The Weighted Composite Index Analysis of Indonesia's Bilateral Economic Agreements

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加重コンポジット・インデックスにもとづく インドネシアの二国間経済協定の考察

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Just a couple of years before, some countries including in Southeast Asia, are more interested in the mega regionalism such as the RCEP (Regional Comprehensive Economic Partnership, the FTAAP (Free Trade Area of the Asia Pacific) and the TPP (Trans-Pacific Partnership). From now on, in addition to the mega-regionalism, the Association of Southeast Asian Nations (ASEAN) members are also the enthusiast with the bilateral. Time-wise, the bilateral negotiation is faster than that of the regional or mega-regional, yet in term of risk, it is riskier since a country has to do head to head negotiation with its partner. Macro-economic indicators affect negotiation results. A previous study on Indonesia proved that income per capita gap affected the bilateral output gap. If the partner has income per capita higher than that of Indonesia, then Indonesia has to aim for the investment inflows (FDI), and trade if the opposite. Now, this study attempts to prove it with more macroeconomic variables and observed countries. This study adopted 15 macroeconomic variables with eight observed countries of the RCEP (Japan, South Korea, China, India, Australia, and New Zealand) and two existing Indonesia' bilateral economic partners (Pakistan and Chile) from 1987–2017. It applied the econometric model and took a significant result for weighting the index. The latter has been formulated utilizing the comparative macroeconomic variables between Indonesia and her partner. Parameter one applies for insignificant, and two applies for the significant variable. The indexes are then combined as one composite index and decompose with an association to either trade or investment issue. This study finds (1) investment issues are more dominant than trade issues in Indonesia bilateral negotiation, and (2) the better macroeconomic indicators of the partner, the more advantage from investment inflow and the opposite, the more advantage for trade.

Keywords: composite index, bilateral trade agreement, trade, long-run investment, Indonesia
JEL: C43, F53, F1, E22, F21

1. Background

Nowadays, the bilateral economic agreement has become more favorable compared to a couple of years ago where mega regionalism such as the TPP was leading. This changing situation affects Indo-

nesia's preference upon the economic agreement option. Indonesia was intended joining the TPP yet backed off since the USA repealed from it. Indonesia has several bilateral economic agreements, and the number has been significantly increased since the USA prefers non-multilateral agreements. However, for the developing country like Indonesia, bilateral comes with the cost. The bilateral economic agreement requires 'head to head' negotiation between two countries, and this is riskier compared to regional or global economic negotiation. However, time-wise, bilateral negotiation is less time-consuming compared to the multilateral because the latter needs some more countries. For any group of the economic agreement such as regional economic cooperation, the bilateral agreement can create a spillover effect, namely the 'snowballing' effect. It took place when one member did bilateral economic agreement to a non-member state simply because another member state did it before. This effect works well when there are the leader and follower in the group. Indonesia experienced a spillover effect from making a bilateral trade agreement with a non-member of ASEAN because she was affected by a member state of ASEAN which had bilateral with that non-member.

At the regional level, the bilateral can create a negative effect. Bilateral become a stumbling block for regional economic cooperation if the member state cheats with non-member state and other members follow suit. This cheat–cheat situation will increase the economic gap within members, which in fact, the economic convergence is the primary aim of any regional economic cooperation. The bilateral agreement can be a 'building block' if this is done within member states of the multilateral or regional economic organization. At the multilateral of the WTO level, bilateral can solve the unfinished and unsolved businesses because sometimes, it is required to solve the deadlocks in a multilateral agreement. Preferably, the bilateral agreement is doing under the multilateral if the aim is for supporting the WTO or under regional umbrella within member states, including in the mega-regional form.

Every member of mega-regional or regional economic cooperation has different negotiation capacity due to its different income level. In Southeast Asia, for instance, take and offer negotiation of Singapore must be different from that of Indonesia due to their income per capita difference. A high-income per capita country may aim for investment outflows, import, and empowerment service sector while the medium and low-income per capita country aims for investment inflows, export and empowerment of the agriculture and manufacture sector. Nevertheless, referred back to the snowballing effect, there is no member state want to be left behind like the spectator if the influencer did bilateral with a non-member state. Nowadays, in Southeast Asia, bilateral economic agreement with non-member state of ASEAN become the favorable option due to the spillover effect of it.

Indonesia does not want to leave behind; therefore, when the world is moving from mega-regional to bilateral, Indonesia also please to adopt the bilateral economic agreement. Indonesia at the moment has negotiated and ratified two bilateral economic agreements; one is IJEPA (Indonesia–Japan Economic Partnership Agreement) in 2008 and two is IPPTA (Indonesia–Pakistan Preferential Trade Agreement) in 2012. Indonesia has finished the negotiation and soon will be ratified for another two bilateral agreements of IC-CEPA (Indonesia–Chile Comprehensive Economic Partnership Agreement)

in 2017 and IA–CEPA (Indonesia–Australia Comprehensive Economic Partnership Agreement) in 2019. Indonesia has already had four bilateral economic agreements with several are in the pipeline. Considering its risk, Indonesia needs to assess its bilateral economic agreements. This assessment is useful for Indonesia to formulate her trade and investment strategy, particularly with her bilateral economic partners.

The next questions are what factors in macroeconomy that Indonesia must focus on? A previous study in the case of Indonesia found that if the country partner has higher income per capita than Indonesia, then Indonesia would gain benefit from investment inflows while the opposite she would gain the benefit from export (Verico, 2018). This previous study adopted and adapted the Regulatory Impact Assessment (RIA) to measure[1] the impact of five RIA factors namely legal basis, benefit, cost, competitiveness and market objective achievement on most related factors of economic agreement of trade (export & import), FDI (Foreign Direct Investment), labor absorption. Considering that macro-economics is not only income per capita, there is a need to include other macroeconomic variables into the analysis.

2.　Objective

Macroeconomic indicators are useful in assessing economic agreement within countries. The previous study found that income per capita can be utilized as an indicator for this assessment. This study expands macroeconomic indicators from trade and investment to 16 macroeconomic indicators, including the income per capita itself. All of these macroeconomic indicators are applied to assess Indonesia's bilateral economic agreement. This study uses eight selected countries as the observed countries. They are six countries from the partner of the RCEP (China, Japan, South Korea, Australia, New Zealand, and India) and two more from existing Indonesia's bilateral economic partners of Pakistan and Chile. The objectives of this study are:

1. Analyze the relation and calculate the magnitude of each of these 15 macroeconomic indicators (independent variables) to the intra-trade to the world (a dependent variable). This analysis is to provide statistical significance information for each indicator. This study applies a balanced panel data analysis of 279 observations consist of 9 countries and 31 years from 1987 to 2017. This analysis is obtaining the information of significant or insignificant statistical measurement for all the independent variables.
2. Analyze the impact of each independent variable referring to its statistical level of significance in the form of the composite index. Each macroeconomic variable is transformed into the form of the index by comparing that indicator for Indonesia and her bilateral economic partner. These

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[1]　Two existing bilateral economic agreements of Indonesia with Japan and Pakistan were assessed with Likert Scale of 1＝very poor; 2＝poor; 3＝normal; 4＝good; 5＝very good; 6＝great

indexes are measured and combined into one composite index. This composite index uses weighted measurement model of which all the indexes are differentiated into two impact magnitude from the regression test: two for the statistically significant variable and one for the non-significant variable.

3. Transform all of the indexes into investment (inflow or outflow) or trade (export or import). This decomposition transformation is essential as initial information for Indonesia to focus on either investment or trade at any of its bilateral negotiation. If it is investment, then Indonesia can identify to focus on inflow or outflow and if, in trade, Indonesia can choose to focus on export or import. This measurement also describes, for Indonesia, the relative macroeconomic strength of each bilateral economic partner.

3. Previous Study

Since 2016, the USA prefers bilateral economic agreement than either multilateral, which is borderless or regional under the geographic proximity. This bilateral option had declined enthusiasm on regional economic cooperation because the USA has a strong influence in NAFTA and megaregional organization of the TPP and even the WTO. It also impacted the country's preference that nowadays prefer bilateral economic agreement. In terms of study, the bilateral economic agreement is not something new, but the popularity of it has increased recently since the USA shown her interest in bilateral.

Jagdish Bhagwati (1991) explained that bilateral economic agreement was possible, creating the 'spaghetti bowl effect' that harmful to the multilateral agreements. On the opposite, R. Baldwin showed that bilateral was creating the 'bandwagon effect' to multilateralism because it could be used as an alternative negotiation whenever multilateral negotiation was deadlock. In other to solve deadlocked meetings, developed countries of the USA and EU conduct the bilateral meeting. Therefore, bilateral is also known as a pre-negotiation for smoothing the multilateral meeting. In 2006, during the APEC Summit in Hanoi, Russia conducted a bilateral meeting with the USA in order to smooth her accession to the WTO. Another example is China's anti-dumping and import restrictions with the US and EU to complete her commitment to the WTO. The bilateral economic agreement can also cover any issues in multilateral negotiations of the WTO such as investment, labor, and environmental issues. If a country has become a member of the WTO, it is not inevitably assured that multilateral agreement easy to conclude. This obstacle is why some scholars argue that bilateral is useful to support multilateral agreements but not to replace it.

Bilateral has been supporting multilateral negotiation and play as a building block instead of a stumbling block. In the Annual Memorial Silver Lecture of the Columbia University on 31 October 2006, Director-General of the WTO, Pascal Lamy argued that bilateral is useful to support the WTO agreement. This concept is known as the WTO Plus Framework. Referring to Baldwin's argument, it is known that bilateral trade negotiation has not only been driven by economic but also political-economic motives. For some countries, the decision to have bilateral is affected by other countries. For

instance, Japan was interested in having a bilateral economic agreement with the USA since South Korea succeeded to have it. This phenomenon has confirmed that the bilateral can generate either a spillover effect or snowballing effect. The usage of bilateral increased in the period of the 2000s in East Asia and Russia. The PRC conducted bilateral agreement with Macao, and Hong Kong and Russia develop at least 15 bilateral within Russia for preventing the country from political disintegration. In some cases, the developed country uses bilateral negotiation for other purposes than economy i.e., environment protection, war on terror, poverty alleviation.

Ravenhill (1995) found that bilateral agreement was designed to increase trade and investment relations as well as to protect the Intellectual Property Rights (IPRs). In Southeast Asia, his study found that only Malaysia and Singapore are possible to conclude mutual benefit from bilateral negotiation.

Rajan and Sen (2002) argued that the key-success factors for bilateral trade agreement is not dependent on a country's size in terms of GDP or population but more on a country's level of trade-investment liberalization, GDP per capita and its protected economic sector. Countries like Singapore and Chile are classified as 'small-countries' but its economic levels in terms of GDP per capita, trade liberalization phases and types of protected economic sectors are more advanced compared to other 'large size' countries such as India and Indonesia.

Manger (2005) took Japan as an observed country for his analysis of the bilateral trade agreement of a developed country. Japan followed other developed countries to have bilateral negotiation. This spillover effect opened the chance for developing countries to have a bilateral agreement with Japan. Manger found that bilateral is the most favorable agreement for developed countries compare to regional or multilateral. Manger took Japan and Mexico bilateral agreement as the case study. As NAFTA generated discrimination between member and non-member, bilateral with Mexico as the member state of NAFTA has opened a privilege for non-member such as Japan to avoid the discrimination. The bilateral agreement is useful to negotiate both trade and investment. Manger found that Japan obtained benefit from negotiation to preserve the vertical intra-industry connection between Japan as an FDI home country and developing country as the FDI host country. For Japan, a bilateral agreement is useful to keep its competitiveness with other developed countries in the host country and preserve the production network sustainability. Manger also found that the core common interests for bilateral trade agreements are trade and investment. In Southeast Asia, Thailand is the first country that has a bilateral agreement with Japan. As for Japan, bilateral economic agreement with Thailand is a building block for the Japan–ASEAN FTA (JETRO Survey, cited by Manger, 2005, p. 820). Manger found that the critical success factor for bilateral economic negotiation between developed and developing country was the excluding of any sensitive issues and sectors from the negotiation. Empirical evidence is seen in the Japan–Singapore Economic Partnership Agreement (JSEPA) in 2003 and Japan-Mexico FTA in 2004 that exclude agricultural related issues. The exclusion of some agriculture products is useful in the case of bilateral economic negotiation between developed and developing countries as both countries are usually protecting the agriculture products.

Menon (2006) argued bilateral agreement used as the alternative for the deadlocks in multilateral meetings. This made bilateral is preferable for trade and investment negotiation in particular when facing difficulties on certain sensitive commodities. In terms of the negotiation process, bilateral negotiation agreement is more straightforward compared to multilateral negotiation if affected countries have equal economic level, i.e., developed and developed the country, developing and developing countries. Hard negotiation in bilateral occurs due to different level of development because different level tends to make different priority sector, comparative advantage, and type of protection of their protected sector. In terms of the level of development, developed country competitive in the manufacturing sector, and usually protect the agricultural sector. On the different developing country usually competitive in the agricultural sector and tend to protect the manufacturing sector. In terms of method of protection, developed country protects the agricultural sector with a subsidy, and the different developing country protects manufacturing sector with tax and import tariff. If the involved country in bilateral has no issue in protection or have similar protection method, then bilateral negotiation agreement would be easier to achieve. Bilateral negotiation between Japan and Singapore succeed since Singapore does not protect the agricultural product while Japan protects it.

Kim (2010) applied econometric modelling analysis on the intra-industry trade with independent variables of GDP value, import share of GDP, annual budget deficit, foreign employment and bureaucratic capacity using index of International Country Risk Guide (ICRG). Kim promoted new variables of the employment with degree of employment by foreign firms and bureaucratic performance.

Trotignon (2010) applied gravity model with dependent variables of GDP, export value, geodesic distance, average relative distance, absolute value of GDP per capita difference, GDP size similarity, real exchange rate, and several dummies of language, common border, regional trade arrangement. Trotignon found that regional trade agreement supports multilateral economic cooperation as its building block.

Jang (2011) found a positive impact on long-run investment inflow in a developed country yet non-positive impact in a developing country. Jang implemented the Gravity Model with Difference in Difference (DID) and Dynamic Specification using the Arellano–Bond estimator. This research applied the panel data of 62 countries and 24 years of the period of 1982–2005. In his model, Jang run variable of investment outflow as endogenous variable and GDP, GDP per Capita, Distance and Trade Openness as an exogenous variable, dummy of bilateral and dummy of year. His study also found that the economic gap created a positive impact on long-run investment for developing country and the opposite for a developed country.

4. Panel Data Analysis

A hub-spoke problem is still possible due to the existing gap in trade liberalization, GDP per capita, and protected sectors between developed and developing countries. This study refers to Rajan & Sen (2002) and Manger (2005) and adopts variables from previous studies of Kim (2010), Trotignon (2010)

and Jang (2011). This study enlarges the options of macroeconomic variables to analyze economic integration as well as to assess the bilateral economic negotiation between Indonesia and its economic partners. This study in total adopts15 related macroeconomic variables and generates 14 comparative indexes from them.

Regression of the model is designed to obtain significant and insignificant statistical information, which then utilized as the weighting indicator for the comparative index. All the 14 comparative weighted indexes then transformed into a composite index for each economic partner. Each composite index has been translated into either investment (FDI) or trade (export & import).

This model follows the previous studies of the modeling of intra trade between the two countries. The calculation of intra trade uses data of export and import of goods and services of the country to the world. The dependent variable is intra-trade which calculated as:

$$IntraT_{nt1-t0} = 1 - \frac{\left| X_{nt1-} M_{nt0} \right|}{\left(X_{nt1+} M_{nt0} \right)}$$

IntraT is country intra trade of country at time to the world. n is country, t is time, X is total export of country 'c' at 't' time to the world and M is total import of country 'c' at 't' time.

The 15 macroeconomic variables are independent variables for the intra trade of the country and formulates as follows:

$$\begin{aligned} IntraT_t^{n\,to\,w} = \alpha_0 &+ \alpha_1.GDP_{n,t} + \alpha_2.GDP_{pppn,t} + \alpha_3.\%GDPgrowth_{n,t} + \alpha_4.\%Uperlabor_{n,t} \\ &+ \alpha_5.\%\pi_{n,t} + \alpha_6.GDPCap_{n,t} + \alpha_7.\%PDperGDPn,t/GDP_{n,t} \\ &+ \alpha_8.\%ABDperGDPnt/GDP_{n,t} + \alpha_9.\%FDIperGDPnof_{n,t} + \alpha_{10}.GDP_{primaryn,t} \\ &+ \alpha_{11}.\%EMPperLabor_{agriculturen,t} + \alpha_{12}.\%GDPperGDP_{manufn,t} \\ &+ \alpha_{13}.\%HighTechp_{expmanufn,t} + \alpha_{14}.\%TServicesperGDP_{n,t} + \alpha_{15}.\frac{RND_{n,t}}{GDP_{n,t}} \end{aligned}$$

Definition and source of data for each variable is presented below.

This study uses 15 independent variables with the WDI data from the year 1987–2017 (31 years) for nine countries, including Indonesia. Statistical significance of each variable will be utilized as the weighted measurement (1 for insignificant variable or 2 for significant variable). In the next step, this study obtains a composite index for each bilateral economic cooperation by multiplying weighted measurement into the latest data of each simulated variable. In this section, this study shows the statistical significance of each variable as the references for weighted measurement. This paper applied this model with panel data which consists of nine countries as the 'n' space and 31 years as the 't' time; therefore, the panel data has 279 observations (n×t). This econometric regression has not been applied to find the fittest model through the reduced form model. Therefore, the aim of this regression is not to obtain the ideal R-square but knowing the significant and insignificant t-test for each of variable. This information is needed as the weighted indicator of the index. The latter has been modified

Table 1. Independent Variable: Definition & Source of Data

No.	Variable	Definition	Source of Data
1	GDP	Gross Domestic Product in current price for Economic Size	World Development Indicator (WDI)
2	GDP PPP	Gross Domestic Product in purchasing power parity for Purchasing Power	World Development Indicator (WDI)
3	GDP constant price Growth (%)	Real Economic Growth	World Development Indicator (WDI)
4	Unemployment per Labor Force (%)	Unemployment rate representing the labor absorption capacity	World Development Indicator (WDI)
5	Inflation Rate (%)	The Delta of GDP Deflator	World Development Indicator (WDI)
6	GDP per Capita (USD)	Level of Economy	World Development Indicator (WDI)
7	Public Debt (PD) per GDP (%)	Fiscal Sustainability	Trading Economics
8	Annual Budget Deficit (ABD) per GDP (%)	Fiscal Discipline	Trading Economics
9	Foreign Direct Investment (FDI, value)	Investment Outflows Capacity	World Development Indicator (WDI)
10	GDP of Agriculture Sector per GDP (%)	Primary Sector Role in economy	World Development Indicator (WDI)
11	Agriculture Employment per Total Employment (%)	Employment in Agriculture which combining with the GDP of Agriculture sector representing Agriculture Sector Productivity	World Development Indicator (WDI)
12	GDP of Manufacture Sector per GDP (%)	Manufacture Sector Role in the economy	World Development Indicator (WDI)
13	High Technology Export per Total Manufacture Export (%)	High-Tech Export Capability	World Development Indicator (WDI)
14	Trade in Services (% of GDP)	Service Sector Role in the economy	World Development Indicator (WDI)
15	RND Expenditure per GDP (%)	RND Role in the economy	World Development Indicator (WDI)

Source: Author's compilation, 2019

from the macroeconomic variables. The results of the regression can be seen below.

As the time observations are more than space observations, then the model regresses the fixed effect model. The results are presented above confirms that GDP per Capita significantly affects the bilateral economic negotiation. In the previous study on Indonesia's bilateral economic agreements both the IJEPA and APPTA, Verico (2018) found that with Japan, Indonesia aimed for investment inflows and labor absorption while with Pakistan, Indonesia aimed for export penetration. This previous study showed that bilateral with a country that higher GDP per Capita made Indonesia aimed for investment and the opposite for the trade. Besides, this regression shows that fiscal discipline (ABDX) and agriculture employment (AGRIEMPL) shares a similar level of significance (5%) and a positive trend. These mean that the more discipline the fiscal and the higher the employment in the agriculture sector, the higher intra trade which indicates, the higher intention to be integrated. The fiscal discipline represents high accountability of the government while agriculture represents Indonesia's export capacity since this sector is Indonesia's dominant export products (palm oil, fisheries, rubber, paper,

Table 2. Linier Model with Fixed Effect & Random Effect Country Base

Variable	Linier with Fixed Effect	Linier with Random Effect, GLS, Country Base; Robustness Test
GDPX std.err; p>|t|	.0000936 *.0000577; 0.106*	.0000936 *.0000577; 0.105*
GDPGRX std.err; p>|t|	−.000147 *.0000982; 0.136*	−.000147 *.0000982; 0.135*
ABDX std.err; p>|t|	.0002503** *.000117; 0.033*	.0002503** *.000117; 0.032*
gdpp3x std.err; p>|t|	4.65e-15** *2.37e-15; 0.05*	4.65e-15** *2.37e-15; 0.05*
Unem std.err; p>|t|	.0030336 *.0024096; 0.209*	.0030336 *.0024096; 0.208*
inflation std.err; p>|t|	−.0009175 *.0005855; 0.118*	−.0009175 *.0005855; 0.117*
gdppercap std.err; p>|t|	1.89e-06*** *6.41e-07; 0.003*	1.89e-06*** *6.41e-07; 0.003*
pdebtx std.err; p>|t|	.0001251 *.0001798; 0.487*	.0001251 *.0001798; 0.487*
fdix std.err; p>|t|	−.0000435 *.0001665; 0.794*	−.0000435 *.0001665; 0.794*
AGRIVAX std.err; p>|t|	−.0012769 *.0021265; 0.549*	−.0012769 *.0021265; 0.548*
AGRIEMPL std.err; p>|t|	.0025967** *.0012886; 0.045*	.0025967** *.0012886; 0.044*
MANUFVA std.err; p>|t|	−.0003865 *.0018396; 0.834*	−.0003865 *.0018396; 0.834*
HTECH std.err; p>|t|	−.0005537 *.0009333; 0.553*	−.0005537 *.0009333; 0.553*
TRSER std.err; p>|t|	−.0008539 *.0018756; 0.649*	−.0008539 *.0018756; 0.649*
RNDX std.err; p>|t|	−.018762 *.0136317; 0.170*	−.018762 *.0136317; 0.169*
Constant std.err; p>|t|	.8651234*** *.0587677; 0.000*	.9095927*** *.0532652; 0.000*
N R-Sq	279 0.19	279 0.58
*Country_*	*irrelevance*	(+Chile, −China −India, −Indonesia, −Japan, +New Zealand, −Pakistan, +South Korea)

Note: ***; **; * denote level of significance at 1%; 5%; 10%; irrelevance means this running does not provide country relation

Source: Author's calculation, 2019

coffee, tea). The last but not least is purchasing power (GDP PPP) which positively significant at 10%. This finding confirms that undervalue of local currency (Rupiah) is an incentive for Indonesia's bilateral economic cooperation. The country-based table above is a robustness test with random effect and country base. The country base (by alphabetical order) is Australia. This regression confirms that the linear model with fixed effect holds robust results since the significant variables and their trends are consistent.

Finally, this study regresses the dynamic model of the log–log model with fixed effect option. This econometric regression has been formulated and implemented to get closer into reality as in real life; economic cooperation is dynamic. In the process of applying the model, this study finds that not all the macroeconomic variable can be transformed into a dynamic logarithm form. Some variables, such as economic growth, inflation rate, and unemployment, are appropriate in the form of linear. This model still adopts a fixed effect option, and the complete results of the dynamic fixed effect regression are presented below.

This model shows that economic growth, fiscal discipline, value-added of agriculture sector and manufacture sector, as well as R&D expenditure per GDP, are significant with a level of significance of 1%, 10%, 5%, 1%, and 10%. As for the relationship, economic growth, fiscal discipline, and R&D positively affect bilateral economic cooperation (intra-trade). On the other side, agriculture and manufacture value-added have a negative relationship with intra-trade. This result shows that negative

Table 3. Dynamic Model with Fixed Effect

Variable	Linier with Fixed Effect
log_gdpx std.err; p>|t|	.0334055*** .0065988; 0.000
GDPGRX std.err; p>|t|	−.0001586 .0001127; 0.161
ABDX std.err; p>|t|	.0002424* .0001383; 0.081
log_gdpp3x std.err; p>|t|	−.0256336 .0254523; 0.315
Unem std.err; p>|t|	−.0003001 .0029978; 0.920
inflation std.err; p>|t|	−.0009733 .0006697; 0.147
log_gdppercap std.err; p>|t|	−.0185156 .0278432; 0.507
pdebtx std.err; p>|t|	.0002873 .0001925; 0.137
fdix std.err; p>|t|	−.0001492 .0001894; 0.432
AGRIVAX std.err; p>|t|	−.0057318** .0024256; 0.019
AGRIEMPL std.err; p>|t|	−.0010539 .001868; 0.573
MANUFVA std.err; p>|t|	−.0086018*** .002264; 0.000
HTECH std.err; p>|t|	.001485 .0011823; 0.210
TRSER std.err; p>|t|	−.0004339 .0024315; 0.859
RNDX std.err; p>|t|	.0277428* .0148629; 0.063
Constant std.err; p>|t|	.8397153 .619057; 0.176
N R-Sq	279 0.19

Note: ***; **; * denote level of significance at 1%; 5%; 10%

Source: Author's calculation, 2019

trend in its economic sector motivates Indonesia even more to have a bilateral economic agreement. The negative current account due to the decreasing of oil price, which affects that of other primary products of Indonesia's major export products has been happening since 2011. This increase Indonesia's motivation to have economic cooperation and technically nowadays at some reasons, the most practical option is bilateral.

All of the significant variables found in linear fixed effect and dynamic fixed effect are adopted as weighted in forming the composite index of bilateral economic cooperation. The significant variables of Purchasing Power (GDP PPP, +, **), Economic Growth (Log GDP, +, ***), Level of Economy (GDP per Capita, +, ***), Annual Budget Deficit per GDP (ABDX, +, *, **), Agriculture Sector Productivity (AGRIVAX, −, ** & AGRIEMPL, +, **), Manufacture Sector Productivity (MANUVFA, −, ***) and R&D Role (RND, +, *) hold weighted of 'two' while the rest variable hold 'one'. These regressions (FE, RE Country Base, Log–Log FE) shows that bilateral economic agreements are positively affected by purchasing power, economic growth, income per capita and country's role of RND as well as agriculture and manufacture's sector productivity.

5.   Bilateral Macroeconomic Simulation

The simulation model is formulated follows the composite index of the competitiveness indicator based on the transformation of 15 macroeconomic variables into 14 macroeconomic indexes with the alpha (α) either one or two depending on statistically insignificant or significant from the regressions obtained above.

$$CI_t^{j,ina} = \alpha_1 \cdot \frac{GDP_{jt}}{GDP_{INAt}} + \alpha_2 \cdot \frac{GDP_{pppjt}/GDP_{HBjt}}{GDP_{pppinat}/GDP_{HBinat}} + \alpha_3 \cdot \frac{\overline{X_{5t}GDP\,growth_{jt}}}{\overline{X_{5t}GDP\,growth_{inat}}} + \alpha_4 \cdot \frac{\overline{X_{5t}u_{inat}}}{\overline{X_{5t}u_{jt}}}$$

$$+ \alpha_5 \cdot \frac{\overline{X_{5t}GDP\,growth_{jt}/\pi_{jt}}}{\overline{X_{5t}GDP\,growth_{inat}/\pi_{inat}}} + \alpha_6 \cdot \frac{GDPCap_{jt}}{GDPCap_{inat}} + \alpha_7 \cdot \frac{PD/GDP_{inat}}{PD/GDP_{jt}}$$

$$+ \alpha_8 \cdot \frac{ABD/GDP_{inat}}{ABD/GDP_{jt}} + \alpha_9 \cdot \frac{FDI\,nof_{jt}}{FDI\,nof_{inat}} + \alpha_{10} \cdot \frac{GDP_{primaryjt}/Emp_{primaryjt}}{GDP_{primaryinat}/Emp_{primaryinat}}$$

$$+ \alpha_{11} \cdot \frac{GDP_{manufjt}/GDP_{jt}}{GDP_{manufinat}/GDP_{inat}} + \alpha_{12} \cdot \frac{\%HighTech_{expmanufjt}}{\%HighTech_{expmanufinat}}$$

$$+ \alpha_{13} \cdot \frac{\%TiServices_{GDPjt}}{\%TiServices_{GDPjtinat}} + \alpha_{14} \cdot \frac{RND_{jt}/GDP_{jt}}{RND_{inat}/GDP_{inat}}$$

The CI is composite index while 'j' for bilateral partner country and 'ina' is Indonesia with 't' is time. Definition of the simulated variables are presented below.

The composite index is defined as the summation of the indexes is formulated as follows:

$$CI_t^{ij} = \sum_{k=1}^{n} \theta_k M_k^{ij}$$

The above equation defines the composite index as the summation of the relative macroeconomic factors between country i and j, M_k^{ij} adjusted the respective weights, θ_k of each factor. This study assumes that trading partner with better index is more competitive than Indonesia and this is unique depends on the variable definition. All of these 15 macroeconomic variables have been observed and considered to reflect country's relative competitiveness over another country. A ratio between relative indicator M_k of country j and i is calculated while the parameter was adopted from the econometric test. Relative ratio defines the variable while the econometric defines the impact parameter of either 1 (if insignificant) or 2 (if significant). This ratio is an index and the summation of it is the composite index.

Definition of variable can involve one indicator such as GDP as the representative of economic size and GDP per capita as the representative of power. Definition of variable also can involve more than one variable such as productivity which connect economic growth and inflation. The higher the gap of economic growth of a country compare to its inflation rate, the more productive the country. The relative indicator is the ratio between the country j's macroeconomic indicator in a certain period t to the economic partner in the period t; (ii) macroeconomic indicator is represented by an index of $\overline{\overline{M_k^{ij}}}$.

This study limits its focus on Indonesia therefore Indonesia's is the country base to another economic partner's comparison. The index is formulated as follow:

$$CI_t^{INA,j} = \sum_{k=1}^{n} \theta_k M_k^{INA,j}$$

This study transforms these 15 macroeconomic variables into 14 indexes of Indonesia and her macroeconomic bilateral partner representing indicators from economic size to R&D role index. The

Table 4.　Macroeconomic Index

Variable	Comparative Indicator	Source of Data
GDP	$\dfrac{GDP_{jt}}{GDP_{INAt}}$: Economic Size	World Development Indicator (WDI)
GDP PPP	$\dfrac{GDP_{pppjt}/GDP_{HBjt}}{GDP_{pppinat}/GDP_{HBinat}}$: Purchasing Power & also indicating the power of undervalue of local currency	World Development Indicator (WDI)
Five-year Average of GDP constant price Growth (%)	$\dfrac{\overline{X_{5t}}GDP\,growth_{jt}}{\overline{X_{5t}}GDP\,growth_{inat}}$: Economic Performance	World Development Indicator (WDI)
Five-year Average of Unemployment (U) per Labor Force (%)	$\dfrac{\overline{X_{5t}}u_{inat}}{\overline{X_{5t}}u_{jt}}$: Unemployment Rate represents Labor Absorption Capacity	World Development Indicator (WDI)
Five-year Average of Economic Growth per that of Inflation Rate (%)	$\dfrac{\overline{X_{5t}}GDP\,growth_{jt}/\pi_{jt}}{\overline{X_{5t}}GDP\,growth_{inat}/\pi_{inat}}$: Economic Productivity	World Development Indicator (WDI)
GDP Capita (USD)	$\dfrac{GDPCap_{jt}}{GDPCap_{inat}}$: Level of Economy	World Development Indicator (WDI)
Public Debt (PD) per GDP (%)	$\dfrac{PD/GDP_{inat}}{PD/GDP_{jt}}$: Public Debt Capacity represents Fiscal Sustainability	Trading Economics
Annual Budget Deficit (ABD) per GDP (%)	$\dfrac{ABD/GDP_{inat}}{ABD/GDP_{jt}}$: Annual Budget Deficit Capability represents Fiscal Discipline	Trading Economics
Foreign Direct Investment (FDI, value)	$\dfrac{FDI\,nof_{jt}}{FDI\,nof_{inat}}$: Investment Outflows Capacity	World Development Indicator (WDI)
Productivity in Agriculture Sector	$\dfrac{GDP_{primary\,jt}/Emp_{primary\,jt}}{GDP_{primary\,inat}/Emp_{primary\,inat}}$: Agriculture Sector Productivity	World Development Indicator (WDI)
GDP Manufacture (value)	$\dfrac{GDP_{manuf\,jt}/GDP_{jt}}{GDP_{manuf\,inat}/GDP_{inat}}+\alpha_{12}$: Manufacture Sector Role in economy	World Development Indicator (WDI)
High Technology Export per Total Manufacture Export (%)	$\dfrac{\%HighTech_{expmanuf\,jt}}{\%HighTech_{expmanuf\,inat}}$: High Tech Export Capacity	World Development Indicator (WDI)
Trade in Services (% of GDP)	$\dfrac{\%TiServices_{GDP_{jt}}}{\%TiServices_{GDPjt_{inat}}}$: Trade in Service Capacity represents Tradable Service Sector	World Development Indicator (WDI)
RND Expenditure per GDP (%)	$\dfrac{RND_{jt}/GDP_{jt}}{RND_{inat}/GDP_{inat}}$: RnD Capacity per GDP	World Development Indicator (WDI)

Source: Author's compilation, 2019

full results are presented below.

　This table shows that each economic partner country has its own comparative and dis-comparative advantage index over Indonesia. In terms of economic size index: China, Japan, India, and South Korea are bigger than Indonesia. Surprisingly, even India has more population than that of Japan, but in terms of economic size, Japan is bigger than India. The main message from this index is value-

Table 5. Composite Index and Ideal Coverage of Negotiation of Indonesia's Bilateral Economic Agreement

Comparison with Indonesia (Decomposition)	Chile	Australia	New Zealand	Pakistan	India	China	South Korea	Japan
Economic Size	0.3	1.30	0.20	0.30	2.61	12.05	1.51	4.80
Purchasing Power	1.0	0.56	0.60	2.24	2.48	1.19	0.81	0.71
Economic Performance	0.9	0.97	1.29	1.96	2.91	2.78	1.18	0.50
Labor Absorption	0.6	0.74	0.83	1.22	1.60	1.06	1.21	1.27
Economic Productivity	0.4	2.69	1.07	0.90	1.64	3.52	1.53	1.46
Economic Level	8.0	27.97	22.32	0.80	1.03	4.59	15.46	19.98
Fiscal Sustainability	1.3	0.57	1.41	0.42	0.64	0.66	0.78	0.16
Fiscal Discipline	1.8	2.64	(1.20)*	0.87	1.42	1.43	2.51	1.12
Investment Outflows Capacity	8.6	1.68	(1.41)**	0.08	7.47	4.13	10.26	17.16
The Role of Agriculture	1.9	5.00	3.86	2.55	1.64	2.21	1.88	1.55
The Role of Manufacture	1.0	0.57	1.13	1.19	1.48	2.91	2.74	2.09
High-Technology Capability	1.1	2.35	1.58	0.39	1.29	4.38	2.61	2.54
Trade in Services Capacity	1.5	1.78	2.55	0.94	1.96	0.98	2.42	1.38
R&D Role	8.7	45.53	30.16	5.81	3.37	49.75	100	74.30
Total	**37.1**	**94**	**64**	**20**	**32**	**92**	**145**	**129**
FDI Inflows	43%	50%	50%	36%	64%	57%	64%	64%
FDI Outflows	29%	21%	21%	36%	7%	14%	7%	7%
Trade	29%	29%	29%	29%	29%	29%	29%	29%

Note: *Negative means annual budget surplus, **negative means net FDI inflows (reinvestment)
Source: Nuthor's calculation, 2019

added (productivity) is more vital than just number of populations.

However, in terms of purchasing power (undervalue of local currency) index: India, Pakistan, China, and Chile are better than Indonesia. This undervalued of local currency shows that these four countries offer a cheaper price than that of Indonesia. In terms of productivity index: China, Australia, India, and South Korea are better than Indonesia. From these three indexes, this study argues that bilateral negotiation with India will be challenges for Indonesia as India is bigger in term of economic size, cheaper in terms of price and more productive in terms of comparative of economic growth and inflation rate. The latter has been confirmed by the index of economic performance and labor absorption indexes, whereas India is always better than Indonesia. In terms of economic performance (average last five-year economic growth) index: India, China, Pakistan, and New Zealand are better than Indonesia and in terms of labor absorption index: India, Japan, Pakistan, and South Korea are better than Indonesia.

In terms of economic level (GDP per Capita) index: Australia, New Zealand, Japan, and South Korea are richer than Indonesia. This economic size shows that in term of bilateral, Indonesia expects more investment inflows from these countries. In this case, IA-CEPA (Indonesia–Australia Comprehensive Economic Partnership Agreement) will be benefited if the investment increase from Australia to Indo-

nesia and Indonesia become the production base for that investment. This investment will create a global production network, which involves Indonesia. This will be a big opportunity for both countries to increase their economic relations.

In terms of fiscal capacity, both discipline (annual budget deficit) and sustainability (total public debt) indexes shows that only Chile has a comparative advantage for both. This fiscal capacity and sustainability indicate that the Government of Chile is reliable and competent in managing fiscal policy. In terms of fiscal discipline index, in addition to Chile, the accountable and reliable countries are Australia and South Korea. In terms of fiscal sustainability index: New Zealand, in addition to Chile, is better than Indonesia.

In terms of investment outside the country index: Japan, South Korea, Chile, and India are better than Indonesia. This indicator is vital for bilateral economic negotiation between Indonesia and India, which has been predicted to be uneasy. However, the high intention of investment from India to abroad opens a big opportunity for a win–win situation for both countries. This investment will make both countries to have a more straightforward negotiation process.

In terms of agriculture sector index, Indonesia can learn from her bilateral economic partner of Australia, New Zealand, Pakistan, and China. All the observed countries explained above have a comparative advantage in the agriculture sector over Indonesia. In terms of the manufacture sector index, Indonesia can learn from China, South Korea, Japan, and India. In terms of the service sector (tradable goods) index, Indonesia can learn from her bilateral economic partner of New Zealand, South Korea, India, and Australia. Last but not least, in terms of optimizing the impact of research and development on the economy, Indonesia must learn from South Korea, Japan, China, and Australia.

The indexes inside the composite index show that most expected benefits come from investment then followed by trade. In investment, the most potential benefits come from investment inflows. These indexes show the three levels of benefit sources for Indonesia's bilateral economic agreement: long-run investment inflows, trade (export & import) and long-run investment outflows. This study finds that in bilateral economic agreement, Indonesia aims for the investment inflows. The indexes related to this are GDP per capita, external investment capacity, economic productivity & labor absorption, fiscal discipline & sustainability, manufacture & service sector role, high-tech export capability, and R&D role. As for the trade-related index, this composite consists of economic size, purchasing power, economic performance, and agriculture sector role.

Given the seven most significant variables with weighted of two instead of one, this study finds that South Korea, Japan, Australia, and China are the four highest composite index partners for Indonesia's bilateral economic agreement. Indonesia at the moment had already had bilateral economic cooperation in forms of CEPA with Japan and Australia. Indonesia needs bilateral economic negotiation with i.e., South Korea, of which many indexes showed that Indonesia would obtain more benefit from this bilateral according to the composite index value.

The composite index indicates that Indonesia's bilateral economic agreement supports the RCEP or

ASEAN＋6 frameworks. Indonesia's bilateral agreement is the 'building block' for the RCEP therefore, due to the increasing bilateral economic engagement globally, the most economic framework that benefits ASEAN is the ASEAN＋6. This phenomenon indicates that ASEAN economic integration will be succeeded because of the ASEAN Plus Framework. This open regionalism is the most practical way to own a succeeded economic transformation from the economic community (ASEAN Economic Community/AEC) to the common market. This study argued that the core of ASEAN succeed process is the bilateral economic integration within the members of the RCEP.

6. Conclusion

This study argues that Indonesia's bilateral economic agreement, in addition to the income per capita, is affected by other macroeconomic variables. There are 15 macroeconomic variables that this study proposes: GDP, GDP PPP, Economic Growth, Unemployment Rate, Inflation Rate, GDP per Capita, Public Debt to GDP, Annual Budget Deficit to GDP, FDI Outflows to GDP, Agriculture Value Added to GDP, Agriculture Employment to Total Employment, Manufacture Value Added to GDP, Trade in Services to GDP, High-Tech Export to Total Manufacture Export and R&D Expenditure to GDP.

These 15 macroeconomic variables are regressed to intra-trade as the dependent variable. Therefore, in total, this study adopts 16 macroeconomic variables. The result of significant or non-significant for each independent variable has been used as the weighted for the index, a comparative indicator of Indonesia and her economic partner. The regression results show that bilateral economic agreements are positively affected by purchasing power, economic growth, income per capita and country's role of RND as well as agriculture and manufacture's sector productivity. All of these variables have weight of two while the rest have weight of one.

This paper formulates 14 indexes based on the comparative variable between Indonesia and its economic partner. Each comparative become an index with weight adopted from regression results (either tow or one based on statistical significance result). The regression result carries non-negative character when it is transformed from the slope to the weight. Each index owns its positive weight in the process of transformation from a variable to an index. All of these 14 indexes then calculated into one composite index which represents Indonesia's advantage for bilateral negotiation.

This study finds the four highest composite indexes of economic partners for Indonesia's bilateral economic agreement. They are South Korea, Japan, Australia, and China. They are the members of the RCEP. This study argues that bilateral economic agreement will strengthen the ASEAN open regionalism of which at the end succeeding the ASEAN economic integration since the ASEAN Plus Framework is the key for the ASEAN economic integration transformation (Verico, 2017). This study indicates that bilateral economic agreements of Indonesia can be the building blocks for the ASEAN open regionalism. This role supports ASEAN to achieve the common market, not from the custom union but the bilateral economic agreements within member states.

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