*Sig.*
C	3.135101	**0.0000*** **	-	-	3.172310	**0.0000*** **
DEBT?	0.002188	0.2396	0.001049	0.2794	0.001295	0.4299
ER?	2.36E-06	0.2028	-1.85E-08	0.9868	2.73E-06	**0.0853***
EXPORT?	-0.000402	0.5079	0.000302	0.2306	-0.000173	0.7056
GDP?	3.79E-05	**0.0000*** **	8.34E-06	**0.0080*** **	3.53E-05	**0.0000*** **
IMPORT?	6.42E-06	0.9932	-6.26E-05	0.8360	3.77E-07	0.9995
INFLATION?	0.005503	0.5542	0.003333	0.3418	0.001661	0.8145
SAVING?	4.13E-06	0.9817	-6.09E-05	0.4578	-5.75E-05	0.6954
R Squared	0.853407		0.982270		0.780377	
Adj. R Square	0.824903		0.971763		0.737673	
F Stat	29.93981		93.48907		18.27391	
Prob (F Stat)	0.000000		0.000000		0.000000	
Durbin Watson	0.327651		1.542040		0.378466	
Uji Chow (Prob. F Square)	0.0000					
Hausman Test						

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
DEBT?	0.001049	0.001295	-0.000002	NA
ER?	-0.000000	0.000003	-0.000000	NA
EXPORT?	0.000302	-0.000173	-0.000000	NA
GDP?	0.000008	0.000035	-0.000000	NA
IMPORT?	-0.000063	0.000000	-0.000000	NA
INFLATION?	0.003333	0.001661	-0.000038	NA
SAVING?	-0.000061	-0.000058	-0.000000	NA

Source: data processed, Eviews 7.0
*Significant at 10%
**Significant at 5%
***Significant at 1%

Based on the summaryof estimated regression with panel data (Table 8), Chow test has significant value below 0.05 there for a appropriate model between Common Effect Fixed with Fixed Effect Model is a Fixed Effect Model, because the results of Chow test choose Fixed Effect Model , then it is necessary to view a regression of the Random Effect model.Furthermore, Hausman test performed to choose the model between Fixed Effectwith Random Effect model. Hausman test results obtained on the significance of GDP value lower thanFixed or Random model (0.0000008 < 0.000035), so the Fixed Effect model is then selected.

The summary of estimated regression with panel data tested with three models mentioned above, which is the dependent variable Log_GDP, Debt and Inflation coefficient has a positive correlation to LogGDP but these effects are not significant at the 5% error level of test. Import variable and ER have a negative effect on therandom and fixed effect model, but random effect and effect model have a positive relationship to Log_GDP, however the relationship did not influence at the 5% level of test. Export variable has a negative correlation to the common effectand random effect model, while on the fixed effect model has a positive relationship to Log_GDP, but the relationship did not influence at 5% error level. GDP variable has a positive correlation and significant to Log GDP in fix, common and random model. Saving variables have a negative relationship but not significant in thefixed and random effect model. In model common effect model Savinghas a positive correlation but not significant.

Adjusted R-square value indicates the influence contribution of independent variables to dependent variables the model, where on common effect model the value was 82.49 % ; fixed effect model was 97.17 % and in random effect showed the R- square by 73.76 % , and the rest can be influenced by other factors not included in the model . As mentioned in the previous chapter, to select the best model, it is necessary to perform the Chow test, to test the common effect model compared to fixed effect model. AndHausman test was used to compare the fixed effect model with random effect model. Herewith, an explanation of the Chow and Hausman test.

D. Chow Test

Since the results of the model indicate that Chi-square test is significant (p-value 0.0000 < 0.05), means Ho is rejected and Ha accepted, thus the selected model is Fixed Effect Model. If in Chow test the Fixed Effect was selected, then Hausman test is carried out to choose the appropriate model between Fixed Effect and Random Effect model.

E. Hausman Test

To determine which model between Fixed Effect and Random Effect Model is more appropriate, the Hausman hypothesis test can be performed. The definition is as follow; Ho:Random Effect Model; H1:Fixed Effect Model. The conclusion is based on X^2 calculation compared to X^2Table. Ho is rejected if X^2calculation > X^2Table. The Hausman test result showed that the significance value of GDP on Fixed Effect model was lower than Random Effect Model (0.000008 < 0.000035), means that Fixed Effect Model was selected.

F. t-Test

To asses the coefficients regression, partial test was conducted to identify the significance of the effect for each independent variable towardsthe dependent variable by assuming that other variables are constant. Decision is made by compare the p-value to alpha (α) 0,05. Ho refused if the significance <α0.05 and the vice versa if the significance value >α 0.05 then Ho is accepted. To ensure that the numbers of coefficients can be used as a model to determine Log_GDP, then these figures will be tested using the t test.The summary of estimated regressionpanel data by Fixed Effect Model approaching, which Log_GDP as dependent variable, the debt coefficient, export and inflation has a positive relationship with Log_GDP but the effect is not significant at the 5 % error level of test.Import and Saving have a negative correlation with Log_GDP but the relationship did not influence at 5% error level. ER variables have a negative relationship but not significant at the 5 % error level of

test against Log_GDP. GDPvariable has positive and significant relationship to Log_GDP at the 5% error level of test.

G. F-Test

F test was also used to examine the relationship of all independent variables together on the dependent variable. To test this hypothesis using criteria decision making as follows:If the p-value<0.05 then Ho is rejected model can be used, so the vice versa if the p-value >0.05 Ho accepted model can not be used.

Table 9. F-test Result

Model	Sig.	Decision
Log_GDP = 0.001049*DEBT – 1.85E-08*ER + 0.000302*EXPORT + 8.34E-06*GDP - 6.26E-05*IMPORT + 0.003333*INFLATION - 6.09E-05*SAVING	0.000000	Ho rejected

Source: data processed E-Views 7.0

The result of the test F fixed effect model above shows that the p-value< 0.05 or 0.000000 < 0.05, then Ho is rejected, it means the model can be used in research. Therefore, panel data multiple regression equations model can explain that the independent variables have a significant effect simultaneously on the dependent variable.

H. Adjusted R^2

Adjusted R^2 is the ability of independent variables to explain the dependent variable or can also mean how much of the variation in the dependent variable can be influenced by independent variables. R^2 value is zero and one. If the value of R^2 is lesser (small), indicates that the independent variable in explaining the dependent variable are very limited, whereas if the value of the independent variable approaches one, it provides almost all the information needed to predict the dependent variable.

Table 10. Result of R^2 and *Adjusted* R^2

Model	R^2	Adjusted R^2
Log_GDP = 0.001049*DEBT – 1.85E-08*ER + 0.000302*EXPORT + 8.34E-06*GDP - 6.26E-05*IMPORT + 0.003333*INFLATION - 6.09E-05*SAVING	0.982270	0.971763

Source: data processed E-Views 7.0

R^2 value on Fixed Effect Modelof 0.982270 means that the dependent variable affected by all of the independent variables by 98.22%, while the remaining influenced by other variables not included in the model. Adjusted R – Square on Fixed Effect Model of 0.971763 means that the dependent variable is affected by all of the independent variables by 97.17% while the remaining influenced by other variables not included in the model .

Conclusion and Suggestions

Conclusion

VAR Test proved that the endogenous variable VAR (independent variable) in all seven equations respectively is able to explain the diversity between variables observed by the Adjusted R^2 value of of 35.96%; 99.44% ; 97.32%; 94.74%; 99.76%; 37.41% and 99.96%, while the rest was influenced by other variables . Williamson Index calculation showed that the index value close to one (1) for each period of research, there for it can be concluded; there is disparity in economic growth between ASEAN countries. Beta Convergence test results and Absolute Regression obtained a value of 3,92.E-05 and significant (probability) at 1%, 5%, 10%, error level of test, and the value of R-Square was 81.2%, so it can said that the ASEAN region is suggested to perform the formation of a single currency. Based on t-test obtained that the coefficient of Debt, Export and Inflation had a positive correlation to Log_GDP as dependent variable, but the effect is not significant at the 5 % error level. ER variables have a negative relationship but not significant at the 5 % error rate against Log_GDP. GDP variable has a positive and significant impact on Log_GDP at 5% error rate. This means that GDP had significant influence on the formation of the single currency. TheF-Test on Fixed Effect Model obtained the p-value < 0.05 or 0.000000 < 0.05 then Ho is rejected, means the model can be used in research and model panel data multiple regression equations model able to explain that the independent variables influence significantly to dependent variable. R^2 Value on the Fixed Effect Model was 0.982270, which means the 98.22% dependent variable is affected by all of the independent variables while the remaining influenced by other variables not included in the model. Adjusted R-Square value obtained was 0.971763 means that dependent variable was influenced by all independent by 97.1% and the rest was influenced by other variables not included in the test.

Suggestion

Based on the conclusions that have been described above, the researchers suggest some of the following; It could be said that the GDP is one of the macroeconomic indicators in determining the feasibility of the establishment of the single currency, there for the GDP gap between countries in the ASEAN region can be reduced. In addition also consider the macroeconomic conditions of each country as expressed by Agarwal, et al., (2004), that the possibility of the integration of the single currency Asean (Asean Dollar) is feasible if the Government Deficit to GDP is not greater than 3% , the ratio of government debt to GDP should be less than or equal to 60%, the exchange rate is relatively stable with fluctuations in the normal 15% for a period of two years and have never experienced a devaluation, and inflation does not exceed 1.5% of the average inflation of the three Member States with the best performance. It is need further study according to perform and implement the establishment of a single currency, which is in principal predominate obstacles that are usually associated with economic and monetary integration. It is necessary for the restructuring in all related fields, including the prospect and feasibility study of establishment the Asean Central Bank as well as ECB (European Central Bank) in the European region, to manage monetary and financial system of the region ASEAN.

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References

[1] Abimanyu, Y. (2004). *Memahami Kurs Valuta Asing*. FE-UI, Jakarta.
[2] Agarwal, A., Penm, J.H.W., Wing, K.W., and Martin, L.M. (2004). Asean Dollar: A Common Currency Establishment for Stronger Economic Growth of Asean Region. *JEL Classification: G10, F30, F36*.
[3] Allam, M.S. and Goerres, A. (2008). Adopting the Euro in Post–Communist Countries: An Analysis of the Attitude towards the Single Currency. *MPIFG Discussion Paper.*
[4] Allesi, L., Ghysels, E., Onorante, L., Peach, R., and Potter, S. (2014). *ECB Working paper Series No. 1688 July 2014. ISSN.1725-2806* (online).ISBN.987-92—899-19096-5. *JEL Classification : C53, E37.*
[5] Anand, MR., Gupta, GL., and Dash, R.(2012). The Eurozone Crisis; It's Dimension and Implication. Download on September, 5th, 2012, 23:15 pm.
[6] Aggarwal, V.K and Urata, S. (2006). *Bilateral Trade Agreement in the Asia Pacific: Origin, Evolution and Implication.* Published by: Routledge 270 Madison Ave, New York, NY 10016
[7] Baldwin, R., DiNino, V., Fontagne, L., De Santis, R.A., and Taglioni, D. (2008). Studying of the Impact of The Euro on Trade and Foreign Direct Investment. *European Commision Directorate General for Economic and Financial Affair Publication.B1049 Brussel – Belgium. ISBN 978-92-79-08246-7.*
[8] Barrow, R.J., and Sala-i-Martin, X. (2004). *Economic Growth*. Second Edition. The MIT Press Cambridge, Massachusetts, London, England. ISBN : 0-262-02553-1.
[9] Baxter, M and Kouparitsas, M. (2004). Determinant of Business Cycle Co-movement: A Robust Analysis. *Working Paper 10725, NBER.*
[10] Bayoumi,T.and Mauro, P. (1999). The Suitability of Asean for a Regional Currency Arrangement. *International Monetary Fund Research Department, IMF Working Paper.*
[11] Bordo, M.D. and Eichengreen, B. (1993). A Retrospective on the Bretton WoodsSystem: Lessons forInternational Monetary Reform. *Volume ISBN:0-226-06581VolumeURL:http://www.nber.org /books/bord93-1.ConferenceDate: October 3-6,1991. Publication Date: January 1993.*
[12] Bordo, M.D. and Lars, J. (2000). Lesson for EMU from the History of Monetary Unions. *London: Institute of Economics Affair*.
[13] Ca'Zorzi, M., De Santis, R.A. and Zampoli, F. (2005). Welfare Implication of Joining Currency. *European Central Bank. Working Paper Series No. 445, Februari 2005. ISSN 1561-08110 (print). ISSN 1725-2806 (online). JEL classification : E52, E58, F33, F40.*
[14] Chowdhury, K. (2004). Convergence of Percapita GDP Across SAARC Countries.*WorkingPaper* 04-07, *Department of Economics,University of Wollongong, 2004.JEL Classification: C21, O18.*
[15] Dammasch, S. (2014). The System of Bretton Woods, A Lesson History. Download 8 Mei 2014,20:15 from: www.ww.uni-magdeburg.de/fwwdeka/student/arbeiten/006.pdf.
[16] Duarte, M. (2003). The Euro and Divergence in Europe. *Federal Reserve Bank of Richmond. Economic Quarterly Volume 89/3 Summer 2003*.
[17] Dziuda, W. and Mastrobouni, Gi. (2008). The Euro Changeover and Its Effects on Price Transparency and Inflation. *Journal of Money, Credit and Banking. JEL Classification Codes D83, F33, L11.*
[18] Enders, W. (2004). *Applied Economics Time Series.* Second Edition. John Wiley & Son Inc.NY.
[19] Engle, R. F. and Granger. (1987). Co-Integration and Error Correction: Representation, Estimation and Testing. *Econometrica*. Vol. 55, 251-76.

[20] European Central Bank. (2014). Aggregated Balance Sheet of Euro Area Monetary Excluding the Eurosystem. *ECB Monthly Bulletin, Januari 2014.*
[21] Eurostat Statistic In Focus. (2010). Kiiver, Hannah; Hijman, Remko. Population and Social Condition. *ISSN 1977-0316, Catalogue Numberr KS-SF10-020-EN NEuropean Union, 2010*. Downloaded on September, 10, 2013, 15:54pm.
[22] Ford, J. (2002). A Social Theory of Trade Regime Change: GATT to WTO. InternationalStudies Review. 4: 115–138.doi: 10.1111/1521-9488.00267. *Research School of Pacific and Asian Studies at the Australian National University*. Issue published online: 13 JUN 2003..
[23] Frankel, J.A and Rose, A.K. (2002). An Estimate of The Effect of Common Currencies on Trade and Income. *JEL Classification Number: F11, F33, O40.*
[24] Friedman, F. (2002). *Capitalism and Freedom*.40th Anniversary Edition. The University of Chicago Press. *ISBN : 0-226264211.*
[25] Gama, A.S. (2008). Disparitas and konvergensi produk domestic Regional Bruto (PDRB) Per Kapita Antar Kabupaten/Kota di Provinsi Bali. *Jurnal Ekonomi dan Sosial*. Vol. 2 No.1, 38-
[26] Gantz, D.A. (1999). Dispute Settlement Under the NAFTA and the WTO: Choice of Forum Opportunities and Risks for the NAFTA Parties. *American University International Law Review 14 (4): 1025–1106.*
[27] Guedes, A.L. and Faria, A. (2007). Globalization and International Management: In Search of an Interdiciplinary Approach*. BAR v.4.n 2, art 2. P 20-39. May/August 2007,Brazilian Administration Review, 2007*. Received 16 December 2005, received in revised 04 December 2006. Available online at: http:// anpad.org.br/bai.
[28] Gupta, A.S. (2010). Prospect for A Single Asian Currency. *Policy Research Institute, Ministry of Finance, Japan, Public Policy review, Vol 6.No 5, June.*
[29] Hall,S.G., Hondroyiannis,G., P.A.V.B. Swamy and Tavlas, G.S. (2010). Bretton-Woods systems,old and new,and the rotation ofexchange-rate regimes.*Working Paper Bank of Grace Euro System, April 2010.*
[30] Hubbard, G.R and O'Brien, A.P. (2013). *Economics*. Fourth Edition, Pearson Education Limited, Edinburg Gate Harlow, Essex CM20 2JE, England. *ISBN 10: 0-273-77984-2, ISBN 13: 978-0-273-77984-1.*
[31] Islami, D.R.P. (2010). Prospect of Forming A Common Currency Area in 10 Asean Country. *Thesis.* Universitas Diponegoro.
[32] Juanda & Junaedi. (2012). Ekonometri Deret Waktu: Teori dan Aplikasi. *IPB Prasa, Bogor*.
[33] Kementrian Perdagangan Republik Indonesia, Menuju Asean Economics Community 2015. (2008). http://ditjenkpi.kemendag.go.id/website_kpi/Umum/Setditjen/Buk%20Menuju%20ASEAN%20ECONOMIC%20COMMUNITY%202015.pdf
[34] Kusumadewi, R. (2011). Kerjasama Perdagangan Internasional.Kementrian Perdagangan Republik Indonesia.*Buletin KPI Edisi 001/KPI/2011*.
[35] Masahiro, K.D and Wignaraja, G. (2007). Asean +3 or Asean +6 Which Way Forward*. Paper presented at the Conference on Multilateralising Regionalism Sponsored and organized by WTO – HEI. Co - organized by the Centre for Economic Policy Research (CEPR) 10 - 12 September 2007. Geneva, Switzerland.*
[36] Rachbini, D.J. (2001). *Ekonomi Politik Utang (Political Economics on Foreign Debt*). Jakarta, INDEF.
[37] Rahmanta. (2009). *Aplikasi Eviews dalam Ekonometria*. USU Repository.
[38] Ramayandi, A. (2004). ASEAN MONETARY Cooperation: Issues and Prospect. *Australian National University & Padjajaran University; Australian-Japan Research Centre, Asia Pacific School of Economics and Government-Australian National University C anberra, ACT 0200.* Paper for the16th MEA Convention on December 9, 2004 and the 29th Conference of the Federation of ASEAN Economic Associations (FAEA) December 10-11, 2004, Institute Integrity of Malaysia, Persiaran Duta, Off Jalan Duta, Kuala Lumpur, Malaysia
[39] Santoso, S. (2001). *Mengolah Data Statistik Secara Profesional*. PT. Alex Media Komputindo. Jakarta.
[40] Santoso, Y. (2011). *Pengaruh Hutang Luar Negeri, Kurs dan FDI terhadap Produk Domestik Bruto di Indonesia Tahun 1990 – 2008.* Skripsi. Fakultas Ekonomi Universitas Atmajaya Yogyakarta.
[41] Singarimbun, E. (1995). *Metoda Penelitian Survei*. LP3ES, Jakarta.
[42] Steffek, J. (2003). The Legitimation of International Governance: A Discourse Approach *European Journal of International Relation, 9, 2: 249-275.*
[43] Taylor, M. (1995). The Economics of Exchange Rates. *Journal of Economic Literature, March 1995.*
[44] Wang, Y. (2009). *VAR Models*. Cornel University.
[45] Winarno, Wing Wahyu. (2011). *Analisis Ekonometrika dan Statistika dengan Eviews*. Yogyakarta: UPP STIM YKPN
[46] www.asean.org
[47] www.cia.gov

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3. The Introduction of Fiscal Decentralization. 2011. 1st edition. ISBN: 978-979-99976-2-3

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1. Readings in Islamic Economics and Finance", Penerbit Universiti Utara Malaysia, 2007. *Why do Muslim Countries Cut First at a Time of Fiscal Adjustments?* (with Abdul Ghafar Ismail,UKM).

2. The Impact of World Oil Price Fluctuation on The Indonesian Economy". Irsa Book Series No7: Regional Development, Energy and The Environment in Indonesia. Penerbit Universitas Sriwijaya