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# Steady-State Analysis and Trade Balance Convergence Rate of ASEAN Member Countries

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## Abstract

The international trade role of a country depends on its economic condition, international economic openness, and cooperative orientation in its trade. This research analyzes AFTA free trade relating to the steady-state, disparity, and the ASEAN members' trade balance convergence rate. The data used was taken from UNCTAD, ASYB, and Central Bank of Indonesia. The analysis model used was the most appropriate from Common, Fixed Effect Model (FEM), Random Effect Model (REM), and Generalized Method of Moment (GMM). ASEAN members' balance trade reached a different steady-state for every country, therefore convergence pattern did not take place, and the divergence pattern occurred in trade balance among the member countries. The divergent trade balance was due to the different early economic conditions, macroeconomic development, trade openness, and trade facilities and infrastructures in each country. It was also due to the ASEAN intra-trade cooperative role and low investment coming from intra-ASEAN foreign investment. To promote trade and lower divergent trade balance, it is necessary to promote intra-ASEAN trade and create a conducive situation for foreign capital investors.

**Keywords:** Beta Convergence, Sigma Convergence, Trade Balance, Steady State, Disparity

**JEL Clasification Code:** E11, F11, F15, F41

## 1. Introduction

Economic integration is an arrangement among nations that typically includes the reduction or elimination of trade barriers and the coordination of monetary and fiscal policies. Economic integration is a concept that provides benefits, either directly or indirectly, to member countries in conducting international trade. Economic integration also encourages and expedites investment flows from one country to another. Many countries have responded to the forming the economic integration. One of them was free bloc-trade called ASEAN Free Trade Area (AFTA) which was set up in 1992.

It is expected that the higher trade volume will lower the gap in trade balance among the ASEAN countries. Countries that have low involvement in trade but have high potential, are supposed to have a shorter time to raise trade volume. The ASEAN members are expected to have a steady-state in their trade balance and a convergent pattern.

Some pessimistic economists criticize economic integration or joint market by asking the existence of such trade blocs as domination over other weaker countries in the region. Carvalho and Harvey (2005) concluded that the impact of trade creation in forming RTAs in developing countries was fragile and that there were no trade creation and trade diversion in the process of integration in the region (Burmansyah, 2014).

In fact the trade balance of ASEAN 6 countries was surplus, except Philippines, while Cambodia, Laos, Myanmar, and Vietnam (CLMV) had a deficit trade balance. The different amount of foreign investment and the global economic crisis in 2008, could have had an impact on ASEAN that had strong trade relations with the USA and Europe.

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## 2. Literature Review

Whether or not each ASEAN member country tends to converge in the trade balance, will depend on the initial economic conditions and the openness of the economy to its international trade. On the other hand, macroeconomic variables and external factors are also thought to have an effect on the trade balance.

Several empirical research results showed factors that influence the trade balance in the financial sector are currency exchange rate (Kennedy, 2013; Okodua & Olayiwola, 2013) and inflation (Okodua & Olayiwola, 2013; Mwakanemela, 2014), and factors that influence the trade balance in the real sector are foreign direct investment (Kennedy, 2013; Mwakanemela, 2014), and Gross Domestic Income (Irhan et al., 2011; Edoun et al., 2015), as well as other factors that can affect the development of a country's trade balance.

Some economists proposed the convergence level and how to measure it in various economic problems, such as the Solow model which estimated convergence in the economy of two countries depending on the initial differences (Zakaria, 2014). Every economist would be closed or moving toward its steady state. Zakaria (2014) stated that there were two convergence approaches, namely beta convergence and sigma convergence. Tu and Giang (2018) defined beta convergence ($\beta$) where there was a negative partial relationship between the level of state income and the level of initial income, while the sigma ($\sigma$) convergence was defined when the per capita income disperse between economic groups of countries decreases. If the economy of the countries is identical, the convergence of $\beta$ may take place and drives the economy to the same equilibrium. On the other hand, if the economy is not homogeneous, only conditional $\beta$ convergence is possible, where the economy grows towards a different equilibrium. Furthermore, Nguyen et al. (2020) described three convergences in the neoclassical paradigm, namely: $\beta$ unconditional convergence, $\beta$ conditional convergence, and $\sigma$ convergence. Furthermore, Kennedy (2013) defined $\beta$ convergence as a negative correlation between levels and growth rates.

Santillan-Salgado and Ortego Diaz (2017) explained that there were 3 (three) alternative models related to measuring the level of beta conditional convergence, relating to trade in the products of the manufacturing industry based on the relationship between the growth in trade of the products of the manufacturing industry and its lag trade level; the relationship between the level of trade in the products of the manufacturing industry with the level of trade in the lagging industry; and the relationship between the growth of trade in the products of the manufacturing industry and the growth in trade in the lagging industry.

In this study, beta convergence was used to show whether the trade balance of a country or several countries would converge towards a steady-state or the same equilibrium position. The sigma convergence was used to show whether the trade balance gap was decreasing over time, by looking at the disperse through the coefficient of variation. The smaller the level of the trade balance gap could be indicated by the smaller coefficient of variation.

## 3. Research Methods

### 3.1. Types of Research and Data Sources

This study would analyze the impact of macroeconomic variables on the steady-state position and the level of trade balance convergence, as well as developments in the trade balance parity. The data used was panel data, namely a combination of time series and cross-section data. The research variables consisted of independent variables consisting of the dollar exchange rate against the rupiah (ER), consumer price index (CPI), national income (GDP), foreign domestic investment (FDI), and the global economic crisis (Dummy 08). Meanwhile, the dependent variable was the trade balance of ASEAN member countries. The data used was secondary data sourced from the ASEAN Statistical Yearbook (ASY), United Nations Conference on Trade and Development (UNCTAD), Bank Indonesia (BI), and Statistics Indonesia (BPS).

### 3.2. Analysis Model

Before analyzing the convergent trade balance rate, it is necessary for us to understand the development of trade balance among ASEAN countries members, either inter countries members (intra ASEAN), or extra ASEAN trade. The detail of the two development can be seen in Table 1 as follows.

The development from the period of 1998–2018 in Table 1, shows that the 5 countries having an average surplus trade balance starting from the smallest to the biggest are Singapore, Malaysia, Indonesia, Brunei Darussalam, and Thailand. While the other countries are facing a deficit in trade balance as the Philippines, Vietnam, Cambodia, Laos, and Myanmar.

But then, if we see the stability based on variation coefficient value (CV), countries with stable trade balance are Malaysia, Singapore, and Brunei Darussalam. While countries whose trade balance highly fluctuated are Myanmar, Thailand, Vietnam, and the Philippines. The other countries are Indonesia, Cambodia, and Laos are in the middle of two groups.

The analysis model in this study was simple linear regression, multiple linear regression, and linear trends during 1998–2018. Before analyzing, the appropriate panel regression model would be selected, such as Common, FEM or REM, and Dynamic Panel Data (GMM) by entering the minimum lending interest instrument variables and other independent lag variables. Furthermore, the classical assumption testing for the selected model is also carried out.

**Table 1:** Trade Balance ASEAN Countries Members in 1998–2018 (Million $US)

| Year | BruBrunei D | Cambodia | Indonesia | Lao PDR | Malaysia | Myanmar | Philippines | Singapore | Thailand | VietNam |
|---|---|---|---|---|---|---|---|---|---|---|
| 1998 | 506 | −366 | 15.089 | −183 | 14.983 | −1.601 | −2.082 | 8.163 | 11.507 | −2.139 |
| 1999 | 1.237 | −463 | 17.923 | −214 | 19.232 | −1.176 | 4.008 | 3.620 | 8.123 | −201 |
| 2000 | 2.796 | −546 | 21.808 | −205 | 16.266 | −751 | 1.051 | 3.259 | 7.039 | −1.155 |
| 2001 | 2.481 | −594 | 19.827 | −191 | 14.225 | −491 | −2.771 | 5.751 | 3.006 | −1.189 |
| 2002 | 2.146 | −395 | 20.826 | −146 | 14.300 | 691 | −5.884 | 8.736 | 3.463 | −3.040 |
| 2003 | 3.094 | −442 | 21.912 | −127 | 21.407 | 389 | −6.345 | 23.684 | 4.499 | −5.107 |
| 2004 | 3.635 | −395 | 15.890 | −349 | 21.479 | 182 | −6.422 | 25.038 | 1.838 | −5.484 |
| 2005 | 4.758 | −836 | 11.271 | −329 | 27.301 | 1.868 | −8.233 | 29.602 | −7.241 | −4.319 |
| 2006 | 5.960 | −1.079 | 22.877 | −177 | 30.307 | 2.001 | −6.668 | 33.097 | 949 | −5.188 |
| 2007 | 5.567 | −1.350 | 24.912 | −144 | 29.795 | 3.006 | −7.530 | 36.152 | 13.902 | −14.121 |
| 2008 | 7.747 | −1.800 | 12.068 | −311 | 43.066 | 2.626 | −11.342 | 18.396 | −1.447 | −18.029 |
| 2009 | 4.751 | −1.634 | 25.860 | −408 | 33.487 | 2.314 | −7.442 | 24.047 | 18.714 | −12.852 |
| 2010 | 6.371 | −1.648 | 22.751 | −314 | 33.990 | 3.901 | −6.972 | 41.076 | 10.385 | −12.602 |
| 2011 | 8.836 | −2.596 | 26.061 | −215 | 40.613 | 219 | −15.388 | 43.733 | −6.211 | −9.844 |
| 2012 | 9.429 | −3.512 | −1.653 | −784 | 31.149 | −324 | −13.251 | 28.670 | −20.009 | 749 |
| 2013 | 7.835 | −2.889 | −4.077 | −817 | 22.434 | −810 | −9.007 | 37.234 | −21.902 | 554 |
| 2014 | 6.910 | −3.846 | −1.886 | −1.609 | 25.077 | −5.006 | −6.065 | 43.056 | −287 | 2.368 |
| 2015 | 3.124 | −4.718 | 7.671 | −2.022 | 23.981 | −5.456 | −15.924 | 54.500 | 11.657 | −3.545 |
| 2016 | 2.197 | −4.032 | 8.837 | −1.128 | 21.059 | −3.873 | −33.122 | 47.142 | 21.190 | 1.777 |
| 2017 | 2.486 | −3.406 | 11.885 | −794 | 22.713 | −5.375 | −33.188 | 45.522 | 15.116 | 2.804 |
| 2018 | 2.410 | −4.830 | −8.492 | −869 | 29.853 | −2.706 | −51.842 | 42.073 | 4.756 | 7.166 |
| $\mu$ | 4.489 | −1.970 | 13.874 | −540 | 25.558 | −494 | −11.639 | 28.693 | 3.764 | −3.971 |
| $S$ | 2.597 | 1.548 | 10.481 | 519 | 8.150 | 2.749 | 12.985 | 15.797 | 11.083 | 6.379 |
| CV | 57.9 | −78.6 | 75.5 | −96.1 | 31.9 | −556.6 | −111.6 | 55.1 | 294.4 | −160.6 |

Source: UNCTAD annual edition and processed.

The analysis of the level of trade balance convergence is done in 2 (two) ways, namely: beta convergence (beta unconditional and beta conditional) and sigma convergence. The unconditional beta convergence model was based on levels according to the theory of Santillan-Salgado and Ortego Diaz (2017), namely $\widehat{TB_{i,t}} = \beta_0 + \beta_1 \mathrm{TB}_{i,t-1} + \varepsilon_{it}$; where $\mathrm{TB}_{i,t}$: Trade balance of ASEAN member countries; $\mathrm{TB}_{i,t-1}$: Previous year's trade balance; $\beta_0$: Constant; $\beta_1$: Regression coefficient; $\varepsilon_{it}$: Residue.

Mathematically, the steady-state condition with $0 < \beta_1 < 1$, can be described if the growth is zero ($\mathrm{GTB}_{i,t} = 0$), and where $\mathrm{TB}_{i,t} = \mathrm{TB}_{i,t-1}$, then the steady-state condition is:

$$\mathrm{TB}_{i,t} = \beta_0 + \beta_1 \mathrm{TB}_{i,t-1} \text{ or } \mathrm{TB}_{i,t} - \beta_1 \mathrm{TB}_{i,t-1} = \beta_0,$$
$$\text{so } \mathrm{TB}_{i,t} = \mathrm{TB}_{i,t-1} = \frac{\beta_0}{(1-\beta_1)}$$

If each ASEAN member country has the same steady-state, then countries tend to converge in the trade balance within the region, and if the steady-state is different, it tends to diverge in the trade balance (see Figure 1).

The measurement of the level of convergence of the trade balance beta conditional will use one of the models proposed by Santillan-Salgado and Ortego Diaz (2017), namely: $\mathrm{trade}_{it} = \alpha_i + \gamma \cdot \mathrm{trade}_{i,t-1} + \beta_i' X_{it} + u_{it}$; where $X_{it}$ is the control variable. If it is in accordance with the expectation that the value of $\beta_1$ is a positive fraction ($0 < \beta_1 < 1$), then the steady-state condition will be achieved in the trade balance (convergent). However, if $\beta_1 > 1$, then there is no convergence because the trade balance will not reach a steady state. Mathematically, the model of the convergence beta conditional equation is $\mathrm{TB}_{it} = \beta_{0i} + \beta_{1i}; \mathrm{TB}_{i,t-1} + \beta_{2i}\mathrm{ER}_{it} + \beta_{3i}\mathrm{CPI}_{it} + \beta_{4i}\mathrm{GDP}_{it} + \beta_{5i}\mathrm{FDI}_{it} + \beta_{6i}\mathrm{Dummy}_{it} + \varepsilon_{it}$, where, $\beta_0$ = Constant; $\beta_{1-6,i}$ = regression coefficient of each variable;

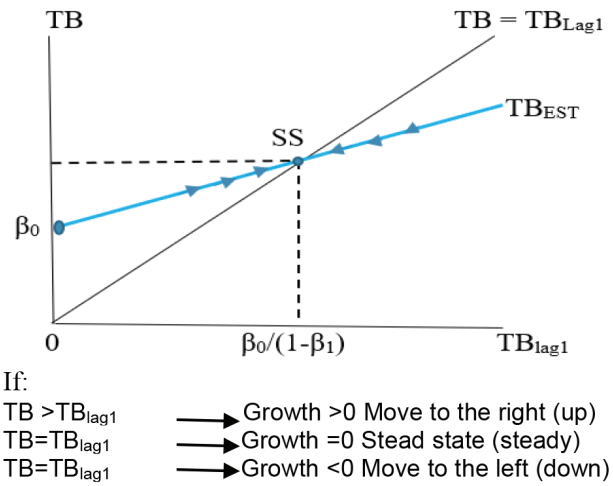


**Figure 1:** Steady State Trade Balance Conditions at Level-Level Method

$TB_{it}$: Trade balance of ASEAN member countries; $TB_{i,t-1}$: Trade balance with the previous year; $ER_{it}$: The exchange rate of the US dollar against currencies of ASEAN member countries; $CPI_{it}$: Consumer Price Index of ASEAN member countries; $GDP_{it}$: Gross Domestic Product; $FDI_{it}$: Stock of foreign investment; and Dummy 08: 0 for before the global economic crisis and 1 for after the global economic crisis and $\varepsilon_{it}$: Residue.

In the analysis of sigma convergence,

$$CV_t = \gamma_0 + \gamma_1 T + \varepsilon_{it},$$

Where, $CV_t = \frac{S_t}{\bar{X}_t} \times 100$; $CV_t$ = coefficient of variation; $\gamma_0$: Constant; $\gamma_1$: regression coefficient; and $T$: Time and $\varepsilon_{it}$: Residue. If the value of the regression coefficient over time (1 < 0 or significantly negative), then the trade balance disparity between ASEAN member countries decreases or tends to converge. On the other hand, if ($\gamma_1 > 0$ or significantly positive), then the disparity increases or tends to diverge.

## 4. Results and Discussion

### 4.1. Beta Convergence Analysis of the ASEAN Member Countries' Trade Balance

The relationship between the previous year's trade balance and the current year's trade balance, without involving other variables in the equation model would be able to show a convergent or divergent trade balance for each ASEAN member country.

Based on the Redundant Effects test, the probability value of $F_{Stat}$ is 0.0002 which was smaller than $\alpha$ = 0.05. It could be concluded that the Fixed Effect Model (FEM) was more precise than the Common Effect Model. Furthermore, the Hausman test was carried out giving the result that FEM was more precise than the Random Effect Model (REM) because the probability value of $F_{Stat}$ was 0.0007 which was smaller than $\alpha$ = 0.05.

Mathematically, the results of the equation can be expressed as follows:

$$TB = 1.274{,}546 + 0.809156TB_{lag1}$$

| | | |
|---|---|---|
| Probability | **(0.0000)**** | **(0.0000)***** |
| | $R^2$ = 0.8863 | $R^2_{Adj}$ = 0.8802 |

The equation above showed that ASEAN member countries had different linear regression equations, with a positive regression coefficient ($0 < \beta_1 < 1$) between the previous year's trade balance and the current year's trade balance. The trade balance size at the established level in the unconditional beta model showed that there would be convergence for each member country with a different steady-state position, thus showing no convergence of the trade balance between countries in the region. The absence of convergence in the trade balance was caused by the existence of different initial economic conditions - both GDP per capita and the diversity in economic openness in international trade in each ASEAN member country.

### 4.2. The Sigma Convergence Analysis of the ASEAN Member Countries Trade Balance

The beta conditional convergence model was an unconditional beta convergence model coupled with macro-economic variables such as control variables describing the characteristics of each ASEAN member country. The factors that could influence the development of export-import (the trade balance) of a country were some fundamental macroeconomic variables and external variables, including exchange rates of currencies of ASEAN member countries against the United States Dollar (ER), inflation or consumer price index (CPI), national income (GDP), foreign investment (FDI) as well as the global economic crisis (Dummy08). Based on the beta conditional convergence equation with various models, the result of the beta conditional (trade balance) convergence can be seen in Table 2.

The results of the Redundant Fixed Effect test show that the Fixed Effect Model (FEM) is more appropriate to use than the Random Effect Model (REM) with a probability value of $F_{Stat}$ = 0.0001 < $\alpha$ = 0.05. However, when choosing FEM or REM, where $T$ (time series) is greater than $N$ (number of cross section units), FEM is more suitable for use than REM. Furthermore, the results of the $R$ square test and $t$-test on each independent variable on the GMM model are more precise than the static FEM panel model.

**Table 2:** Result of Conditional Trade Balance Convergence Regression Beta

| Variables | Common | Fixed | Random | GMM |
|---|---|---|---|---|
| *C* | −169.1774 (0.07216) | 2.547.840 (0.0027)*** | 312.4104 (0.08541) | 1.776.199 (0.0023)*** |
| $TB_{lag1}$ | 0.951831 (0.0000)*** | 0.747025 (0.0000)*** | 0.914695 (0.0000)*** | 0.760817 (0.0000)*** |
| ER | −0.009416 (0.7741) | 0.287975 (0.0706)* | −0.08604 (0.4016) | 0.395475 (0.0045)*** |
| CPI | 6.816424 (0.3249) | −10.21061 (0.1970) | 14.62174 (0.5339) | −6.296151 (0.2602) |
| GDP | −0.002484 (0.3249) | −0.011906 (0.0160)** | −0.003222 (0.1701) | −0.014592 (0.0001)*** |
| FDI | 0.0044667 (0.1076) | 0.007507 (0.0894)* | 0.005930 (0.0192)** | 0.008690 (0.0069)*** |
| Dummy ’08 | −791.9509 (0.0705)* | −57.5474 (0.8852) | −2.715.283 (0.0353)* | −106.6393 (0.6498) |
| *R*-square | 0.865234 | 0.898019 | 0.824925 | 0.898317 |
| Adjusted *R*-square | 0.861250 | 0.890134 | 0.819753 | 0.890027 |
| SE of Regression | 5.754.390 | 5.659.398 | 6.402.796 | 5.707.589 |
| *F*-statistlc/*J*-statistic | 217.2182 | 113.8882 | 159.4201 | 7.661155 |
| Prob *F*/*J* (statistic) | (0.0000)*** | (0.0000)*** | (0.0000)*** | (0.1759) |

The Generalized Method of Moment (GMM) equation model is obtained:

$$TB = 1.776{,}651 + 0{,}760817\ TB_{lag1} + 0.395475\ ER - 6.296151\ CPI - 0.014592\ GDP + 0.008690\ FDI - 106.6393\ Dummy$$

Prob **(0.0022)***** **(0.0000)***** **(0.0045)***** (0.2548) **(0.0001)***** **(0.0069)***** (0.6498)

$R^2 = 0.8983$ $R^2_{Adj} = 0.8900$ Rank Instrument 21 $j_{Stat} = 7.6611$ $F_{Prob} = 0.1759$

The results of the GMM regression equation showed the regression equation with different constants, and the regression coefficient was also positive ($0 < \beta_1 < 1$). This meant that each ASEAN member country would experience a convergence in its trade balance. However, the steady-state position was not the same (different), which means that there was no convergent pattern of trade balance between ASEAN countries in the region.

Based on Figure 2, the steady-state position of Indonesia’s trade balance ranked third after Singapore and Malaysia. Meanwhile, Thailand and Brunei *D* were in 4th and 5th place, followed by the other five countries VietNam, Laos, Myanmar, Cambodia (CLMV), and the Philippines which experienced deficits in their trade balance.

## 4.3. Macroeconomic Developments and Global Economic Crisis for the Trade Balance of ASEAN

### Member Countries

The results of the beta conditional model equation show that simultaneously the previous year’s trade balance ($TB_{lag1}$), exchange rate (ER), inflation (CPI), national income (GDP), foreign investment (FDI), and the global economic crisis (Dummy 08) have a significant effect on the trade balance of ASEAN member countries.

Several macro variables had a partially significant effect on the trade balance, except for inflation and the global economic crisis. The exchange rate (ER) could affect exports and imports according to the theory of Lipsey and Cristal (2011), and research conducted by Ng et al. (2008), Irhan et al. (2011), and Okodua and Olayiwola (2013). However, there was a contradiction with the use of independent and dependent variables in the research of Asadullah et al. (2021), where the exchange rate is significantly affected by the trade balance. Furthermore, foreign investment (FDI) had a direct and significant effect on the trade balance, according to research conducted by Muhammad (2010), Kennedy (2013), and Santillan-Salgado and Ortega-Díaz (2017). National income (GDP) has a significant effect but in different directions on the trade balance, according to the theory of Samuelson (2010) and Gordon (2012). These results were in line with research by Ng et al. (2008), Chiu et al. (2010), Irhan et al. (2011), Okodua and Olayiwola (2013), and Muhammad (2010) who showed that Gross Domestic Product has a significant effect on exports. Identical to the research results of Nguyen et al. (2019) showed that the exchange rate and GDP have a significant effect on intra-industrial trade.

The inflation variable (CPI) had a negative and insignificant effect, meaning that the increase in prices of goods generally causes a decrease in the trade balance

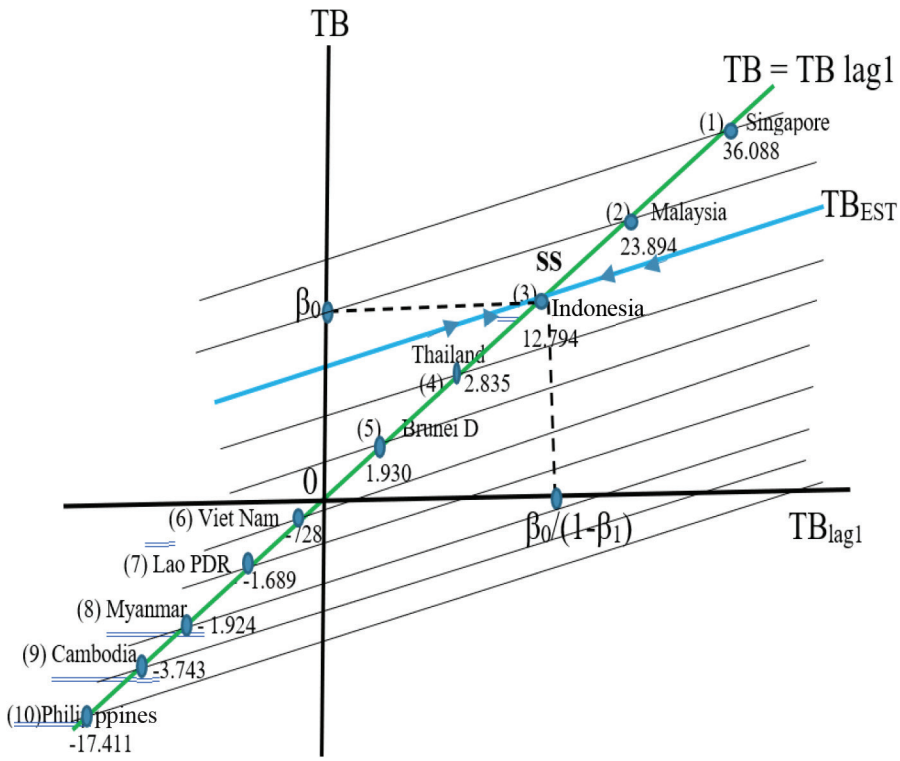


**Figure 2:** Steady-State Conditions and Beta Conditional Convergence Trade Balance of ASEAN Member Countries

which is not significant for each ASEAN member country. This negative and insignificant effect was because most of the export of goods comes from natural resources and products from the basic processing industry, so that export demand was inelastic to price changes. These results were consistent with the research of Okodua and Olayiwola (2013). However, it was slightly different from Mwakanemela (2014) and Alemu and Jin-Sang (2014), where inflation had a significant negative effect on the trade balance.

Likewise, the global economic crisis (Dummy 08) had a negative but insignificant effect on the trade balance of ASEAN member countries. This insignificant negative effect was due to the decline in demand for ASEAN export goods from America and European countries. However, it was accompanied by a shift in ASEAN's trading partners, which was originally dominated by the United States, European countries, Japan, and China. However, after the global economic crisis, ASEAN's dominant trading partners were China and Japan, which surpassed the role of the United States and Europe, followed by Korea, India, and Australia.

Thus, if the macroeconomic variables of ASEAN member countries change, they will affect the steady-state conditions of each of these countries.

### 4.4. The Sigma Convergence Analysis of the ASEAN Member Countries Trade Balance

The results of the sigma convergence equation for the trade balance of ASEAN member countries are as follows:

$$CV_{ASEAN} = 313.6817 + 26.36003T$$

Prob $(0.0049)^{***}$ $(0.0049)^{***}$

$R^2 = 0.3131$ $R^2_{Adj} = 0.3131$

The trade balance of a certain group of countries would converge if the trade balance disperses tends to shrink over time, which was shown by the decreasing coefficient of variation. The coefficient of variation in the trade balance between ASEAN member countries during the 1998–2018 period, showed that every year it fluctuated but tend to increase. This showed an increasing disparity so that the trade balance gap between ASEAN countries was getting bigger. This showed a divergent pattern of trade balance among ASEAN countries within the region.

The divergent pattern of trade balance among ASEAN countries in the region could be caused by several things, including; intra ASEAN trade which was still low on average was only around 23.66% of its international

trade. Its export products are still homogeneous (not complimentary) so that there was mutual competition among most of its member countries. In the end, there was trade competition not only in intra-ASEAN trade but also in ASEAN countries competing in the extra ASEAN market. Besides, the contribution of intra-ASEAN foreign investment was also low, with an average of 14.76% of total foreign investment. The flow of FDI by transnational companies and multinational companies played a major role in increasing trade integration so that the benefits of investment in the region were not evenly distributed to ASEAN member countries. The orientation of ASEAN cooperation was more outward-looking and gave freedom to the relations of its members with various regions and with their trading partner countries. ASEAN has entered into a free Trade Agreement (FTA) with its trading partners, such as ACFTA, AJCEP, AKFTA, AANZFTA, but each member of ASEAN was also allowed to have trade cooperation with its trading partners, thus opening up opportunities for members with more advanced economies. ASEAN was more of a competitive region and liberalized its economy compared to efforts to develop a regional market or its own intra-ASEAN market (inward-looking).

### 4.5. Implications and Discussion

Fellow ASEAN member countries had to strive to increase their trade through intra-ASEAN trade cooperation in increasing intra-ASEAN foreign investment so that it could provide great benefits to all member countries. This was expected to encourage member countries that have relatively small deficits or surpluses in their trade balance to be able to increase exports of goods compared to increases in imports of their goods. In the long term, trade among ASEAN member countries is dynamic with a higher trade balance value at a steady-state and had to be accompanied by a decreasing trade balance gap over time for each of these member countries. The results of this study are expected to be one of the inputs in an effort to realize ASEAN's vision, namely: ASEAN as a community of Southeast Asian countries that is open, peaceful, prosperous, caring for each other, tied together in dynamic partnership.

## 5. Conclusion

Differences in the initial conditions of the economy (GDP and GDP per capita) and economic openness (the ratio of exports and imports to GDP) in trade, as well as the development of fundamental macroeconomic variables (ER, GDP, and FDI) for ASEAN member countries, determined the steady-state of the different trade balance, so that did not show a convergence pattern of the trade balance among ASEAN countries within the region. Even during the research period 1998–2018, the disparity in the trade balance between ASEAN countries increased significantly. This showed a divergent pattern in the trade balance between ASEAN countries in the region. This divergent pattern of the trade balance could occur due to initial economic conditions, differences in trade openness and developments in economic openness, and developments in macroeconomic variables. However, the divergent pattern could also be caused by conditions of trade supporting facilities and factors as well as the orientation of ASEAN trade cooperation, both in intra-ASEAN and extra ASEAN trade. Another cause might occur due to the more role of foreign investment originating from outside ASEAN (extra ASEAN FDI), dominant in supporting trade activities in the ASEAN region compared to the role of intra-ASEAN FDI.

To reduce the trade balance gap between ASEAN member countries, and increase the volume of intra-ASEAN and extra ASEAN trade and create an attractive area for investment, each ASEAN country had to strive to commit to increasing trade cooperation and improving trade support infrastructure and advice, as well as provide convenience and incentives for foreign investment that can encourage export products for ASEAN member countries.

## References

Alemu, A. M., & Jin-Sang, L. (2014). Examining the effects of currency depreciation on the trade balance in selected Asian economies. *International Journal of Global Business*, *7*(1), 71–84. https://doi.org/10.17010/ijf/2014/v8i7/71903.

Asadullah, M., Bashir, A., & Aleemi, A. R. (2021). Forecasting exchange rates: An empirical application to Pakistani Rupee. *The Journal of Asian Finance, Economics, and Business*, *8*(4), 339–347. https://doi.org/10.13106/jafeb.2021.vol8.no4.0339

Burmansyah, E., (2014). New Regime ASEAN: Understanding Supply Chance and ASEAN Economic Community, Sempu Library and Resistance and Alternatives to Globalization (RAG), Jakarta.

Carvalho, V. M., & Harvey, A. C. (2005). Convergence in the trends and cycles of Euro-zone income. *Journal of Applied Econometrics*, *20*(2), 275–289. https://doi.org/10.1002/jae.820

Chiu, Y. B., Lee, C. C., & Sun, C. H. (2010). The US trade imbalance and real exchange rate: An application of the heterogeneous panel cointegration method. *Economic Modelling*, *27*(3), 705–716. https://doi.org/10.1016/j.econmod.2010.01.011

Edoun, E. I., Mufundisi, T., & Mbohwa, C. (2015). Assessment of the impact of devaluation on trade balance and marketing in Zimbabwe (1990–2005). *Innovative Marketing*, *11*(1), 55–66. https://businessperspectives.org/images/pdf/applications/publishing/templates/article/assets/6355/im_en_2015_01_Edoun.pdf

Gordon, R. J. (2012). *Macroeconomics* (12th ed.). London, UK: Pearson Education.

Irhan, H. B., Alacahan, N. D., & Korap, L. (2011). An empirical model for the Turkish trade balance: New evidence from ARDL bounds testing analyses. *Ekonometri ve İstatistik e-Dergisi*, *14*, 38–61. http://eidergisi.istanbul.edu.tr/sayi14/iueis14m3.pdf

Kennedy, O. (2013). Kenya's foreign trade balance: An empirical investigation. *European Scientific Journal, 9*(19), 25–36. https://doi.org/10.19044/esj.2013.v9n19p%25p

Lipsey, M., & Chrystal, R. (2011). *Economic*s. USA: Oxford University Press.

Muhammad, S. (2010). Determinant of the balance of trade: A case study of Pakistan. *European Journal of Scientific Research*, *41*(1), 1–15. https://ssrn.com/abstract=2003785

Mwakanemela, K. (2014). Impact of FDI inflows, trade openness and inflation on the manufacturing export performance of Tanzania: An econometric study. *International Journal of Academic Research in Economics and Management Sciences*, *3*(5), 151. https://doi.org/10.6007/IJAREMS/v3-i5/1198

Ng, Y. L., Har, W. M., & Tan, G. M. (2008). Real exchange rate and trade balance relationship: An empirical study on Malaysia. *International Journal of Business and Management*, *3*(8), 56–68. https://doi.org/10.5539/ijbm.v3n8p130

Nguyen, H. M., Quaan, B. Q. M., Le, H. V., & Tran, T. V. (2020). Determinants of intra-industry trade between Vietnam and countries in TPP. *The Journal of Asian Finance, Economics, and Business*, *7*(1), 123–129. https://doi.org/10.13106/jafeb.2020.vol7.no1.123

Okodua, H., & Olayiwola, W. K. (2013). Migrant workers' remittances and external trade balance in Sub-Sahara African countries. *International Journal of Economics and Finance*, *5*(3), 134. https://doi.org/10.5539/ijef.v5n3p134

Samuelson, P. A., & William. D. N. (2010). *Economics* (19th ed.). New York: McGraw-Hill.

Santillan-Salgado, R. J., & Ortega-Díaz, A. (2017). Is there convergence or divergence in the international competitiveness of the eurozone countries? In: R. Mirdala & R. R. Canale (Eds), *Economic Imbalances and institutional changes to the Euro and the European Union,* (pp. 387–416). Emerald Publishing Limited.

Tu, M. T. C., & Giang, H. T. T. (2018). Estimating the impact of trade cost on export: A case study Vietnam. *The Journal of Asian Finance, Economics, and Business*, *5*(3), 43–50. https://doi.org/10.13106/jafeb.2018.vol5.no3.43

Zakaria, M. (2014). Effects of trade liberalization on exports, imports and trade balance in Pakistan: A time series analysis. *Prague Economic Papers*, *23*(1), 121–139. http://pep.vse.cz/artkey/pep-201401-0007_effects-of-trade-liberalization-on-exports-imports-and-trade-balance-in-pakistan-a-time-series-analysis.php