



CENTRE FOR
STRATEGIC AND
INTERNATIONAL
STUDIES

Economics Working Paper 02 – 2016

Trade in Goods under the AEC: A New Map of Competitiveness for Indonesia

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November 2016

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Abstract

AEC is an incentive for Indonesia to improve its competitiveness and efficiency due to the facts that extra-ASEAN export competition will be intensified at the completion of AEC and the high level of export similarity between ASEAN members. With the largest population and the largest GDP, abundance in terms of natural resources, and large potential in agriculture and fisheries, Indonesia is well equipped to gain the largest benefits from AEC in comparison to other countries. However, challenges in industrial development, infrastructure, bureaucracy and human resources impede Indonesia's competitiveness, especially in ASEAN.

The issue of competitiveness is all the more important as Indonesia also needs to take more active part in the East Asia supply chain, especially in electronic component and automotive sector, which require strong manufacturing base. In this short paper, description of Indonesia's trade with ASEAN at a glance is provided through trade and value-added trade statistics. The paper will delve deeper into the issue of competitiveness by looking at Real Effective Exchange Rate, Total Factor Productivity and Unit Labor Cost, as well as at the Constant Market Share Analysis.

Keywords: Trade in goods, competitiveness, global value chain, Indonesia in AEC context

1. Introduction

The AEC is due to be officially realized by Dec. 31, 2015, five years ahead of the original deadline. With the realization of AEC, ASEAN will gradually become a single market and production base, a highly competitive economic region, a region of equitable economic development, and a region fully integrated into the global economy.

It goes without saying that the establishment of AEC will create challenge as well as opportunity for Indonesia, especially that of trade in goods and services. Larger market and freer movement of goods and factors of production will facilitate a more efficient and larger scale of production of goods and services. The main challenge for Indonesia in this new more competitive environment, especially in trade in goods, is to continually increase its competitiveness relative to other ASEAN member countries.

The purpose of this paper is to provide an overview of opportunity and competitiveness challenge for Indonesia under AEC. We organize the paper as follows. Section 2 provides a brief overview of commitments under the AEC blueprint. In Section 3 we provide survey of literature on possible impacts of AEC on Indonesian economy. Section 4 and 5 examine recent trade pattern and development between Indonesia and ASEAN. Special emphasize the role of Indonesia on ASEAN production network is given in Section 5. Section 6 provides an analytical narrative on the stage of Indonesia's competitiveness vis a vis other ASEAN member counties. The final section sums up and asses some policy suggestion for Indonesia to answer the challenge posed by and opportunity created by AEC.

2. Overview of Commitments under the AEC Blueprint

The AEC is due to be officially realized by Dec. 31, 2015, five years ahead of the original deadline, following an acceleration agreement signed by ASEAN leaders in Cebu. The AEC lists each ASEAN member's commitment pertaining tariff liberalization, elimination of non-tariff barriers (NTB), Rules of Origin, Trade Facilitation, standard and compliance, customs and phytosanitary measures. Indonesia's commitments in terms of trade in goods under the AEC include ASEAN trade in Goods Agreement (ATIGA) as well as the agreement on ASEAN Single Window.

The ATIGA entered into force on 17 May 2010, replacing the Common Effective Preferential Tariff (CEPT) under AFTA. With regards to tariff barriers, ATIGA Form D shall be issued in lieu to CEPT form D. Indonesia made the following commitment for

tariff liberalization that was to be fulfilled by 1 January 2009 (official document of ATIGA):

- Import duties of at least eighty percent (80%) tariff lines are eliminated; - Import duties on all Information and Communications Technology (ICT) products, as defined in the e-ASEAN Framework Agreement, are eliminated;
- Import duties on all Priority Integration Sectors (PIS) products are at zero percent (0%), except those listed in the accompanying negative lists to the Protocols of the ASEAN Framework Agreement for the Integration of Priority Sectors and any amendments thereto; and
- Import duties on all products are equal to or less than five percent (5%);
- Import duties on unprocessed agricultural products listed in Schedule D of each Member State on its own accord shall be reduced or eliminated to zero to five percent (0-5%) by 2010 for ASEAN-6;

In response to ATIGA, the Ministry of Finance of the Republic of Indonesia issued the regulation of the minister of Finance, or *Peraturan Menteri Keuangan (PMK)* in 2010 and 2012 concerning the tariff elimination schedule. The document 128/PMK.011/2010 on import tariff was issued on the 12th July of 2010 lists the tariff schedules and the obligation in regards to Form D under ATIGA. Following this regulation, the Ministry of Finance of the Republic of Indonesia issued the document 208/PMK.011/2012. Since 2010, more than 90% of tariffs have already been set at zero.

With regards to NTBs under the ATIGA, Indonesia shall eliminate the identified NTBs in its non-tariff measures database in three tranches by 1 January of 2008, 2009 and 2010¹.

The ASEAN Single Window (ASW) was developed in order to facilitate trade by means of providing an integrated platform of partnership among government agencies and end-users such as economic operators, transport and logistics operators in the movement of goods (ASEAN Trade Facilitation Document).

As per the agreement, Indonesia commits to develop and operationalize their National Single Windows by 2008, at the latest. Indonesia has activated its National Single Windows (NSWs) and has successfully conducted the electronic exchange of information of the Common Effective Preferential Tariff (CEPT) Form D using a regional platform (ASEAN Trade Facilitation Document).

¹ The list of identified NTBs can be found in <http://www.asean.org/communities/asean-economic-community/item/non-tariff-measures-database>

3. The Impact of AEC on Indonesian Economy

3.1 Benefits and Challenges at a Glance

Essentially, AEC will result in larger market access to other ASEAN members, including the fast growing CLMV. In addition, the process of integration of individual ASEAN markets into a single market of AEC will provide an incentive for Indonesia to improve its competitiveness and efficiency in order to be competitive in intra-ASEAN trade. Nevertheless, at the completion of AEC, extra-ASEAN export competition will be intensified, as ASEAN members has high level of export similarity. If Indonesia is to be successful in AEC, the reward would be a long term welfare gain, if not; a deadlock in economic growth is to be expected.

Indonesia has the largest population in ASEAN, as well as the largest GDP, and thus presents a large opportunity for other ASEAN countries. Indonesia is also abundant in natural resources, and has large potential in agriculture (especially compared to Thailand, as well as other ASEAN member countries) and fisheries. Therefore, Indonesia should have the potential to gain the most benefits from AEC.

The booklet “**Menuju AEC 2015**” released by the Ministry of Trade of the Republic of Indonesia mentioned the top 10 commodities of ASEAN countries. All of the natural resource-based commodities in the aforementioned list are Indonesia’s top exports to the world. As stated by the Ministry of Trade, Indonesia’s mainstay commodities include textiles and textile products, electronic components, rubber and its derivatives, palm oil and its derivatives, forest products, footwear, automotive vehicles, prawn, cocoa, coffee. Indonesia is one of the world’s largest suppliers for cocoa, coffee and natural rubber.

Nevertheless, recent industrial performance has been less than satisfactory. Fisheries sector and agricultural sector has weak competitiveness in ASEAN. Indonesia also faces competition from Vietnam in prawns and textiles, while Thailand is Indonesia’s largest competitor in automotive supply chain in ASEAN.

In order to be competitive in ASEAN, Indonesia needs to build a strong manufacturing base and to raise the quality of human capital. However, Indonesia is facing ongoing problems in terms of infrastructure (logistic, energy supply as well as transportation) and inefficient bureaucracy. In addition, the ongoing debate on minimum wage versus productivity, as well as the high lending rate in Indonesia contributes to the high cost of production in manufacturing sector. Meanwhile, increasing the quality of human capital has been an ongoing issue as reforms in healthcare and education have not yet produced fruitful results, and thus impedes

improvement in services sector. Hereditary problems caused by overlapping and unsuitable regulations have also left problems in Indonesia's economy.

On top of these challenges, Indonesia needs to take more active part in the East Asia supply chain, especially in electronic component and automotive sector, which require strong manufacturing base.

3.2 Impact of AEC on Output and Employment

A large portion of investigation on the impact of AEC on regional economy are conducted using computable general equilibrium (CGE) model. The CGE model is an ex-ante simulation model in a general equilibrium setting used to analyze the potential costs and benefits of a PTA before the implementations.

One recent study by ADB and ILO estimates using CGE model that the implementation of trade measures under the AEC could lead to a 7.1% increase in ASEAN GDP by 2025, with the largest gains obtained by lower-income ASEAN Member States².

In terms of welfare, a study by Petri, Plummer and Zhai found that the full implementation of the AEC would raise ASEAN real incomes by \$69.4 billion, or 5.3 percent over 2004 baseline income by 2015³. Based on the study, Singapore will reap the largest gain with 9.7% increase in real incomes, followed by Cambodia and Indonesia with 6.3% and 6.2% increase in real income respectively. These benefits do not appear to be related to per capita income levels.

Additionally, simulations in Petri, Plummer and Zhai also show that raw materials output will mostly shrink relative to the baseline, while manufacturing and services output likely to rise relative from the baseline. Manufacturing industries such as electrical equipment, machinery, metals lead the expansion with increases in the 30% range. The increase in services sectors reflects the sectors' linkages with manufacturing sector, but nevertheless is not as large as increase in manufacturing.

Using dynamic CGE model, a study by Plummer and Lee suggests that reducing administrative and technical barriers (e.g. streamlining customs procedures and mutual recognition of product standards) and lowering the trade and transport margins (e.g. through increased competition and improvements in infrastructure) are significant in

² ADB and ILO (2014), "ASEAN Economic Community 2015: Managing Integration for Better Jobs and Shared Prosperity"

³ Plummer, M.G., Petri, P.A., Zhai, F. (2010), "The Economics of the ASEAN Economic Community," Working Papers 13, Brandeis University, Department of Economics and International Business School.

enlarging the benefits of the AEC⁴. Reductions in frictional trade costs as well as the trade and transport margins was found to have significant effects on economic welfare as deviations in equivalent variations, while allowing for endogenously determined productivity levels has a small impact. The estimated welfare gains for the year 2015 is 1.1% for Indonesia, much lesser to that of Thailand at 9.4%.

Plummer and Lee's simulation results also show significant output expansion in 2015 is to be expected in textiles, metals, machinery, electronic and transportation sectors. On the other hand, significant contraction in output is to be expected in rice, coal, oil and gas, processed food and apparel. Petri, Plummer and Zhai also shows significant output contraction in primary materials through further simulations of CGE models⁵. Meanwhile, textiles, machinery and electrical, as well as transportation shows expansion of output.

Several studies also estimated the impact of AEC on the growth and shifts of sector employment. The previous study by ADB and ILO⁶ estimated a net increase of 14 million jobs in Cambodia, Indonesia, Lao People's Democratic Republic, Philippines, Thailand and Viet Nam. The largest demand will be for low- and medium-skill jobs. This is consistent with the findings in the study by Petri, Plummer and Zhai in 2014, in which CGE model shows that the rise in sector employment tends to be dominated by increasing jobs in the informal sectors, with the exception of the Philippines⁷.

Nevertheless, the study by ADB and ILO also found that high-skill occupations is projected to growth the fastest in some economies. High-skill employment growth between 2010-2025 in Indonesia, Cambodia, Lao People's Democratic Republic, Philippines, Thailand and Viet Nam is estimated to be 41% with half of the gain in Indonesia.

⁴ Lee, H. & Plummer, M.G. (2011), "Assessing the Impact of the ASEAN Economic Community," OSIPP Discussion Paper 11E002, Osaka School of International Public Policy, Osaka University.

⁵ Plummer, M.G., Petri, P.A., Zhai, F. (2012), "ASEAN Economic Community: A General Equilibrium Analysis," Asian Economic Journal, East Asian Economic Association, vol. 26(2), pages 93-118, 06.

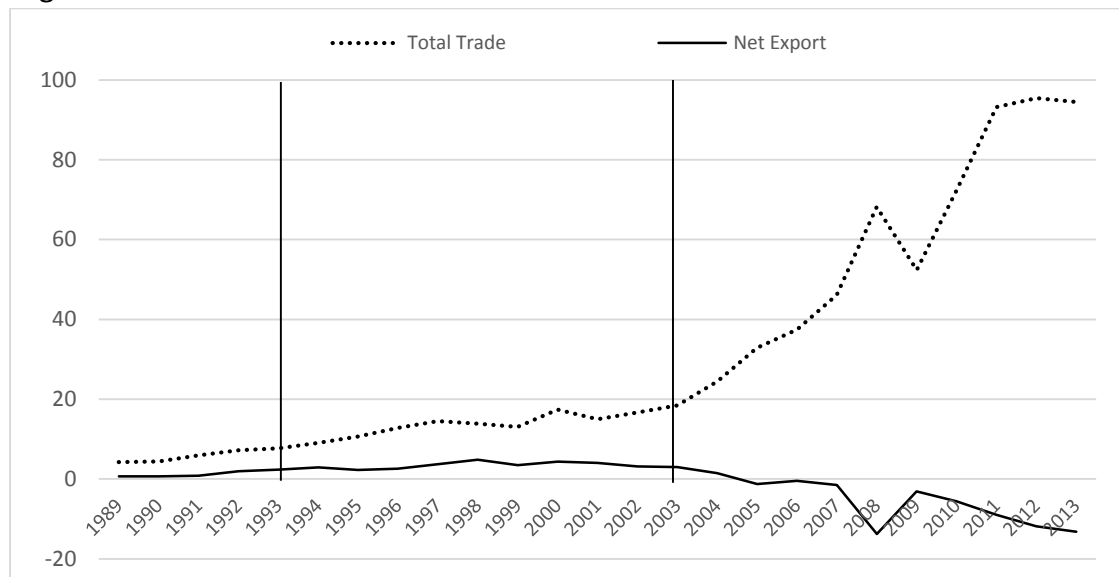
⁶ ADB and ILO (2014), "ASEAN Economic Community 2015: Managing Integration for Better Jobs and Shared Prosperity"

⁷ Plummer, M.G., Petri, P.A., Zhai, F. (2014), "Assessing the Impact of ASEAN Economic Integration on Labour Markets," ILO Working Papers 486351, International Labour Organization.

4. Bilateral Trade Pattern

Figure 1 provides general trend of Indonesia's trade relation with other ASEAN countries. Some observations could be made in relation to this relationship. First, Indonesia's total trade with ASEAN has increasing trend throughout 1989-2013.

Figure 1. Indonesia's Trade with ASEAN

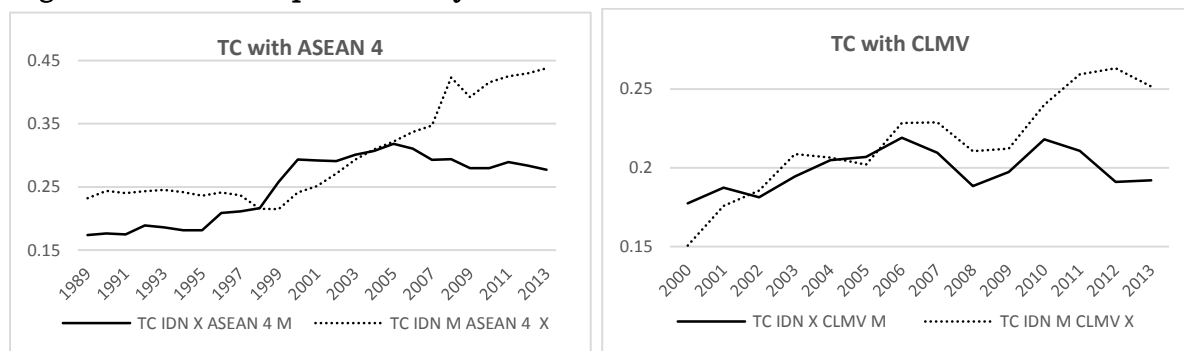


Source: COMTRADE

Second, the trend of negative relationship between Indonesia's total trade and trade balance with ASEAN is even more pronounced since 2003. In reality, there are two point of changes, namely on 1993 and 2003, during which Indonesia's total trade with ASEAN increases with faster rate than the previous periods. This suggests that the intensity of Indonesia's trade with other ASEAN countries acquired a significant boost with the starting of AFTA in 1993 and the amendment of AFTA import duties elimination schedule in 2003.

Trade complementarity between Indonesia and ASEAN remain low throughout the years (Figure 2). For the past decade, complementarity between Indonesia's exports and ASEAN's imports remain around 0.25. On the other hand sharp increase in complementarity between Indonesia's imports and ASEAN's exports are observed, reaching 0.44 in 2013 from 0.3 in 2003.

Figure 2. Trade Complementarity



Source: COMTRADE

In comparison to other major trade partners of Indonesia - namely China and Japan, ASEAN's portion in Indonesia's total trade has significantly increased. By 2013, 51.75% of Indonesia's trade is conducted with ASEAN – a more than 4 times increase in portion compared to 1993⁸.

Few changes are observed in terms of Indonesia's trade partner within ASEAN. For one, more than 90% of Indonesia's trade with ASEAN are conducted with ASEAN 4 – Singapore, Thailand, Malaysia and the Philippines throughout the years.

Among this group of countries, Singapore is Indonesia's largest trade partner. Until 2013, Singapore's share in Indonesia's trade with ASEAN is still larger than 40%. Nevertheless, this is much less compared to 1993, in which Singapore's portion was 67.47%.

Along with the decline in trade with Singapore, trade with Malaysia and Thailand picked up to double their respective amounts in 1993. Trade with Malaysia occupied 25.39% from the previous 14.41% in 1993. Similar pattern occur with Thailand, in which trade nearly doubled to 17.74% in 2013 from the previous 9.18% in 1993. In the case of Thailand, the increase in trade portion is driven by the increase in the share of imports from Thailand. As for Malaysia, it is driven by increase in the share of exports to Malaysia.

Meanwhile, the annual growth of total trade with CLMV in the last few years are much larger in comparison to those with ASEAN 4 despite the considerably smaller portion of trade with these countries. From 2009 to 2013, the growth of total trade with CLMV has exceeded the growth of total trade with ASEAN 4. Vietnam remains the largest trade partner of Indonesia among the CLMV countries in 2013 with a share of

⁸ Interestingly, as trade with ASEAN intensified, the bulk of trade China increased significantly from 1993 to 2013. While China previously occupied 3.3% of Indonesia's total trade, by 2013 China occupied a share of 28.73% in Indonesia's total trade.

5.42% in total trade with ASEAN - nearly three times larger than Cambodia, Laos and Myanmar combined.

Changes occurred in terms of the composition of exports and imports to and from ASEAN are depicted in Table 1. In the last two decades, more than 40% of Indonesia's imports from ASEAN are consumer goods. Meanwhile, Indonesia's largest exports to ASEAN countries are intermediate goods. Nevertheless, the share of consumer and capital goods exports are picking up after 2003, while the shares of consumer and capital goods imports are declining.

Table 1. Composition of Trade with ASEAN

	Average % of Share								
	Exports to ASEAN			Imports from ASEAN			Total Trade with ASEAN		
	1989 - 1993	1994 - 2003	2004 - 2013	1989 - 1993	1994 - 2003	2004 - 2013	1989 - 1993	1994 - 2003	2004 - 2013
Intermediate goods	50.05%	30.45%	33.58%	27.16%	27.05%	21.03%	40.87%	29.14%	26.82%
Raw materials	24.38%	19.65%	19.53%	12.23%	10.67%	11.66%	19.45%	16.18%	15.15%
Consumer goods	19.46%	23.78%	23.47%	36.74%	42.04%	46.52%	26.47%	30.89%	35.80%
Capital goods	6.11%	26.12%	23.41%	23.87%	20.25%	20.79%	13.21%	23.79%	22.23%

Source: COMTRADE

The above trend drives the general pattern of total trade composition with ASEAN. Although intermediate goods occupies the largest average % of share in Indonesia's total trade with ASEAN, its average % share has declined significantly after 1993. In turns, the average % share of consumer and capital goods has increased since 1993, notably the average % share of capital goods.

Looking at top 100 commodities that are traded between Indonesia and ASEAN in 2013, several patterns are also observed. First, trade with CLMV are more diversified in comparison to trade with ASEAN 4 at this level.

Second, trade in raw materials in 2013 are largely centred in mineral products sector – 86.83% and 84.43% of exports and imports to ASEAN came from this sector in 2013⁹. A snapshot of top 20 traded commodities with ASEAN is provided in Table 2. By 2013, natural gas in gaseous state occupies 12.8% of ASEAN's import basket from Indonesia. Meanwhile 39.3% of Indonesia's import from ASEAN is non-crude petroleum oil.

⁹ The fact that Indonesia's trade with ASEAN are largely found in mineral products sector is undisputable. Looking at the average % share of Indonesia's trade with ASEAN, mineral sector has remained the largest shareholder in Indonesia's trade with ASEAN throughout the years, with most of the traded commodities classified as consumer goods, and to a lesser extent raw materials.

Third, HS 6 (chemical and allied products) and 7 (plastic and rubbers) each occupies slightly over 30% of Indonesia's top imported intermediate goods from ASEAN by 2013. Nearly 60% of Indonesia's exports of intermediate goods to ASEAN are largely concentrated in HS section 15 (metals) and mineral products.

Fourth, trades in top 100 capital goods with ASEAN are largely centred in HS section 16 (machinery or electrical). More than 65% of capital goods traded with ASEAN 4 in 2013 came from this section, while the rest came from section 17 (vehicles and transport). Meanwhile, around 88% of Indonesia's imports of capital goods from CLMV are from HS section 16, while the rest are from mineral products and vegetable products sectors. Nearly 64% of Indonesia's exports of capital goods to CLMV countries are from HS section 3 (animals and vegetable oils), the rest come from HS section 15.

Fifth, export composition of consumer goods in the basket of top 100 commodities are more diversified in comparison to imports composition of consumer goods: around 89% of Indonesia's imports from ASEAN in 2013 came from mineral products sector. Meanwhile, around 60% of exported consumer goods to ASEAN are mineral products, with three other leading export sections, HS section 4 (prepared foodstuffs and beverages), 5 (mineral products) and 3 scores reasonably high portion in the export basket to ASEAN.

Even though few changes occur in bilateral trade pattern between Indonesia and ASEAN, a possible "diversion" pattern is found during separate observations on trade with ASEAN 4 and CLMV. First, % share of raw materials exports in CLMV imports basket from Indonesia increases while % share raw materials exports in ASEAN 4 imports basket from Indonesia declined. Secondly, % share of intermediate goods in imports from ASEAN 4 declined while at the same time % share of intermediate goods in imports from CLMV increases – similar pattern is also found in capital goods.

The trade complementarity index figure (Figure 2) seems to reflect some of these observations, as a steady decline is observed in the complementarity between Indonesia's imports and ASEAN's exports. Nevertheless, this possible diversion to CLMV is not significant enough to affect complementarity index figures between Indonesia and CLMV as evidenced by Figure 2.

Table 2. Profile of Top 20 Traded Commodities with ASEAN

Export Product Code	HS Product Code	UNCTAD Sop Description	Product Description	Export Value in 2013	Rank of Exports in 2013	Rank of Imports in 2014
271121	27	Consumer goods	Natural gas in gaseous state	12.77%	1	
270900	27	Raw materials	Petroleum oils and oils obtained	5.92%	2	2
271390	27	Intermediate goods	Other residues of petroleum oils ,	5.62%	3	
270112	27	Raw materials	Bituminous coal, not agglomerated	4.79%	4	
800110	80	Intermediate goods	Tin not alloyed unwrought	3.32%	5	
270119	27	Raw materials	Other coal, not agglomerated, nes	2.97%	6	
151190	15	Consumer goods	Palm oil (excl. crude) and liquid f	2.10%	7	
271000	27	Consumer goods	Petroleum oils, etc, (excl. crude);	1.67%	8	1
382390	38	Intermediate goods	Chemical products and residual prod	1.48%	9	88
240220	24	Consumer goods	Cigarettes containing tobacco	1.46%	10	
151110	15	Intermediate goods	Crude palm oil	1.34%	11	
740311	74	Intermediate goods	Copper cathodes and sections of cat	1.11%	12	
740811	74	Intermediate goods	Wire of refined copper of which the	1.04%	13	
180100	18	Raw materials	Cocoa beans, whole or broken, raw o	0.97%	14	
870322	87	Consumer goods	Automobiles with reciprocating pist	0.93%	15	3
480252	48	Intermediate goods	Paper... (excl. mechanical fibres),	0.92%	16	
710812	71	Intermediate goods	Gold in unwrought forms non-monetar	0.88%	17	
840991	84	Capital goods	Parts for spark-ignition type engin	0.83%	18	21
854219	85	Capital goods	Monolithic integrated circuits, nes	0.75%	19	6

Source: COMTRADE

Import Product Code	HS Product Code	UNCTAD Sop Description	Product Description	Import Value in 2013	Rank of Exports in 2013	Rank of Imports in 2014
271000	27	Consumer goods	Petroleum oils, etc, (excl.crude);	39.28%	8	1
270900	27	Raw materials	Petroleum oils and oils obtained	2.76%	2	2
870322	87	Consumer goods	Automobiles with reciprocating pist	1.27%	15	3
170111	17	Intermediate goods	Raw cane sugar, in solid form	1.16%		4
852520	85	Capital goods	Transmission apparatus, for radiote	1.15%		5
854219	85	Capital goods	Monolithic integrated circuits, nes	1.05%	19	6
870899	87	Capital goods	Motor vehicle parts nes	1.03%	34	7
390210	39	Intermediate goods	Polypropylene, in primary forms	1.01%		8
271320	27	Intermediate goods	Petroleum bitumen	0.95%		9
290243	29	Intermediate goods	p-Xylene	0.83%		10
390110	39	Intermediate goods	Polyethylene having a specific grav	0.73%		11
841510	84	Capital goods	Air conditioning machines window or	0.69%		12
290531	29	Intermediate goods	Ethylene glycol (ethanediol)	0.65%		13
390230	39	Intermediate goods	Propylene copolymers, in primary fo	0.62%		14
390120	39	Intermediate goods	Polyethylene having a specific grav	0.59%		15
870421	87	Capital goods	Diesel powered trucks with a GVW no	0.55%		16
847120	84	Capital goods	Digital auto data process mach cntg	0.55%		17
290121	29	Intermediate goods	Ethylene	0.53%		18
842952	84	Capital goods	Shovels and excavators with a 360 r	0.53%	55	19

5. Indonesia and ASEAN in Global Production Network

5.1 Value-Added Trade of Indonesia and ASEAN

The increasing interdependency of the global economy could be indicated by the general increase in the foreign content of exports. Since 1995, a general increase in the foreign content of exports are observed, saved for the period 2008-2009 due to the impact of GFC on trade. In Indonesia's case, the contribution of foreign value-added in gross exports has been declining since 2000, and only recently picked up slightly 11.97% in 2011.

Throughout the years, domestic value-added content of Indonesia's exports has always been higher than the foreign value-added content. Nevertheless, it has stayed below the ASEAN average since 2005. By 2011, foreign value-added was 36.82% of Indonesia's gross exports whereas it occupied 32.89% of ASEAN's gross exports.

For ASEAN and Indonesia, the foreign value-added contribution to gross exports is relatively low in mining, agriculture, hunting, forestry and fishing. Both Indonesia and ASEAN are well connected to global value chains in industries such as machinery and electronics as those are sectors with the highest percentage of foreign value-added in their gross exports. Nevertheless, the foreign value-added content in Indonesia's gross exports of machinery and electrical are much lower than the ASEAN. For machinery and electrical, 38% and 27% of the value of Indonesia's gross exports consist of embodied foreign value-added, indicating that Indonesia is involved in processing activities. Meanwhile, 54% and 51% of ASEAN's gross exports are foreign value-added.

Although the foreign value-added content in gross exports is lower for textile products, but a high percentage of imported intermediate inputs in these products are used to produce exports. In fact, in 2011 the highest usage of intermediate input imports for exports was found in textiles industry. Similar cases are also found in woods and chemicals (Table 3).

Table 3. Imported intermediate inputs used in exports (% total imports of intermediate inputs)¹⁰

Industry	%
Textiles, textile products, leather and footwear	28.88
Machinery and equipment, nec	20.99

¹⁰ It reflects the share of intermediate imports that are used (indirectly and directly) in producing goods and services for export, as a per cent of total intermediate imports (by import category). The indicator provides a measure of the importance of intermediate imports to produce goods and services for export and their role as a source of international competitiveness

Electrical and optical equipment	20.53
Wood, paper, paper products, printing and publishing	20.33
Chemicals and non-metallic mineral products	16.47
Transport equipment	15.32
Manufacturing nec; recycling	14.47
Food products, beverages and tobacco	11.52
Basic metals and fabricated metal products	10.69

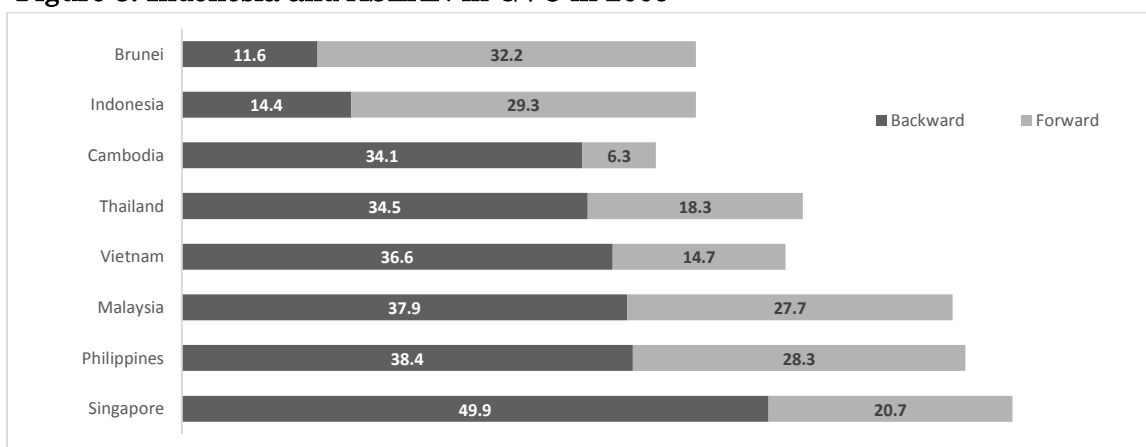
Source: OECD TiVA

Based on trade in value-added data, interdependency between ASEAN (including Indonesia) and global economy is the highest in machinery and electrical sector. On another note, Indonesia's exports are concentrated on mineral products, and hence the country's specialisation is in specialises in activities at the beginning of the value chain (upstream) such as mining that might explain the higher domestic value added content in its exports.

5.2 Participation in GVCs

Another indicator of a country's involvement in GVC is the GVC participation index (Koopman, 2010). It is expressed as the sum of backward participation index and forward participation index. Backward participation index measures the proportion of imported inputs, or foreign value added in the overall exports of a country, that is, the value of imported intermediate inputs in the overall exports of a country. Forward participation index measures the proportion of domestic inputs, or domestic value added of a country in the overall exports of third countries.

Figure 3. Indonesia and ASEAN in GVC in 2009



Source: OECD

Overall, Indonesia's participation in GVC is relatively low compared to the other ASEAN countries – its participation is slightly higher than Cambodia and lower than Vietnam (Figure 3).

Higher levels of backward participation indicates higher amount of international production stages as opposed to domestic ones¹¹. As seen in Figure 3, Indonesia is the second lowest in terms of the level of backward participation. The high level of forward participation could be explained by Indonesia's exports of natural resources. Indonesia's participation in the GVC is the highest in mining and chemicals, 13.6% and 7.32% respectively, which is probably due to the intermediate goods exports that are then used in other country's exports.

5.3 Distribution of Gains in GVCs

If gains are measured in terms of 'net value-added' by participation in GVCs, then higher the forward linkages as compared to backward linkages implies higher gains. This implies that a country is creating and exporting more domestic value-added than compared to importing foreign value added (Table 4).

Table 4. Ratio of Forward to Backward Participation

	Participation (%)			Ratio		
	2000	2005	2009	2000	2005	2009
Singapore	69.36	74.76	70.66	0.37	0.43	0.42
Philippines	63.23	74.33	66.65	0.38	0.63	0.74
Malaysia	62.56	68.74	65.57	0.45	0.65	0.73
Thailand	49.08	55.87	52.82	0.41	0.45	0.53
Vietnam	47.63	52.88	51.35	0.61	0.51	0.40
Indonesia	42.99	49.23	43.72	1.22	1.76	2.03
Brunei	40.25	45.38	43.72	2.87	5.73	2.78
Cambodia	43.32	42.72	40.33	0.25	0.13	0.18

Source: OECD

Singapore has high level in terms of participation in GVCs. Nevertheless it has much stronger backward linkages as compared to its forward linkages throughout the years, implying lower net domestic value-added – that is, domestic value-added that

¹¹ The backward and forward participation index measures the participation of a country in GVC through upstream and downstream links respectively. Combining the VS and VS1 shares, one can have a comprehensive assessment of the participation of a country in GVCs, both as a user of foreign inputs (upstream links, i.e. backward participation) and supplier of intermediate goods and services used in other countries' exports (downstream links, i.e. forward participation).

enters other countries' exports is much lower than what Singapore imports from other countries. This, to a lesser extent also observed in the case of Philippines and Malaysia.

Meanwhile, Indonesia's participation in GVC is considerably low throughout the years. Nevertheless, its net domestic value-added is the second highest throughout the years.

6. Indonesia's Competitiveness Compared to Other ASEAN Countries

The previous discussion examined the opportunities made available by the establishment of the AEC. A more open and accessible flow of goods, services, capital, and to a certain degree, flow of human capital, implies that competition among ASEAN countries will increase. Hence, to take advantage of Indonesia's involvement in the AEC, the country should continuously strive to improve the competitiveness of its economy.

In general, Indonesia does not have a problem with the competitiveness of its economy and has managed to achieve relatively rapid economic growth with little fluctuation. Indonesia's average economic growth has managed to reach 5.3% in the years since the Asian Financial Crisis (AFC). Lately, Indonesia has always ranked second or third among the G20 countries in terms of economic growth. Macroeconomic management also remains prudent. Indonesia's government has succeeded in reducing their government debt to GDP ratio drastically since the AFC, and it currently holds a debt to GDP ratio that is among the lowest in the region. With careful economic management, Indonesia has managed to withstand the Global Financial Crisis (GFC) with minimal negative impact to its economy.

However, the recent good performance of the Indonesian economy will not necessarily be sustainable or able to withstand the challenges that arise from a dynamic global environment or even those that come with the implementation of the AEC. In the first place, the international economic situation is forecasted to remain sluggish. Secondly, the recent relatively good performance is supported by the commodities boom and capital inflow from OECD countries that are seeking higher returns due to the US Quantitative Easing (QE) policies. However, the commodities boom has ended and the QE policies will soon be expiring. Third, and most importantly, some of the indicators for international competitiveness point to poor performance from Indonesia, which will be discussed further.

There are several underlying reasons for Indonesia's recent weakening competitiveness. Firstly, over the past few decades, Indonesia has increased their terms

of trade during commodities booms. The consequence of an increase in the terms of trade is the appreciation of the real effective exchange rate (REER), due to the increase in the nominal exchange rate, and/or the escalation of Indonesia's inflation relative to its trading partners. As aforementioned, Indonesia has been experiencing capital inflow from OECD countries that are seeking higher returns. Increased capital inflow into Indonesia has contributed to the appreciation of the rupiah in real terms. At the end of the 1998 crisis, Indonesia suffered considerable depreciation in the rupiah. However, Indonesia's high inflation at the time compared to its trading partners eroded the boost in its competitiveness from this depreciation.

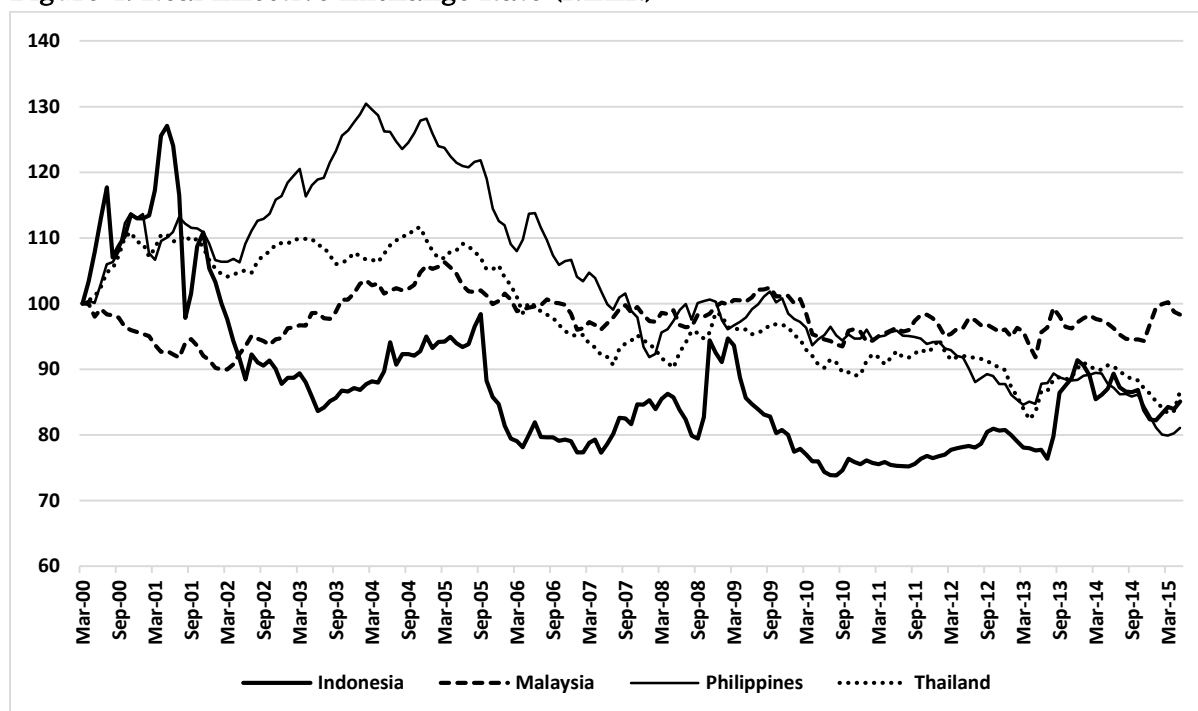
Secondly, Indonesia's competitiveness weakened due to a failure to conduct post-AFC regulatory reform. Looking back to the mid-1980s, Indonesia undertook large-scale reforms when falling oil prices led to an economic crisis. These major reforms produced a healthier and more diversified economy with reduced dependence on the oil and gas sector and increased participation from the private sector. Deregulation fatigue occurred in the early 1990s, which led to the 1998 economic (and political) crisis. In 1998, large-scale economic and political reforms resumed and most of these reforms were able to restore the economic growth. However, it also led to a more assertive parliament, a rainbow cabinet, a weaker presidential institution, reduced legal certainty, and a more active civil society, which gave rise to policies that tend to be more populist and nationalistic in nature.

The third underlying reason for Indonesia's weakened competitiveness is that, while Indonesia is gaining new competitors in other countries with lower labor costs such as Vietnam and Bangladesh, Indonesia has yet to improve the technological sophistication of its production relative to other countries, such as the BRICS. This section discusses the various indicators of Indonesia's competitiveness relative to those of other ASEAN countries.

6.1 Real Effective Exchange Rate

Figure 4 illustrates the Real Effective Exchange Rate (REER) trend for Indonesia, Malaysia, the Philippines, and Thailand over the period of 2000–2015. A downward movement indicates appreciation of the REER, either due to nominal exchange rate appreciation or high inflation. Hence, a downward trend indicates a potential for weakening competitiveness.

Figure 4. Real Effective Exchange Rate (REER)



Source: see Appendix B

Figure 4 exhibits some of the salient features of Indonesia's economic competitiveness compared to its neighboring countries. Firstly, throughout the period of 2000–2013, Indonesia lost competitiveness compared to its neighboring ASEAN countries. Only after a rather sharp depreciation in the rupiah in 2013 did Indonesia experience an increase in competitiveness. Secondly, these depreciation episodes were due to capital outflow, which occurred in the midst of political instability in the early 2000s and global shock in 2009 and 2013. Apart from these episodes, Indonesia's REER tended to appreciate, indicating a loss of competitiveness. Thirdly, Indonesia's REER is more volatile compared to the REER of its neighboring countries. This volatility of the REER further weakens Indonesia's competitiveness, especially towards long-term investment.

Hence, Indonesia's REER figures is consistent with the Dutch Disease literature, which states that a commodities boom leads to an appreciation of the real exchange rate and a reduction in the competitiveness of tradable sectors that are excluded from the commodities that experienced a boom.

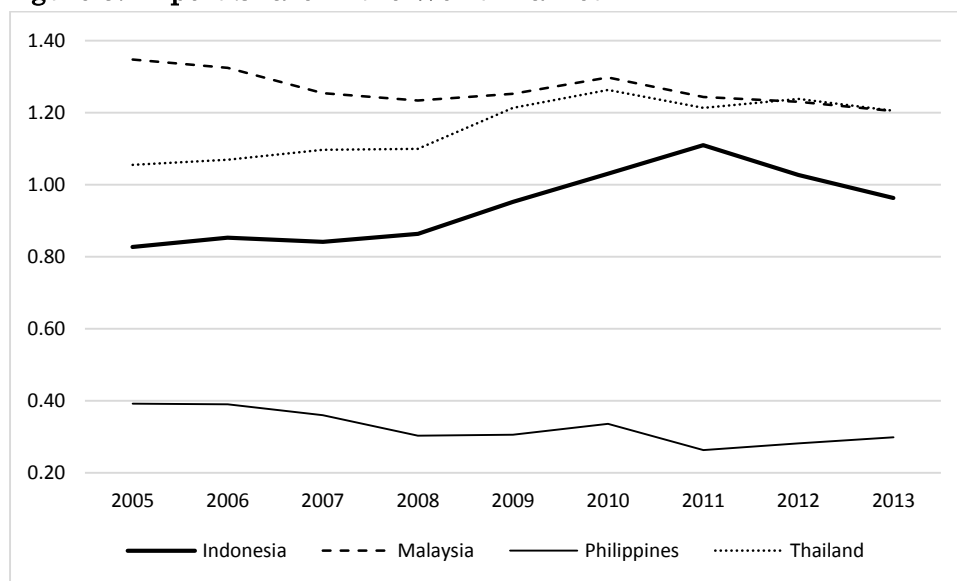
6.2 Constant Market Share Analysis

One of widely used techniques in quantitative international economics is Constant Market Share Analysis (CMSA). It is essentially a decomposition technique

that decomposes a country's export performance over time into a 'structural effect', sometimes also referred to as commodity composition effect; an 'adaptation effect', sometimes also referred to as a market distribution effect; and a 'competitiveness effect'. That is, the growth of exports can be attributed to the general growth of world exports, the commodity mix of these exports, and the extent to which established export markets are growing more or less quickly relative to global growth. The residual competitiveness effect, which is the gain or loss in market share, is assumed to be attributable to the relative prices of a country's exports. The commodity composition effect will be positive if world demand for that commodity is growing strongly; for example, palm oil over the past decade in the case of Indonesia. Similarly, the market distribution effect will be positive if a country's exports are heavily directed towards high-growth markets. In Indonesia's case over the past decade, for example, that would include China and India. The residual competitiveness term is at best suggestive, and subject to well-known limitations.

Before we present the CMSA analysis for ASEAN, it is important to show the changes in Indonesia's export share in the world market. Figure 5 shows that trend.

Figure 5. Export Share in the World Market



Source: COMTRADE

Indonesia's share in world exports increased dramatically throughout 2008–2011, before finally showing a downward trend that lasted until 2014. The increase in market share does not necessarily indicate an increase in Indonesia's competitiveness within the international market however, as this period coincided with rising demand and prices of Indonesia's export commodities. When demand fell in 2011, Indonesia's market

share also decreased. This increase in market share from 2008-2011 and the lower market share after 2011 indicate a product composition effect within the CMSA.

The following Table 5 shows the competitiveness effects for Indonesia, Malaysia, Philippines, and Thailand.

Table 5. Competitiveness Effects

	2006-10	2007-11	2008-12	2009-13	2006-13
Indonesia	-0.004	0.009	-0.008	-0.011	-0.014
Malaysia	-0.016	-0.016	0.029	-0.011	-0.015
Philippines	0.621	0.084	0.166	0.017	0.889
Thailand	0.012	0.005	0.000	-0.001	0.017

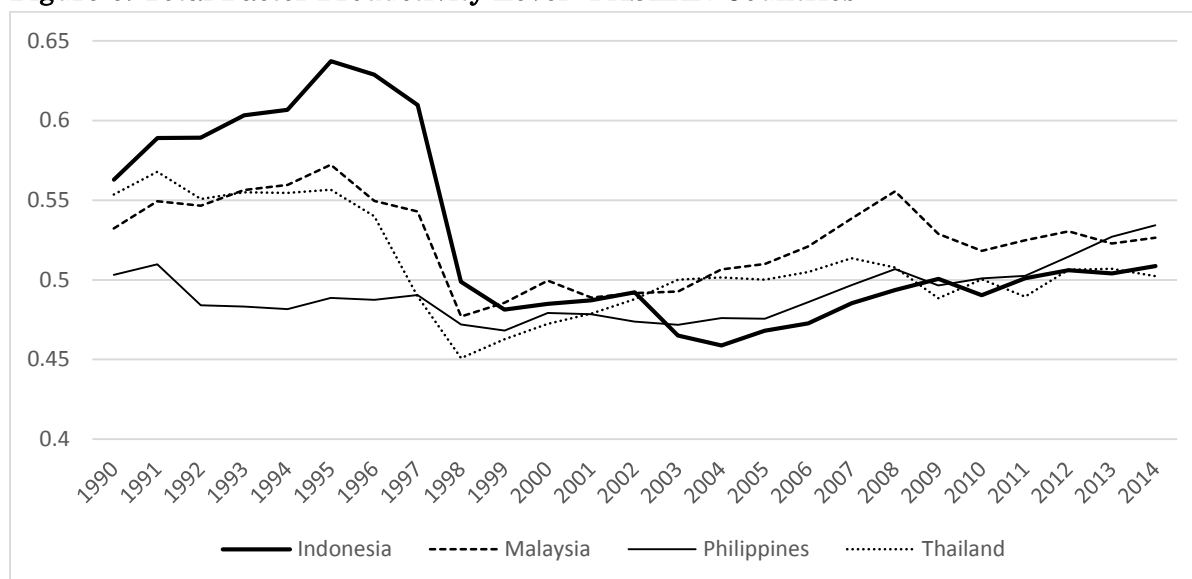
Source: see Appendix B

Compared to the Philippines and Thailand, Indonesia shows a negative competitiveness effect more often. Only in the period of 2007-2011 did Indonesia show a positive competitiveness effect. Overall, throughout 2006-2013 the loss of export competitiveness has led to a decrease in Indonesia's market share by 0.014 percent (0.014%). Conversely, lower competitiveness effects have provided significant positive contributions in the export growth of the Philippines and Thailand. Hence, Indonesia's export growth is driven by demand, rather than the ability to produce competitive export commodities in terms of price and quality. This structural weakness has caused Indonesia (as well as Malaysia, which is also rich in natural resources) to be more vulnerable to shocks in international demand.

6.3 Total Factor Productivity

Quite a significant amount of research exists on Total Factor Productivity (TFP) in Indonesia, although most of it is outdated. As such, we used the internationally estimated TFP published by the Conference Board, who provides the most recent estimates up until 2014. The Conference Board only provides TFP growth data. Penn World Tables 8.1 shows Indonesia's TFP level relative to the US. We used data consisting of Indonesia's TFP level in 1990 (from Penn), US TFP growth, and ASEAN TFP growth in order to calculate the TFP level of ASEAN countries relative to the US up until 2014.

Figure 6. Total Factor Productivity Level: 4 ASEAN Countries



Source: see Appendix B

A few conclusions can be drawn from Figure 6. Firstly, TFP growth follows GDP growth (pro-cyclical). This pro-cyclical phenomenon is particularly evident in the 1998 AFC and to a lesser degree during the 2008 GFC. This empirical regularity is consistent with Verdoorn's Law on TFP and economic growth. With the exception of these two crisis periods, Indonesia and other ASEAN countries generally experienced positive TFP growth. Secondly, the average TFP growth in Indonesia has been much lower since the AFC and is slowing down. Thirdly, Indonesia had the highest TFP level right before the AFC, but also suffered the largest deterioration compared to its neighboring countries. In addition, these neighboring countries also recovered more quickly, while Indonesia continued to experience a crisis period up until 2004, after which its TFP level started to rise. Due to this drastic fall in Indonesia's TFP level and slower economic recovery, by 2014 Indonesia's TFP level was below that of Malaysia and the Philippines.

6.4 Unit Labor Costs

Post-AFC employment policies were more pro-labor in nature compared to employment policies pre-AFC. This policy change has implications on production costs, especially in labor-intensive sectors. In this section, we will review these changes by examining Unit Labor Costs (ULC). Figure 7 shows labor productivity, average wage, and ULC for Indonesia's manufacturing sector.

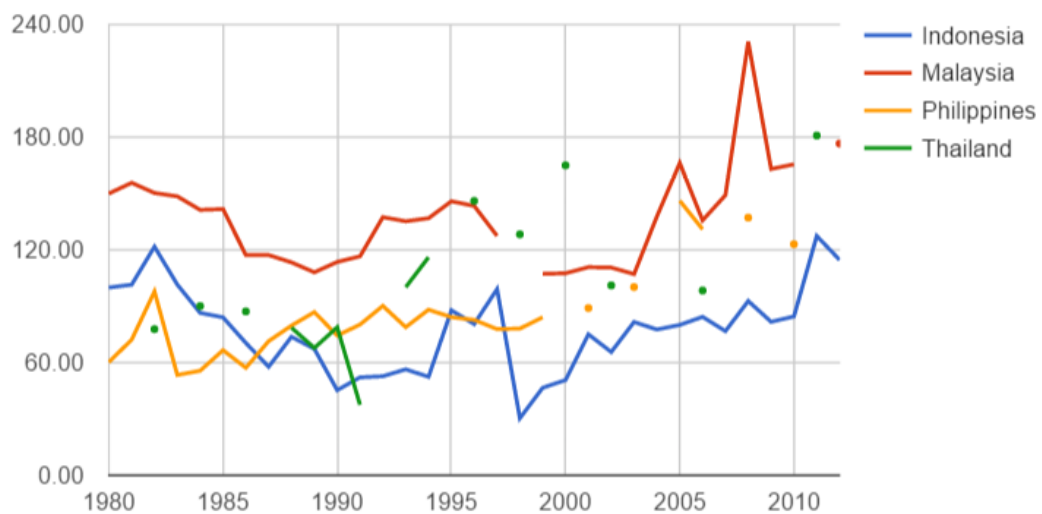
Figure 7. Indonesia's Labor Productivity, Average Wage, and Unit Labor Cost for Manufacturing Sector



Source: see Appendix B

The data depicted in the Figure 7 shows that throughout 2000-2014, average wage grew much more rapidly than labor productivity. As a result, ULC increased 3.5-fold. The highest wage growth occurred in early 2000, as a reasonable adjustment to the high inflation during the 1998 crisis. Wages soared again during 2012-2014, while labor productivity showed no significant change.

Figure 8. Unit Labor Costs: Four ASEAN Countries



Source: see Appendix B

Indonesia is not the only country that experienced a rapid increase in wages (see Figure 8). Neighboring countries, namely Malaysia and Thailand, also experienced a significantly high inflation of wages. Therefore, relatively speaking, Indonesia's ULC remained competitive at least until 2012. Unfortunately, the data available does not include the surge in wages in 2013 and 2014. The sharp increase in Thailand's ULC in 2011 is mainly due to a decrease in their productivity as a result of a massive flooding in 2011, rather than the increase in wages (the surge in minimum wages only occurred in 2012).

6.5 Infrastructure

The performance of Indonesia's infrastructure has been studied intensively, being made a top priority in the SBY era and an even higher priority in the Jokowi era. Infrastructure planning in SBY era has resulted in a master plan for infrastructure development, embodied in MP3EI. In the logistics field, the Logistic Blueprint was also published. The 2015 state budget issued in the Jokowi era set aside Rp. 300 trillion for infrastructure. Despite this large amount, transportation between islands in this archipelagic state is indeed great, and extremely high cost. The high cost of logistics pushes up the price structure in general, especially in areas far from Java. For example, Sandee et al (2014) provided comparative data that demonstrated that Indonesia's logistics cost is much higher than that of its more efficient neighbors. This logistic report also showed that in Tanjung Priok, Indonesia's biggest port, throughput rate increased by twofold during 2007-2013. Nevertheless, there were no significant additions to its facilities.

Logistic problems in Indonesia arose due to low investment in infrastructure, as well as various regulatory barriers. Indonesia's infrastructure investment to GDP ratio post-AFC was half of the ratio in the Soeharto era. Regulations that did not encourage competition in the logistics sector further exacerbated the poor performance of this sector. In contrast to the deregulation within the field of air transportation, which encouraged competition and led to the rapid growth of the sector, the sea transportation sector has become increasingly restrictive. The 2008 Shipping Law reinforced the cabotage principle, which emphasized shipping in Indonesian waters for domestic-owned vessels. Although the government continues to increase its commitment towards infrastructure development, whether the government is also able to eliminate crucial barriers in the logistics sector such as the lack of coordination between central and local

governments and the ambivalent policy environment within the logistics sector, still remains to be seen.

7. Summary and Policy Suggestions

With the establishment of AEC significant output expansion in 2015 is to be expected in production and trade in goods especially textiles, metals, machinery, electronic and transportation sectors. On the other hand, significant contraction in output is to be expected in several commodities such as rice, coal, oil and gas, processed food and apparel. The key to enlarge the benefits of AEC is by reducing administrative and technical barriers (e.g. streamlining customs procedures and mutual recognition of product standards) and lowering the trade and transport margins (e.g. through increased competition in logistic sector and improvements in infrastructure)

In term of employment the largest beneficiary will be those who work in low- and medium-skill jobs. This is consistent with the findings in the study by Petri, Plummer and Zhai in 2014, in which CGE model shows that the rise in sector employment tends to be dominated by increasing jobs in the informal sectors, with the exception of the Philippines. High-skill employment growth between 2010-2025 in Indonesia, Cambodia, Lao People's Democratic Republic, Philippines, Thailand and Viet Nam is estimated to be 41% with half of the gain in Indonesia.

Indonesia's total trade with ASEAN has increasing trend throughout 1989-2013. The trend of negative relationship between Indonesia's total trade and trade balance with ASEAN is even more pronounced since 2003. One of the challenges to advance trade between Indonesia and other ASEAN member country is the low trade complementarity between Indonesia and ASEAN. It means Indonesia needs to sharpen its comparative advantage vis a vis other ASEAN member countries. Participation in ASEAN production network will also help in sharpening the division of labour among ASEAN member countries including Indonesia

In comparison to other major trade partners of Indonesia—namely China and Japan, ASEAN's portion in Indonesia's total trade has significantly increased. ASEAN also help Indonesia to diversify its export destination, the annual growth of total trade with CLMV in the last few years are much larger in comparison to those with ASEAN 4 countries despite the considerably smaller portion of trade with these countries.

ASEAN also help Indonesia in diversifying its exports basket. In the last two decades, more than 40% of Indonesia's imports from ASEAN are consumer goods.

Meanwhile, Indonesia's largest exports to ASEAN countries are intermediate goods. Nevertheless, the share of consumer and capital goods exports are picking up after 2003, while the shares of consumer and capital goods imports are declining.

Nevertheless, Indonesia exports are concentrated in mineral products and need further diversification. Looking at top 100 commodities that are traded between Indonesia and ASEAN in 2013, several patterns are also observed. First, trade with CLMV are more diversified in comparison to trade with ASEAN 4 at this level. Second, trade in raw materials in 2013 are largely centred in mineral products sector. Third, trades in top 100 capital goods with ASEAN are largely centred in HS machinery or electrical). Possible "diversion" pattern is found during separate observations on trade with ASEAN 4 and CLMV

Turning to ASEAN production network, the indicators shows that Indonesia is left behind compare to other ASEAN countries, even with Vietnam. Throughout the years, domestic value-added content of Indonesia's exports has always been higher than the foreign value-added content. Nevertheless, it has stayed below the ASEAN average since 2005. Foreign value-added content in Indonesia's gross exports of machinery and electrical are much lower than the ASEAN. The common stylized fact with regard to global production network phenomenon is that global production network tends to clustered around machinery and electrical sector. Similarly, interdependency between ASEAN (including Indonesia) and global economy is the highest in machinery and electrical sector.

Overall, Indonesia's participation in GVC is relatively low compared to the other ASEAN countries – its participation is slightly higher than Cambodia and lower than Vietnam. The high level of forward participation could be explained by Indonesia's exports of natural resources. Indonesia's participation in the GVC is the highest in mining and chemicals, 13.6% and 7.32% respectively, which is probably due to the intermediate goods exports that are then used in other country's exports. Nevertheless, Indonesia's net domestic value-added is the second highest throughout the years.

The key challenge for Indonesia to reap the full benefits of AEC is to raise the competitiveness of its production and distribution goods and services. Our analysis shows clearly that Indonesia has a potential and, in some respects actual, 'competitiveness problem'. First, the well-known Dutch Disease effect of commodity boom contributed to the decline of Indonesia's competitiveness through its appreciating effects on real exchange rate. Experience in 1960s and mid 1980s and 1998 suggest that exchange rate policy can be a very effective tool in managing adjustments to large

external shocks. However, without increasing productivity the country will have to regularly depreciate its currency to boost competitiveness. Moreover, depreciation of currency will reduce real incomes in international prices and hence against the development goal, to quickly graduating to higher middle-income status.

Second, if the current trend in the rapid rise of wages, especially in manufacturing sector, without commensurate increase in productivity, continue, Indonesia will lose its labour costs advantage vis a vis other ASEAN countries. It is the classic middle income trap, in which labour costs is no longer competitive vis a vis lower wage countries such CLMV, but the sophistication of its product is no longer competitive to the higher wage countries such as Malaysia and Thailand. It is necessary, that the government revised its labour policy. For example, restore the minimum wage policy to its proper role as safety net and leave larger role for enterprise bargaining based on individual productivity. Similarly, the declining total factor productivity indicates that there are ample room to improve economic efficiency and productivity. The key to increase productivity is competition, freer movement of goods services and factor of production and bureaucratic reform. AEC is one of the key vehicles to achieve those effects. Moreover, through ASEAN exchange of regulatory experience government official may introduce policy best practice that will enhance productivity

Finally, global production network requires adequate infrastructure, efficient logistic and efficient supporting services for production and trade. Indonesia is clearly left behind in this respect. It is therefore imperative for Indonesia to improve its infrastructure and logistic through increase investment in infrastructure and remove various regulatory barriers the hinder the development of efficient logistic. Several specific policy suggestion have been discuss among policy makers and stake holders, such as speedier and increase certainty in land acquisition, increase capacity for project preparation and a more rational pricing policy for infrastructure and public utilities.

Appendix A. HS Sections

Section	Description
1	LIVE ANIMALS; ANIMAL PRODUCTS
2	VEGETABLE PRODUCTS
3	ANIMAL OR VEGETABLE FATS AND OILS AND THEIR CLEAVAGE PRODUCTS; PREPARED EDIBLE FATS; ANIMAL OR VEGETABLE WAXES
4	PREPARED FOODSTUFFS; BEVERAGES, SPIRITS AND VINEGAR; TOBACCO AND MANUFACTURED TOBACCO SUBSTITUTES
5	MINERAL PRODUCTS
6	PRODUCTS OF THE CHEMICAL OR ALLIED INDUSTRIES
7	PLASTICS AND ARTICLES THEREOF; RUBBER AND ARTICLES THEREOF
8	RAW HIDES AND SKINS, LEATHER, FURSKINS AND ARTICLES THEREOF; SADDLERY AND HARNESS; TRAVEL GOODS, HANDBAGS AND SIMILAR CONTAINERS; ARTICLES OF ANIMAL GUTRAW HIDES AND SKINS, LEATHER, FURSKINS AND ARTICLES THEREOF; SADDLERY AND HARNESS; TRAVEL GOODS, HANDBAGS AND SIMILAR CONTAINERS; ARTICLES OF ANIMAL GUT (OTHER THAN SILK-WORM GUT)
9	WOOD AND ARTICLES OF WOOD; WOOD CHARCOAL; CORK AND ARTICLES OF CORK; MANUFACTURES OF STRAW, OF ESPARTO OR OF OTHER PLAITING MATERIALS; BASKETWARE AND WICKERWORK
10	PULP OF WOOD OR OF OTHER FIBROUS CELLULOSIC MATERIAL; RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD; PAPER AND PAPERBOARD AND ARTICLES THEREOF
11	TEXTILES AND TEXTILE ARTICLES
12	FOOTWEAR, HEADGEAR, UMBRELLAS, SUN UMBRELLAS, WALKING-STICKS, SEAT-STICKS, WHIPS, RIDING-CROPS AND WALKING-STICKS, SEAT-STICKS, WHIPS, RIDING-CROPS AND PARTS THEREOF; PREPARED FEATHERS AND ARTICLES MADE THEREWITH; ARTIFICIAL FLOWERS; ARTICLES OF HUMAN HAIR
13	ARTICLES OF STONE, PLASTER, CEMENT, ASBESTOS, MICA OR SIMILAR MATERIALS; CERAMIC PRODUCTS; GLASS AND GLASSWARE
14	NATURAL OR CULTURED PEARLS, PRECIOUS OR SEMI-PRECIOUS STONES, PRECIOUS METALS, METALS CLAD WITH PRECIOUS METAL AND ARTICLES THEREOF; IMITATION JEWELLERY; COIN
15	BASE METALS AND ARTICLES OF BASE METAL
16	MACHINERY AND MECHANICAL APPLIANCES; ELECTRICAL EQUIPMENT; PARTS THEREOF; SOUND RECORDERS AND ELECTRICAL EQUIPMENT; PARTS THEREOF; SOUND RECORDERS AND REPRODUCERS, TELEVISION IMAGE AND SOUND RECORDERS AND REPRODUCERS, AND PARTS AND ACCESSORIES OF SUCH ARTICLES
17	VEHICLES, AIRCRAFT, VESSELS AND ASSOCIATED TRANSPORT EQUIPMENT
18	OPTICAL, PHOTOGRAPHIC, CINEMATOGRAPHIC, MEASURING, CHECKING, PRECISION, MEDICAL OR SURGICAL INSTRUMENTS AND APPARATUS; CLOCKS AND WATCHES; MUSICAL INSTRUMENTS; PARTS AND ACCESSORIES THEREOF
19	ARMS AND AMMUNITION; PARTS AND ACCESSORIES THEREOF
20	MISCELLANEOUS MANUFACTURED ARTICLES

21	WORKS OF ART, COLLECTORS' PIECES AND ANTIQUES
22	LIVE ANIMALS; ANIMAL PRODUCTS
23	LIVE ANIMALS; ANIMAL PRODUCTS
24	VEGETABLE PRODUCTS

Appendix B. Competitiveness Indicators

Constant Market Share

The world market share

$$\frac{X_i^t}{X^{t\dots}} = \sum_j \sum_k \frac{X_{ijk}^t}{X^{t\dots}} = \sum_j \sum_k \frac{X_{ijk}^t}{X_{.jk}^t} \cdot \frac{X_{.jk}^t}{X^{t\dots}}$$

i = exporting country

j = destination country

k = industry or product

The world market share of exporting country i in time t is the ratio between the country's total exports (X_i^t) and world exports ($X^{t\dots}$)

The structural effect of initial specialisation on import markets

$$\sum_j \sum_k \frac{X_{ijk}^0}{X_{.jk}^0} \cdot \left(\frac{X_{.jk}^t}{X^{t\dots}} - \frac{X_{.jk}^0}{X^{0\dots}} \right)$$

Hypothetical gains or losses in a country's aggregate market share that would occur if changes were only due to the dynamism of import markets, regardless of any variations in the country's market shares in these markets.

Competitiveness effect

$$\sum_j \sum_k \frac{X_{.jk}^0}{X^{0\dots}} \cdot \left(\frac{X_{ijk}^t}{X_{.jk}^t} - \frac{X_{ijk}^0}{X_{.jk}^0} \right)$$

Hypothetical gains or losses of a country's aggregate market share that would occur if changes were only due to variations in the country's market share in import markets, regardless of the structure of the country's exports.

Adaptation effect

$$\sum_j \sum_k \left(\frac{X_{.jk}^t}{X^{t\dots}} - \frac{X_{.jk}^0}{X^{0\dots}} \right) \cdot \left(\frac{X_{ijk}^t}{X_{.jk}^t} - \frac{X_{ijk}^0}{X_{.jk}^0} \right)$$

Measures a country's ability to adjust its exports to changes in world demand.

Source: The Trade Performance Index, Technical notes, May 2007
(http://legacy.intracen.org/appli1/TradeCom/Documents/TPI_Notes.pdf)

Limitation: The choice of disaggregation or the base year can have a considerable impact on the value and signs of the various effects.

Real Effective Exchange Rate

Nominal EERs are calculated as geometric weighted averages of bilateral exchange rates. Real EERs are the same weighted averages of bilateral exchange rates adjusted by relative consumer prices. The weighting pattern is time-varying, and the most recent weights are based on trade in 2008-10.

Source: BIS effective exchange rate indices
(<http://www.bis.org/statistics/eer/broad1402.xls>)

Methodology: http://www.bis.org/publ/qtrpdf/r_qt0603e.pdf

Limitation: As a measure of competitiveness, the accuracy of the measure depend on the choice of price indices used for calculating REERs. The use of CPI may not fully reflect the ability of a country to sell its products in international markets. In this respect, relative unit labour cost measures would seem to be the most relevant indicators of competitiveness.

Unit Labor Costs

Unit labor costs measure the average cost of labour per unit of output and are calculated as the ratio of total labour costs to real output.

$$ULC = \frac{w}{V/L} = \frac{w \cdot L}{V}$$

w = average nominal wage

V = real value added

L = total employment

Two sources of data

Figure 7

V = manufacturing GDP at constant 2000 price

L = total employment in manufacturing industry based on labor force survey Sakernas

w = average nominal wage, for manufacturing industry based on labor force survey Sakernas

Figure 8

For International comparison, we use Industrial statistics from UNIDO

V = nominal value added deflated by GDP deflator for the manufacturing sector
w = Total compensation divided by total employment as reported in Unido industrial statistics
L = Total employment as reported in Unido industrial statistics

Limitation for Indonesia: ideally the labor quantity should be measure in term of man hour, unfortunately such data is not available in Indonesia, and therefore all the author use number of workers as proxy of labor quantity.

Total Factor Productivity (TFP)

General formula for total factor productivity is

$$\dot{A} = \dot{Y} - v_L \cdot \dot{L} - v_Q \cdot \dot{Q} - \sum_{i=1}^J v_{K_i} \cdot \dot{K}_i$$

\dot{A} = Total Factor Productivity growth

\dot{Y} = Value added growth

\dot{L} = Labor quantity

\dot{Q} = Labor quality

\dot{K} = Capital Stock

v = v 's stand for the average input shares in total factor income

Limitation for Indonesia: ideally the labor quantity should be measure in term of man hour, unfortunately such data is not available in Indonesia, and therefore all the author use number of workers as proxy of labor quantity

Source:

The Conference Board Total Economy Database: <https://www.conference-board.org/data/economydatabase/>

Groningen/Penn World Table Version 8.0: <http://www.rug.nl/research/ggdc/data/penn-world-table>

Limitation: it is a residual measure