



Industrialization During the Implementation of ASEAN Economic Community (AEC) Blueprint 2015

Muhammad Iqbal Mutaqin

Universitas Indonesia, Depok, Indonesia

Australian National University, Canberra, Australia

Email: iqbaljumruk@gmail.com

Abstract

Objective – This paper examines whether the implemented ASEAN Economic Community AEC 2015 measures have a significant effect on ASEAN industrialization.

Design/methodology – The examination was performed by comparing the growth of manufacturing indicators before and after the period of the AEC Blueprint implementation. panel data was used to examine the trend of manufacturing development in ten ASEAN countries: Brunei Darussalam, Cambodia, Indonesia, Lao, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. The panel data analysis examined seventeen years data on ten ASEAN countries that reported manufacturing indicators (mnfemp, mnva, rmva), GDP per capita, and population. The AEC Blueprint is implemented in a specific timeline since the year 2008 by ASEAN countries.

Results – This study found that there are no significant differences in the growth of manufacturing employment and the growth of nominal manufacturing value-added before and after a period of AEC blueprint implementation. Also, the growth of the real manufacturing value-added in the period of AEC blueprint implementation is less than prior AEC era. The findings of this study support studies that criticize the AEC implementation.

Keywords: ASEAN, ASEAN Economic Community, AEC, Industrialization, Manufacturing, Value-added.

1. Introduction

ASEAN countries have the ambition to integrate their economy. To implement the goal, ASEAN leaders set some criterion and timeline of implementation. In 1997, ASEAN launched Vision 2020 as a commitment to make “a stable, prosperous and highly competitive ASEAN Economic Region in which there is a free flow of goods, services and investments, a freer flow of capital, equitable economic development and reduced poverty and socio-economic disparities” (ASEAN, 1997). To realize the vision, in 2003, the ASEAN leaders agreed that the ultimate goal of economic integration is the creation of the ASEAN Economic Community (AEC) by 2020. The vision of AEC is creating ASEAN as a single market and production base through trade and labour liberalization (ASEAN, 2003). In 2007, ASEAN leaders accelerated the target of AEC establishment from 2020 into 2015 and set an economic blueprint that consists of goals and commitments to be implemented in a specific timeline from 2008 – 2015 (ASEAN, 2007).

The implementation of the AEC blueprint is measured through a compliance system called the AEC scorecard. The scorecard measures realization of actions on four AEC pillars which are “Single Market and Production Base (Pillar I), Competitive Economic Region (Pillar II), Equitable Economic Development (Pillar III), and Integration into the Global Economy (Pillar IV)” (ASEAN, 2012). Based on AEC scorecard 2012, ASEAN had implemented 65.9% goals on Pillar I, 67.9% goals on Pillar II, 66.7% goals on Pillar III, and 85.7% goals on Pillar IV (ASEAN, 2012). When the AEC timeline met in 2015, ASEAN reported that it had fully implemented all high priority

measures in Pillar III and IV, and substantially implemented high priority measures in Pillar I and II with 92.4% and 90.5% achievement (ASEAN, 2015a).

Progress of the AEC implementation which is measured by the AEC scorecard reap criticism due to its transparency and method. First, the AEC scorecard is too general for private sectors because it does not provide detail of each country achievement and impact of the agreement on trade liberalization (Das, 2016). Second, the self-assessment method of AEC Scorecard gives an incentive for each country to overestimate its compliance to meet the 2015 deadline (Menon & Melendez, 2017). Third, AEC Scorecard is unsuccessful in capturing the country readiness for liberalization due to flexibility in AEC implementation schedule by using words “minimal” or “where appropriate and possible” (Severino & Menon, 2013).

Due to criticism toward the scorecard, there are two independent research which undertaken to review the AEC implementation. First is a study by ERIA in 2012, under request ASEAN economic ministers, and second is research by CARI in 2013 which funded by CIMB group to support economic integration program. Both studies conclude that the expectation of the realization of AEC in 2015 should be corrected due to many gaps between on paper and actual implementations (CARI, 2013; ERIA, 2012). Despite that implementation gaps, ASEAN managed to achieve major achievement on tariff reduction, trade facilitation, and investment liberalization as a foundation of economic growth (ERIA, 2012). Also, from 2007 – 2014 ASEAN managed to increase its trade by almost \$1 trillion which is dominated by intra-trade region and raise its foreign direct investment from \$86 to \$136 billion (Lehmacher, 2016).

Based on the substantial achievement on implementation of AEC 2015 and to continue unfinished measures of AEC 2015, ASEAN leaders introduced an economic agenda to be fulfilled by 2025 named AEC Blueprint 2025 (ASEAN, 2015b). AEC Blueprint 2025 aims to continue AEC 2015 into a deeper integration and cohesive economy, also involve people contribution in the integration process (Das, 2016).

Despite some unfinished measures of AEC 2015, the claim of fundamental achievement on tariff reduction, trade facilitation, and investment liberalization are forms of structural reform that have a high correlation to manufacturing development. Also, one of AEC 2015 characteristic is “integrating industries across the region to promote regional sourcing and enhancing private sector involvement for the building of the AEC” (ASEAN, 2007). The relevant question here is whether implemented AEC 2015 measures have a significant effect on ASEAN industrialization as an engine of growth and an essential element of global value chain participation.

Based on our observation, recent studies on topic the AEC mainly focus on potential challenges on blueprint implementation (Das, 2016; Menon & Melendez, 2017) (Yean & Das, 2015) and examine the readiness of ASEAN member countries in facing AEC (Austria, 2015; Rüland, 2016; Sermeheep & Chirathivat, 2015; Thanh, 2015; Yean, 2015; Yue & Das, 2015). Other studies use CGE model to measure the impact of AEC to ASEAN economy (Lee, 2011; Petri, Plummer, & Zhai, 2012), that studies estimate the potential effects of AEC blueprint implementation, not empirical impact after policy implementation. The writer wants to fill the gap in the literature by comparing industrialization before and after the implementation of AEC Blueprint 2015.

2. Theoretical Framework

Rostow (1960) argues that all economy must pass five stages of development from “traditional, pre-condition for take-off, take-off, drive to maturity, and mass consumption”. In traditional society, economic activities are characterized by the domination of the agricultural sector with low productivity due to limited access to modern technology (Rostow, 1960). The emergence of bank and manufacturing as the form of the modern economy are signs of pre-condition for take-off. However, in this second stage, advanced economic activities are still limited, and the low productivity sectors

dominate the economy (Rostow, 1960). This second stage also named as a transitional economy, to leap into the take-off stage, a capable centralized national state-led by the political decision is a necessary condition (Rostow, 1960).

When a society managed to overcome resistance from a traditional group into modern economics, society begins to take off. In this take-off stage, supporting-group of economic progress dominate the community, characterized by the emergence of political institutions that support the modernization of the economy (Rostow, 1960). In the maturity stages, the society owns high technology and entrepreneurial skills to move beyond its primary industries and able to choose anything to produce (Rostow, 1960). In the mass consumption stage, society does not view modern technology as an ultimate objective. Still, they will allocate more resources for social welfare and security to create a welfare state (Rostow, 1960).

Rostow (1971) argues that modernization in the economy is a result of the interaction of economic, politics, and social agents. For example, modern transport infrastructure and the creation of financial institutions to support economics activities are the results of government policies (Rostow, 1971). The role of government is essential when a society enters the pre-condition for take-off (Rostow, 1960). When a government has a strong capacity to organize market development, manage tax and fiscal system to fund modernization, the society will spend less time to take-off into advanced economic activities (Rostow, 1960).

Each country needs a different time to move its economy from traditional into manufacturing activities. West countries need 300 years to industrialize their economy. Japan took less than a century, while Hongkong and Taiwan only need about 40 years (Lin, 2011). Governments in developing countries that able to formulate and implement structural changes like Hongkong and Taiwan in their economy can reap economic growth and poverty reduction through industrialization (Lin, 2011). In other word, countries that fail to implement structural transformation from the traditional economy into industry will remain underdeveloped.

3. Empirical Method

There are three indicators of manufacturing share to measure industrialization. The first is manufacturing employment as the proportion of workers in the manufacturing sector to total workers. The second is nominal manufacturing value-added as the proportion of GDP of the manufacturing sector to total GDP (at current prices), and the third is real manufacturing value-added as the proportion of GDP of the manufacturing sector to total GDP (at constant prices) (Rodrik, 2016). In this study, panel data was used to examine the trend of manufacturing development in ten ASEAN countries: Brunei Darussalam, Cambodia, Indonesia, Lao, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. Following Rodrik (2016), manufacturing employment share, nominal manufacturing value-added, and real manufacturing value-added was used to compare the trend of industrialization before and after ASEAN implements AEC Blueprint since

The regression model in this research is referring to Rodrik (2016) as follows:

$$\ln mnfemp_{it} = \alpha_0 + \alpha_1 \ln Pop_{it} + \alpha_2 \ln y_{it} + \sum_i \gamma_i C_i + \beta_1 D_1 + \varepsilon_{it} \quad \dots (1)$$

$$\ln mnva_{it} = \alpha_0 + \alpha_1 \ln Pop_{it} + \alpha_2 \ln y_{it} + \sum_i \gamma_i C_i + \beta_1 D_1 + \varepsilon_{it} \quad \dots (2)$$

$$\ln rmva_{it} = \alpha_0 + \alpha_1 \ln Pop_{it} + \alpha_2 \ln y_{it} + \sum_i \gamma_i C_i + \beta_1 D_1 + \varepsilon_{it} \quad \dots (3)$$

where:

- (i) manufacturing employment (*mnfemp*) = proportion of workers in the manufacturing sector to total workers;
- (ii) nominal manufacturing value-added (*mnva*) = the proportion of GDP of the manufacturing sector to total GDP (at current prices);

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- (iii) real manufacturing value-added (*rmva*) = the proportion of GDP of the manufacturing sector to total GDP (at constant prices 2010 US\$);
- (iv) population (*pop*) = the number of population;
- (v) *y* = GDP per capita (at constant prices 2010 US\$);
- (vi) C_i = country fixed effect;
- (vii) D_i = dummy variable. $D_i = 0$ for period 1 (2000 – 2007), $D_i = 1$ for period 2 (2008– 2016);

In the regression model, the year 2000 – 2007 and year 2008 – 2016 are chosen as a dummy variable (D_1) to compare the trend of industrialization on the period before and after ASEAN implemented AEC blueprint. Population (*pop*) and GDP per capita (*y*) are used to know the relation of population and income to manufacturing development.

Based on country grouping in UNIDO statistics (Upadhyaya, 2013), ten ASEAN countries are divided into three industrial categories. Singapore and Malaysia are among industrialized economies. Five states: Brunei Darussalam, Indonesia, Thailand, Philippines, and Vietnam are categorized as developing and emerging industrial economies. And three countries: Lao, Myanmar, and Cambodia, are classified as least developed countries. Reasoning that most ASEAN countries are in the early stage of industrialization, the manufacturing sector should give a significant contribution to income. Therefore, we expect a positive relationship between GDP per capita (*y*) and manufacturing share.

Population (*pop*) has dual relation to trend of industrialization. If labour-saving industries dominate the manufacturing sectors as the effect of technological progress, Population (*pop*) is negatively related to manufacturing share. And vice versa, if labour-intensive industries dominate the manufacturing sectors, Population (*pop*) is positively related to manufacturing share. However, in developing countries with labour-intensive industries and labour abundant resources, the population could have a negative relation with the manufacturing sector if the population grows faster than manufacturing development.

This article uses country fixed-effects (C_i) to capture any country-specific features that create various baseline conditions for the manufacturing industry in ASEAN countries. We use Brunei Darussalam as a base country due to its characteristics as a country with the smallest population in ASEAN and the least industrialized because resources-extracting activities dominate the economy.

Our regression models in equation (1), (2), and (3) are purposed to compare the trend of industrialization before and after ASEAN has AEC Blueprint, which was implemented since 2008. To carry out that purpose, we need to use a dummy variable for the period before AEC Blueprint (the year 2000 – 2007) and the period of AEC Blueprint (the year 2008 – 2016). In defining dummy variables, we set value $D_1 = 0$ for period 2000 – 2007, and value $D_1 = 1$ for period 2008 – 2016.

The panel data analysis uses seventeen years data on ten ASEAN countries that reported manufacturing indicators (*mnfemp*, *mnva*, *rmva*), GDP per capita, and population. The AEC Blueprint is implemented in a specific timeline since the year 2008 by ASEAN countries. Therefore, we can use dummies for the period before and after years of implementation to compare the effect of AEC Blueprint implementation. Finally, the coefficient of the dummy variable (D_i) resulted from panel data regression can inform us of the comparison of manufacturing indicators before and after the period of AEC Blueprint implementation.

Data

Data of variables used in this paper are secondary data which taken from the World Bank (<https://data.worldbank.org/>). The data collected by The World Bank are coming from various sources such as ILOSTAT database, national accounts data from

the World Bank and OECD, and official statistical publication from many countries. The writer then modifies the data by taking its natural logarithm before fitted into the regression model. Constant prices in this paper mean prices in 2010 US\$.

ASEAN Economic Community, AEC, Industrialization, Manufacturing, Value-Added

Table 1. Source of Data in This Paper

Variable name	Definition	Source*
mfemp	The proportion of workers in the manufacturing sector to total workers	ILOSTAT database
mnva	The proportion of GDP of the manufacturing sector to total GDP at current prices	national accounts data from the World Bank and OECD
rmva	The proportion of GDP of the manufacturing sector to total GDP at constant prices	national accounts data from the World Bank and OECD
pop	Number of populations	statistical publication from many countries
y	GDP per capita at constant prices	national accounts data from the World Bank and OECD

*) all data taken from <https://data.worldbank.org/>

Data of mfemp (proportion of workers in the manufacturing sector to total workers) that the writer took from the World Bank are coming from ILOSTAT. ILOSTAT compiles statistic based on economic activity to compute the share of workers in the manufacturing sector to total workers (ILOSTAT, 2020). Data in ILOSTAT database are coming from automatic data processing, a yearly questionnaire to member states, microdata collection, and projections (ILOSTAT, 2020). The manufacturing sector in this paper refers to section D International Standard Industrial Classification of All Economic Activities (ISIC) Rev. 3, as mentioned in Table 2. Employment in the manufacturing sector in ILOSTAT database means the number of employments that occurred in the industry without paying attention to the type of job (ILOSTAT, 2020).

Table 2. Manufacturing Sector on ISIC Rev. 3 Section D

Section	Division	Description
D	15	Manufacture of food products and beverages
D	16	Manufacture of tobacco products
D	17	Manufacture of textiles
D	18	Manufacture of wearing apparel, dressing and dyeing of fur
D	19	Tanning and dressing of leather, production of luggage, handbags, saddlery, harness and footwear
D	20	Manufacture of wood and products of wood and cork, except furniture, manufacture of articles of straw and plaiting materials
D	21	Production of paper and paper products
D	22	Publishing, printing and reproduction of recorded media
D	23	Manufacture of coke, refined petroleum products and nuclear fuel
D	24	Manufacture of chemicals and chemical products
D	25	Production of rubber and plastics products
D	26	Manufacture of other non-metallic mineral products
D	27	Manufacture of basic metals
D	28	Manufacture of fabricated metal products, except machinery and equipment
D	29	Manufacture of machinery and equipment
D	30	Manufacture of office, accounting and computing machinery
D	31	Manufacture of electrical machinery and apparatus
D	32	Manufacture of radio, television, and communication equipment and apparatus
D	33	Manufacture of medical, precision and optical instruments, watches and clocks

Section	Division	Description
D	34	Fabrication of the motor vehicle, trailers and semi-trailers
D	35	Manufacture other transport equipment
D	36	Manufacture of furniture
D	37	Recycling

The data of variable *mnva* and *rmva* (the proportion of GDP of the manufacturing sector to total GDP at current prices and constant prices) are the net output of industries that fit into divisions number 15-37 ISIC Rev.3 divided by GDP in a country. GDP and net output are the sums of value-added, which is the value of gross output subtracted by intermediate output. *mnva* and *rmva* data taken from the World Bank are coming from OECD and the World Bank national accounts data. National account data itself coming from the questionnaire to the member countries.

Variable *y* (GDP per capita at constant prices) that taken from the World Bank are coming from OECD and the World Bank national accounts data. GDP per capita is the sum of total output divided by the population in a country. Variable *pop* (number of population) is coming from member countries statistical publication compiled by the World Bank. Population in here means all of the residents in a country without paying attention to the status of citizenship.

The data of *mfemp* and *mnva* are available in a percentage format. To be fitted into our empirical model, we modify the form into decimal then take natural logarithm. Data of *rmva* obtained from dividing manufacturing value-added (constant prices) into GDP (constant prices) of ASEAN countries, then we take its natural logarithm before fitted into the regression model. The data of GDP per capita (constant prices) and population are modified into natural logarithm before fitted into the empirical model. The value in natural logarithm enables us to capture the growth of each variable.

The collected data are processed by two software. First is Microsoft Excel, and the second is Stata 13. The writer uses Microsoft Excel to compile data from the World Bank, and Stata 13 is used to process the panel data regression.

Panel data provides more information, more variability, less collinearity, a higher degree of freedom and offer greater efficiency. By having more cross-section units, the panel data could minimize bias which is likely to occur. In the analysis of panel data models, there are three kinds of approaches, namely the least square method (pooled least square), fixed effect approach and random effect approach. Estimation of parameter assumption in this study uses a fixed effect model approach to derive the differences between the individual internations overtime

4. Results and Discussion

From the regression result in table 3, we can see the relationship between population, GDP per capita, and years of implementation of AEC Blueprint to three indicators of industrialization (*ln mnfemp*, *ln mnva*, *ln rmva*).

Table 3. Panel Data Results, Fixed Effect

	<i>ln mnfemp</i>	<i>ln mnva</i>	<i>ln rmva</i>
<i>ln Population</i>	-1.023052***	-1.995091***	-1.259049***
<i>ln GDP per capita</i>	.7265804***	.4929329***	.7320028***
<i>D₁ (year 2008 – 2016)</i>	.038757	.0037784	-.0457525*
<i>Constant</i>	9.57225*	28.01435***	13.62941***
Country fixed effects	Yes	Yes	Yes
Number of countries	10	10	10
Number of observations	170	170	170

Levels of statistical significance: ***99%; **95%; *90%

	<i>ln mnfemp</i>	<i>ln mnva</i>	<i>ln rmva</i>
<i>ln Population</i>	-1.023052***	-1.995091***	-1.259049***
<i>ln GDP per capita</i>	.7265804***	.4929329***	.7320028***
<i>D₁ (year 2008 – 2016)</i>	.038757	.0037784	-.0457525*
<i>Constant</i>	3.872573	18.50135***	6.684763***
<i>C₂ = Indonesia</i>	8.398625***	14.63912***	10.3028***
<i>C₃ = Cambodia</i>	6.21935***	9.264516***	7.311474***
<i>C₄ = Lao PDR</i>	4.294539***	6.872008***	5.676277***
<i>C₅ = Myanmar</i>	7.383663***	11.65345***	8.848881***
<i>C₆ = Malaysia</i>	5.800099***	9.811603***	6.837224***
<i>C₇ = Philippines</i>	7.46006***	12.79455***	9.336922***
<i>C₈ = Singapore</i>	2.599139***	5.372732***	3.236489***
<i>C₉ = Thailand</i>	6.816247***	12.02768***	8.606006***
<i>C₁₀ = Vietnam</i>	8.025057***	12.69441***	9.290357***
Number of countries	10	10	10
Number of observations	170	170	170
Levels of statistical significance: ***99%; **95%; *90%			

ASEAN Economic Community, AEC, Industrialization, Manufacturing, Value-Added

Table 4. Panel Data Results with the Intercept of Each Country, Base = Brunei Darussalam

The coefficient of *ln population* shows a significant and negative value which indicates a negative relationship between the population growth and manufacturing development in ASEAN. The coefficient of *ln GDP per capita* shows a significant and positive value which indicates a positive correlation between the growth of GDP per capita and manufacturing development in ASEAN.

There are two interesting findings in the result. First, the coefficients of dummy variable *D₁* is insignificant with two indicators of industrialization: *ln mnfemp* and *ln mnva*. That results indicate that implementation of AEC blueprint during 2008 – 2016 did not give any effect to the growth of manufacturing employment (*mnfemp*) relative to total employment and the growth of nominal manufacturing value added (*mnva*) relative to total GDP. Second, the negative sign of dummy variable *D₁* to *ln rmva* indicates that the growth of manufacturing value-added in constant prices during the implementation of AEC blueprint during 2008 – 2016 is less than the period before ASEAN has structural reform blueprint.

In the following tables, the writer shows the regression results if we divide ASEAN countries into three industrial categories based on UNIDO statistics: industrialized, emerging industrial economies, and least developed countries. Table 5 shows the regression results in Singapore and Malaysia, which categorized as industrialized nations. The regression results of five states that classified as developing and emerging industrial economies (Brunei Darussalam, Indonesia, Thailand, Philippines, and Vietnam) appear in Table 6. The outcomes of regression from three countries that categorized as least developed nations (Lao, Myanmar, and Cambodia) are shown in table 7.

The regression results in two industrialized nations in ASEAN, Singapore and Malaysia, show insignificant coefficients at all variables in two indicators of industrialization: *ln mnfemp* and *ln rmva*. In another industrialization indicator, *ln mnva*, all independent variables are significant at the 99% level.

	<i>ln mnfemp</i>	<i>ln mnva</i>	<i>ln rmva</i>
<i>ln Population</i>	-.6870895	-1.689778***	-.4544442
<i>ln GDP per capita</i>	-.6700224	.5035433***	.2753863
<i>D₁ (year 2008 – 2016)</i>	.1562741	-.0688816***	-.0423246
<i>Constant</i>	16.32953	21.06797***	3.154528
Country fixed effects	Yes	Yes	Yes
Number of countries	2	2	2
Number of observations	34	34	34
Levels of statistical significance: ***99%; **95%; *90%			

Table 5. Panel Data Results in ASEAN Industrialized Nations

These findings indicate that manufacturing growth does not give a considerable contribution to the growth of GDP per capita except in term of nominal growth of

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manufacture. The relation between the growth of GDP per capita and the growth of two indicators of manufacturing (*mnfemp* and *rmva*) in these two ASEAN industrialized nations is relevant to Rostow (1960) framework. Rostow (1960) states that in maturity stages, the society moves beyond its original industries then allocate more resources to create a welfare state.

The negative and significant signs in the growth of population to $\ln mnva$ indicate that manufacturing sectors are dominated by labour-saving industries as one of the characteristics of manufacturing in a developed nation. The insignificant coefficient of dummy variable D_1 on $\ln mnfemp$ and $\ln rmva$ along with negative and significant signs on $\ln mnva$ indicate that the implementation of AEC blueprint during 2008 – 2016 did not give any effect to the growth of manufacturing. Moreover, the growth of nominal manufacturing value-added is less than the period before ASEAN has a blueprint of structural.

Table 6. Panel Data Results in ASEAN Emerging Industrial Nations

	$\ln mnfemp$	$\ln mnva$	$\ln rmva$
$\ln Population$	-.5600283***	-.4899455	-.618027***
$\ln GDP\ per\ capita$	.6024066***	-.4508457***	.2357818***
$D_1(year\ 2008 - 2016)$	-.0249211	.0469193	-.0399759*
Constant	3.046728	10.64644*	7.194599**
Country fixed effects	Yes	Yes	Yes
Number of countries	5	5	5
Number of observations	85	85	85

Levels of statistical significance: ***99%; **95%; *90%

In ASEAN five emerging industrial countries (Brunei Darussalam, Indonesia, Thailand, Philippines, and Vietnam) the growth of population has a negative and significant relation with three indicators of manufacturing. In those three indicators of manufacturing, only the growth of nominal manufacturing value added has an insignificant relationship with the growth of population. The negative signs indicate that the population grows faster than manufacturing development, as one of the characteristics of labour-intensive industries in developing nations.

The positive and significant relationship between two indicators of manufacturing ($\ln mnfemp$ and $\ln rmva$) and the growth of GDP per capita show that manufacturing is an engine of growth in ASEAN emerging industrial countries. The negative and significant relationship between the growth of GDP per capita and the growth of nominal manufacturing value added ($\ln mnva$) is relevant with the downward trend of the growth of $\ln mnva$ and the upward trend of the growth of GDP per capita in ASEAN industrial emerging nations as summarized in figure 1 and figure 2 below.

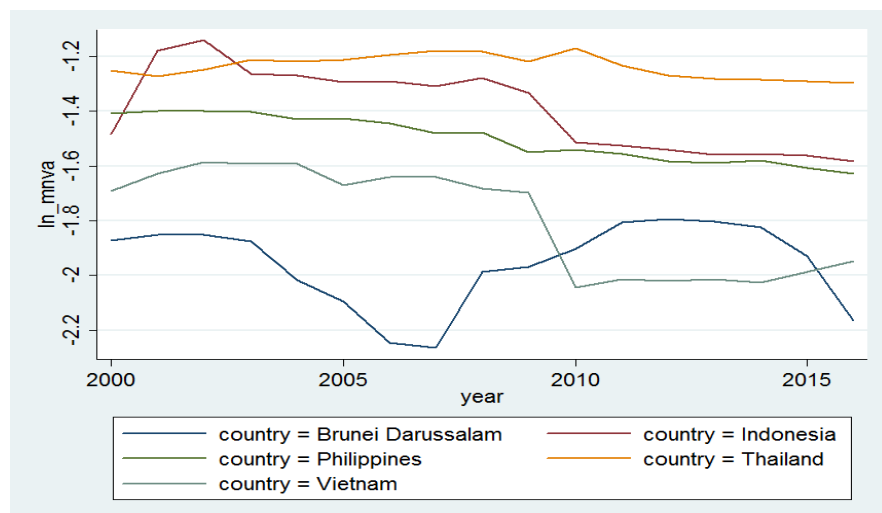
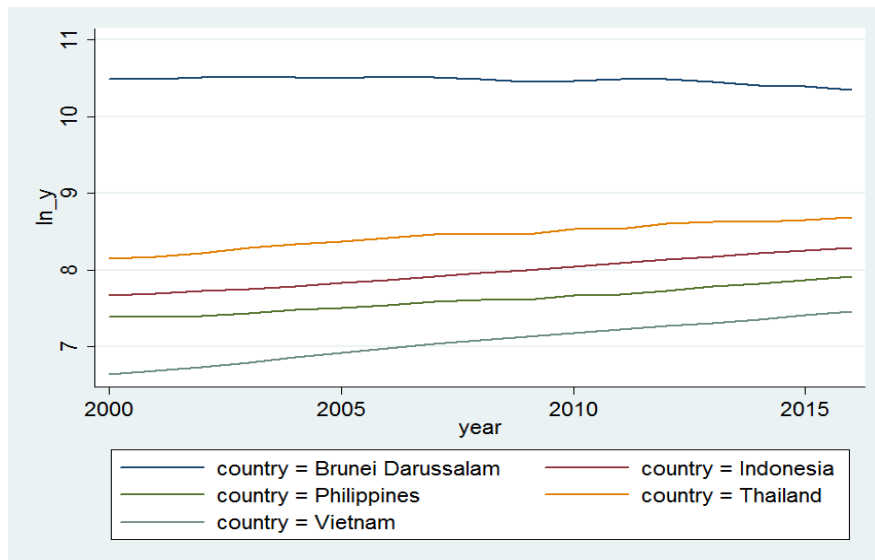


Figure 1. The Trend of the Growth of $\ln_{mnva}$ in ASEAN Emerging Industrial Nations



ASEAN Economic Community, AEC, Industrialization, Manufacturing, Value-Added

Figure 2. The Trend of Growth of GPD per Capita in ASEAN Emerging Industrial Nations

The insignificant coefficients of dummy variable D1 on $\ln mnfemp$ and $\ln mnva$ in five ASEAN developing nations indicate that the implementation of AEC blueprint during 2008 – 2016 did not give any effect to the growth of manufacturing employment and the growth of nominal manufacturing value-added. The negative sign of dummy variable D1 to $\ln rmva$ indicates that the growth of real manufacturing value-added during 2008 – 2016 is less than the period before ASEAN has structural reform blueprint.

	$\ln mnfemp$	$\ln mnva$	$\ln rmva$
$\ln Population$	5.246507***	-4.912611***	-2.848078***
$\ln GDP\ per\ capita$	-.2293071*	1.215587***	1.098756***
$D_1(year\ 2008 - 2016)$	.1035071	-.0149817	-.0173962
Constant	-87.80422***	71.33225***	37.85242***
Country fixed effects	Yes	Yes	Yes
Number of countries	3	3	3
Number of observations	51	51	51

Levels of statistical significance: ***99%; **95%; *90%

Table 7. Panel Data Results in ASEAN Least Developed Nations

In three ASEAN least developed nations, the growth of the population has a positive and significant relationship with the growth of manufacturing employment. Still, it has a negative and significant relation with manufacturing value-added both in nominal and real values. In the other side, the growth of GDP per capita in those nations shows an opposite condition with the growth of population to the growth of manufacturing indicators. That circumstances show that industrialization had taken place in those countries in the form of labour-intensive factories and absorbs employment. However, the manufacturing sectors have not yet functioned as the engine of economic growth. The insignificant coefficient of the dummy variable to all industrialization indicators shows that the implementation of AEC blueprint during 2008 – 2016 did not give any effect to the growth of manufacturing.

Population, GDP per capita, and ASEAN manufacturing development

The negative relationship between population and three indicators of manufacturing, as shown in Table 3 indicates changing employment pattern in ASEAN and lack of infrastructure development. As a region that mostly consists of developing countries that have abundant labour resources, availability of basic infrastructure is a fundamental element to support the development of labour-intensive industries like garment and textile (Mottaleb & Kalirajan, 2014). Tongzon & Cheong (2014) find that slow infrastructure development in ASEAN countries is the main reason for the high

logistic cost that hamper firm efficiency and competitiveness in the international market. Therefore, if infrastructure development is limited, as population increases, inefficient manufacturing sector cannot absorb many workers, then people may shift from manufacturing activities to another sector such as services. This finding also supports Bhattacharyay (2010), who argues that cross border infrastructure development is the main challenge in the creation of a regional production network in ASEAN.

The positive relationship between the growth of GDP per capita (constant 2010 US\$) and three indicators of manufacturing indicates that as income increases, demand for manufacturing goods increases. The increasing demand adds manufacturing employment and value-added both on the real and nominal term. The positive relationship also indicates that manufacturing is an engine of growth in the ASEAN economy.

AEC blueprint implementation and ASEAN manufacturing development

Regression results in Table 3 show that there were no significant differences in the growth of manufacturing employment and the growth of nominal manufacturing value-added before and after a period of AEC blueprint implementation. The insignificant coefficient of D_1 in the growth of manufacturing employment and the growth of nominal manufacturing value-added indicate a stagnation of industrialization during the period of AEC implementation. In other words, we can say that the application of AEC Blueprint does not have an impact on manufacturing. The negative relation of D_1 with the growth of constant manufacturing value-added also supports the indication of stagnation in industrialization, even the growth of real value-added is less than the previous period.

There are some possible explanations of why the industry is stagnant during the period of AEC implementation. First, is due to the gaps between on paper and actual applications of AEC blueprint. Second, is the rising of protectionism in the form of non-tariff barriers in the period of the AEC implementation. And the third is low utilization of free trade agreement by private sectors due to documentation complexities.

If the blueprint is implemented, industrialization should grow significantly. The action plans in the blueprint are supporting liberalization in trade, service, and labour which promote competitiveness and efficiency of manufacturing firms. The stagnation of industrialization in the period of AEC implementation supports finding of studies which argue that expectation on AEC 2015 should be corrected due to gaps between on paper and actual enactment (CARI, 2013; Dosch, 2017; ERIA, 2012). The holes of writing and real implementation are mainly coming from input data method and misleading information.

Using a scorecard as a measure of AEC implementation, the data inputted is coming from each member country without any verification from the independent evaluator. This self-assessment method delivers misleading information because each state has an incentive to overstate the implementation to meet the 2015 deadline (Dosch, 2017; Menon & Melendez, 2017). The example of misleading information is the achievement of trade liberalization in ASEAN. On the paper report, ASEAN Secretariat stated that 95.99% of the intra-trade tariff is at 0% (ASEAN, 2015a). However, the 95.99% achievement of 0% tariff is not using total intra-ASEAN trade as numeraire, but the share of listed goods in the ASEAN trade agreement (Dosch, 2017).

Rise of protectionism in ASEAN also considered as a factor that hampers industrialization and economic integration in ASEAN. Ing et al., (2016) state that through several trade agreements, ASEAN tariff was reduced from 8.9% in 2000 to 4.5% in 2015. However, in the same period, non-tariff barriers were also rising from less around 1,500 measures in the year 2000 to about 6,000 rules in 2015 (Ing et al., 2016).

Non-tariff barriers that rise significantly during the period of AEC implementation is a kind of conflicting relation between economic nationalism and ASEAN re-

gionalism. The political initiative from countries to integrate ASEAN economy at the same time is opposed by domestic businesses that seek protection from the government. ASEAN Secretariat also acknowledges the prevalence of non-tariff barriers imposed by member countries in the form of anti-dumping, countervailing, quantity restriction, safeguards, and technical obstacles (ASEAN, 2015b). The rise of non-tariff barriers in the period of AEC implementation reflects the reluctance of ASEAN member countries to integrate their economy and a sign of failure in responding domestic pressure that against regional liberalization (Chandra, 2016).

The low utilization of trade agreement by the private sector also explains why during the period of the AEC implementation industry was stagnant. In 2012, a survey indicated that only less than a third private sector used preferential tariff from ASEAN trade agreement (CARI, 2013). Moreover, in intra-ASEAN trade, Hill & Menon(2014) argue that preferential tariff in ASEAN is only used less than 10% from total business. The leading cause of this low utilization is the cost proving of preferential tariff through Rules of Origin (RoO) and the complexity in complying document administration (CARI, 2013; Dosch, 2017).

5. Conclusions

This paper has examined whether AEC blueprint that was implemented from 2008 has a significant effect on the manufacturing activities in ASEAN. By using panel data regression, we find that there are no significant differences in the growth of manufacturing employment and the growth of nominal manufacturing value-added before and after a period of AEC blueprint implementation. Also, the growth of the real manufacturing value-added in the period of AEC blueprint implementation is less than prior AEC era.

The findings support studies that criticize AEC implementation. First, AEC implementations reap criticism from several studies due to its transparency and input method. The lack of transparency and self-assessment approach has resulted in many gaps between on paper and actual implementations due to overstated achievements from ASEAN member countries (CARI, 2013; ERIA, 2012). Second, free trade agreements resulted from AEC blueprint were not used by ASEAN firms. Private sectors in ASEAN complained about the cost proving of preferential tariff through Rules of Origin (RoO) and its complexity in complying document administration (CARI, 2013). Third, the rising of protectionism in the form of non-tariff barriers in the period of AEC implementation is considered as a factor that hampers industrialization and economic integration in ASEAN.

In the theoretical framework, Rostow(1960) states that strong capacity from the government is a crucial element to accelerate the transformation from pre-condition for take-off into the take-off stage. The lack of transparency in achievement and the rising of protectionism during the AEC implementation period is a sign of failure of ASEAN as a regional government to coordinate the interaction of economic, politic, and social agents. Also, the stagnation of industrialization in ASEAN during the period of AEC implementation reflects lack capacity of ASEAN to accelerate the regional transformation from pre-condition for take-off into the take-off stage.

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