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Wilson Rajagukguk<sup>1</sup>

## THE IMPACT OF JOINING WTO ON INDONESIA'S ECONOMY: ECONOMETRIC MODELLING APPROACH

*This paper discusses the impact of Indonesia's entry in WTO. The variables analyzed are macroaggregate ones, i.e. consumption, investment, export, import and gross domestic product (GDP) for the period of 1980–2010. The model considered is a new flexible Keynesian approach model. The results of the analysis show that consumption, investment, exports and imports increased when Indonesia joined WTO.*

*Keywords:* WTO membership; Indonesia; export; import.

Вільсон Раджагукгук

## ВПЛИВ ЧЛЕНСТВА У ВТО НА ЕКОНОМІКУ ІНДОНЕЗІЇ: СПРОБА ЕКОНОМЕТРИЧНОГО МОДЕЛЮВАННЯ

*У статті досліджено вплив входження Індонезії у ВТО на економіку країни. Проаналізовано макроекономічні зміни – споживання, інвестиції, обсяги експорту та імпорту, а також ВВП у період 1980–2010 років. Розглянута модель є прикладом гнучкого кейнсіанського підходу в економетриці. Результати аналізу показали, що вступ Індонезії до ВТО призвів до збільшення споживання, інвестування, експорту та імпорту.*

*Ключові слова:* членство у ВТО; Індонезія; експорт; імпорт.

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Вильсон Раджагукгук

## ВЛИЯНИЕ ЧЛЕНСТВА В ВТО НА ЭКОНОМИКУ ИНДОНЕЗИИ: ПОПЫТКА ЭКОНОМЕТРИЧЕСКОГО МОДЕЛИРОВАНИЯ

*В статье исследовано влияние вхождения Индонезии в ВТО на экономику страны. Проанализированы макроекономические переменные – потребление, инвестиции, объёмы экспорта и импорта, а также ВВП в период 1980–2010 годов. Рассматриваемая модель является примером гибкого кейнсианского подхода в эконометрике. Результаты анализа показали, что вступление Индонезии в ВТО привело к увеличению потребления, инвестирования, экспорта и импорта.*

*Ключевые слова:* членство в ВТО; Индонезия; экспорт; импорт.

**Introduction.** In the 2015–2019 Mid-Term Development Plan states that one of the three Indonesia's main problems is weak nation's economic foundation (Bappenas, 2014). It is characterized by poverty, social inequality, regional inequality, environment degradation caused by natural resources exploitation and also food, energy, financial and technological dependence problems. Although poverty is declining, in 2014 nearly 11% of the population lived below the poverty line. Given that Indonesia is the fourth largest population in the world the number of the poor reached almost 28 mln people in 2014, which is larger than Australia's total population or more than 5 times of Singapor. In addition, poverty varied greatly across the provinces, ranging from low 4% in the capital of the country, the Special Capital Region of Jakarta, to as high as 28% in the most remote and hard to reach province of Papua.

Low income per capita has been a major factor of this continuing high poverty in Indonesia. Globally, the gross domestic product (GDP) of Indonesia was the 16th highest in 2014 (approximately currently 888.5 bln USD). However, again, as the

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population of Indonesia is large, Indonesia is ranked the 74th lowest out of 204 countries by income per capita (currently – 3,514.62 USD). In 2014 Malawi was the country with the lowest income per capita (253.02 USD) and Norway had the highest income per capita (97,363.09 USD). Indonesia should increase its economic performance to strengthen its economic foundation. Among the important efforts is to join the International Trade Organization.

The World Trade Organization (WTO) was established in 1995 at the Uruguay Round of trade negotiations. It would function to suppress the domestic policy autonomy of the South together with the World Bank and the International Monetary Fund (IMF). The WTO was much better than the General Agreement on Tariffs and Trade (GATT) and had more ambitious agenda than the latter. The WTO did not only aim to reduce industrial product tariffs but also to lower the tariffs for agricultural goods through the Agreement on Agriculture, to additionally reduce the scope for countries to determine their domestic legislation through the Trade Related Investment Measures (TRIMS) and the General Agreement on Services (GATS), to lastingly transfer the technologically less advanced to economic backwaters by dramatically restricting access to technology through the Trade Related Intellectual Property Rights Agreement (TRIPS) and to subordinate development concerns to free trade principles favorable to corporations.

On the 1st of January 1995 Indonesia joined the WTO. It was followed by the adoption of the Law No. 7 of 1994 regarding the ratification of the Agreement Establishing World Trade Organization. It was believed that in addition to facilitate the opening of wider opportunities at international markets, this membership will principally provide better multilateral protection for national interests in international trade, particularly in dealing with trade partners.

Indonesia is continuously in search for revitalization of its allegiance to the WTO as a joint trading system. The WTO and GATT have been successful in establishing an atmosphere of trading requirements for its members. The mutual trading system of WTO is a law-based trading system as a resource to sustain economic growth, development and employment. The requirements for Indonesia to join the WTO consisted of import tariff reductions, agreement of foreign firms to trade openly at Indonesia's domestic markets, the telecommunication and finance sector commencing to more foreign competition and driving economic growth.

With its interesting and promising benefits almost all countries-nations have registered as the members of this organization. Although this organization has been an instrument of liberalists, the socialists also participated in order to maintain their trade international relationships. For example, socialist countries-nations, such as China and Vietnam, have shown their economic growth after their participation in WTO.

Three major principles of the WTO are most favored nations (non-discrimination), national treatment and transparency. These principles are the foundations for countries-nations in this organization to interact so that they are treated equally without discrimination or monopoly. In addition, the WTO had the objective to support goods and services producers, exporters and importers in trade activities. Other important objectives include:

a. To promote international trade flows by reducing and removing various obstacles that can disturb the smoothness of goods and services trade flows.

- b. To facilitate the negotiation by providing a negotiation forum.
- c. To solve disputes considering that trade relationships sometimes can lead to conflicts of interests.

However, those written objectives are difficult to implement because until now the WTO members still face international trade obstacles. For example, the US and Europe still provide subsidy to their agriculture sector and refuse agriculture products from other countries enter the markets, especially those from developing countries. As a result, agricultural products from the US and Europe are relatively affordable and have better quality than agriculture products from other countries, in particular developing ones.

In its WTO membership Indonesia has faced various situations, both ups and downs. Indonesia obtains benefits as a member explained above. However, Indonesia has not enjoyed all benefits maximally because of some reasons. With its WTO membership Indonesia had to standardize its products and this hinders Indonesia in international trade. It is difficult for Indonesian products to penetrate international markets. In addition, foreign products overflow Indonesia's national market. As a result, Indonesia's economic growth faces significant challenges. Indonesia also experiences international trade discrimination where developed countries protect themselves against products from developing countries. As a real example is the termination of clove cigarette import by the US. This case showed a violation act by the US against Indonesia. The WTO with its restrictions in international trade makes Indonesia, which is actually not ready to face free trade as such, be inevitably involved in it.

Therefore, it is not surprising if import goods quota in Indonesia increased significantly which is not accompanied with an adequately significant export volume. Consequently, Indonesia has to work hard to be able to go through this obstacle. Indonesia has to improve its national industry to produce international standardized products to compete in international trade. Indonesia also has to create the love of its own products among its people so that its national products can control the national markets.

Besides ineffective aspects in international trade as an impact from Indonesia's membership in the WTO, there are also positive aspects that are a bit comforting. For example, Indonesia has specific and unique products that become known globally. This positive aspect makes Indonesia have a special place in the heart of international community. Another example is the appointment of Indonesia's ambassador as a judge for the first time in the WTO's international trade resolution dispute panel among the US, Europe, Mexico and other.

This paper analyzes the impact of Indonesia's participation in the WTO on Indonesia's economic growth. The model used is a new flexible Keynesian approach.

**Data.** The data used in this paper is from Indonesia's economic macroaggregates available for the period of 1980–2010 and from the World Bank for the USA's GDP.

**The model.** Modelling in economies can take many approaches and forms with varying degrees of success in both theoretical and empirical context. This paper uses a simple five-equation Keynesian macroeconomics model of an open economy in the linear form. The model is a dynamic macroeconomic model (Pindyck and Rubinfeld, 1991; Tran-van-Hoa, 2002) for an open economy.

$$C_t = a_{11} + a_{12} Y_t + a_{13} C_{t-1} + e_{1t}; \quad (1)$$

$$I_t = a_{21} + a_{22} Y_t + a_{23} Y_{t-1} + a_{24} R_t + a_{25} R_{t-1} + e_{2t}; \quad (2)$$

$$X_t = a_{31} + a_{32} Y_t + a_{33} YW_t + a_{34} PIN_t + a_{35} PUS_t + e_{3t}; \quad (3)$$

$$IM_t = a_{41} + a_{42} Y_t + a_{43} YW_{t-1} + a_{44} PIN_t + a_{45} PUS_t + e_{4t}; \quad (4)$$

$$Y_t = C_t + I_t + G_t + X_t - IM_t, \quad (5)$$

where  $C$  – private final consumption expenditure;  $Y$  – gross domestic product or GDP (domestic income);  $I$  – private gross fixed investment;  $G$  – government expenditure;  $X$  – export of goods and services;  $IM$  – imports of goods and services;  $YW$  – US income (as a proxy for world income);  $PIN$  – general price deflator in Indonesia;  $PUS$  – general price deflator in the US (as a proxy for world prices);  $R$  – US regime rate (as a proxy for world interest rate);  $a_{ij}$  – denotes the structural parameter;  $e_{ij}$  – the error term.

**Trends in Indonesia's key economic activities.** In general, Indonesian economy increased since 1980. Although it experienced crises when there was a political conflict in 1997–1998, it recovered quickly and kept growing. It can be seen from Table 1 that Indonesian economy was consistently growing. In terms of Indonesia's participation in the WTO, Indonesia's exports and imports were also continuously growing. Export from Indonesia tended to be higher than import, except in the period of 1997–1998. This indicates that Indonesia benefitted in its economic growth from WTO participation. Economic macroaggregates were growing before and after WTO, but they grew higher after WTO entry.

Indonesia's export and import is the economic portrait of Indonesia in relation to participation in the WTO. The difference between export and import ( $X - IM$ ) indicates the international trade profit that reached 106,608.8 bln rupiah, -103,123.2 bln rupiah, and 404,213.3 bln rupiah in 1980, 1997 and 2010, respectively.

**Results.** The results of the analysis for equation (1) show that statistically GDP has significant positive impact on consumption (Table 2). The one unit increase in GDP will cause the consumption increase 0.109714 units. The results also indicate that consumption in year  $t$  is positively affected by the consumption in year  $t - 1$ . The increase of one unit consumption in year  $t - 1$  will cause the increase of consumption in the year  $t$  by 0.840765 units.

Based on the WTO membership equation (1), Indonesia's consumption increased significantly, except for the period of 1997–1998. The increase was higher after Indonesia joined WTO. This indicates that participation in the WTO promotes Indonesia's consumption growth.

The results of the analysis for equation (2) show that US prime rate and US prime rate (-1) statistically do not have significant effect on investment (Table 3). Therefore, these variables were excluded. The results of the analysis for equation (2a) (equation (2) without US prime rate and US prime rate (-1)) show that statistically GDP has significant positive impact on investment (Table 4). The one unit increase in GDP causes the investment increase by 1.053795 units. The results also indicate that investment is negatively affected by GDP in the year  $t - 1$ . The increase of one unit GDP in year  $t - 1$  causes the decline of investment by 0.135185 units.

Based on the WTO membership equation (2a), Indonesia's investment increased significantly, except for the period of 1997–1998. The increase was higher after

Indonesia joined the WTO. This indicates that WTO membership will increase Indonesia's investment growth.

*Table 1. Main macroaggregates: Indonesia 1980–2010, bln rupiah*  
(Ministry of Finance, Indonesia)

Year	C	Y	I	G	X	IM	X – IM
1980	340,937.9	907,137.9	842,683.3	64,454.6	247,364.2	140,755.4	106,608.8
1981	446,543.6	979,048.1	894,097.3	84,950.8	237,347.4	225,461.3	11,886.1
1982	487,374.3	1,001,041.9	905,265.3	95,776.6	218,450.7	234,472.0	(16,021.3)
1983	503,912.5	1,013,776.8	926,269.5	87,507.3	212,448.9	213,340.9	(892.0)
1984	531,774.6	1,084,493.1	993,585.8	90,907.3	230,431.3	197,373.6	33,057.6
1985	560,624.9	1,111,194.9	1,009,017.6	102,177.3	221,772.6	217,863.8	3,908.8
1986	559,755.3	1,176,476.8	1,073,253.4	103,223.4	248,943.6	221,261.1	27,682.4
1987	560,911.4	1,234,431.8	1,134,675.1	99,756.7	275,531.6	219,919.3	55,612.3
1988	567,15.6	1,305,786.8	1,201,713.3	104,073.5	272,268.4	173,247.1	99,021.4
1989	634,279.7	1,403,153.9	1,281,961.0	121,192.9	321,143.2	236,364.9	84,778.3
1990	648,816.1	1,504,772.2	1,375,815.5	128,956.7	319,445.7	227,865.6	91,580.1
1991	687,744.0	1,609,357.7	1,484,071.5	125,286.2	357,040.5	278,293.4	78,747.1
1992	696,371.4	1,713,312.4	1,582,544.5	130,767.9	402,845.2	292,422.6	110,422.6
1993	1,067,616.3	1,824,616.2	1,659,975.8	164,640.4	488,171.3	433,679.1	54,492.3
1994	1,136,729.5	1,962,191.8	1,790,831.2	171,360.6	545,855.1	530,627.5	15,227.6
1995	1,296,058.2	2,123,486.8	1,952,793.3	170,693.5	578,142.9	630,942.9	(52,800.0)
1996	1,422,043.9	2,289,500.8	2,114,210.9	175,289.9	621,849.9	674,254.3	(52,404.3)
1997	1,533,254.9	2,397,105.2	2,221,707.9	175,397.3	670,354.2	773,477.4	(103,123.2)
1998	1,440,461.3	2,085,303.7	1,936,645.6	148,658.1	745,836.1	733,083.1	12,753.0
1999	1,510,848.0	2,106,620.1	1,956,594.4	150,025.6	510,078.3	436,099.1	73,979.2
2000	1,357,653.3	2,202,181.7	2,058,335.3	143,846.5	902,394.7	670,775.2	231,619.5
2001	1,405,091.3	2,282,418.2	2,127,691.7	154,726.5	908,215.9	698,812.3	209,403.6
2002	1,458,987.7	2,385,113.4	2,210,282.7	174,830.8	897,162.4	669,116.5	228,045.9
2003	1,515,784.7	2,499,130.9	2,306,758.2	192,372.7	949,972.9	679,579.8	270,393.1
2004	1,591,076.6	2,624,859.1	2,424,809.8	200,049.4	1,078,488.7	860,710.7	217,777.9
2005	1,653,977.4	2,774,281.0	2,560,958.1	213,323.0	1,257,531.6	1,013,649.4	243,882.2
2006	1,706,465.3	2,926,896.9	2,693,072.3	233,824.6	1,375,811.0	1,100,649.0	275,162.0
2007	1,791,902.5	3,112,607.5	2,869,678.2	242,929.3	1,493,345.3	1,200,414.0	292,931.3
2008	1,886,488.2	3,297,762.5	3,029,641.3	268,121.2	1,634,813.0	1,319,758.4	315,054.5
2009	1,975,831.9	3,443,765.0	3,133,907.5	309,857.6	1,474,425.9	1,120,831.7	353,594.2
2010	2,083,232.5	3,732,999.2	3,423,448.0	309,551.1	1,721,517.4	1,317,304.1	404,213.3

*Table 2. Parameter estimates and standard errors for the model of the impact of Indonesia's membership in WTO on consumption (equation (1)), author's calculations*

Variable	Parameter Estimate	Standard error	Significance (p-value)
Intercept	-6,899.205000	4,203.688000	0.1034
GDP	0.109714	0.027244	0.0001
Consumption (-1)	0.840765	0.040391	0.0000

The results of the analysis for equation (3) show that statistically GDP of Indonesia, GDP of the US and general price deflator in Indonesia has significant positive impact on exports and general price deflator in the US has significant negative impact on exports (Table 5). One unit increase in GDP of Indonesia, GDP USA

and general price deflator in Indonesia cause the export increase by 0.381, 36.13 and 371.0 units respectively. Meanwhile, the increase of one unit in general price deflator in the US causes the decline of Indonesian export by 6,539.8 units.

**Table 3. Parameter estimates and standard errors for the model of the impact of Indonesia's membership in WTO on investment (equation (2)),**  
*author's calculations*

Variable	Parameter Estimate	Standard error	Significance (p-value)
Intercept	1,910.009000	4,101.052000	0.6423
GDP	1.052704	0.039753	0.0000
GDP (-1)	-0.136104	0.040411	0.0010
US prime rate	-64.306410	724.159200	0.9294
US prime rate (-1)	-80.994190	713.902700	0.9099

**Table 4. Parameter estimates and standard errors for the model of the impact of Indonesia's Membership in WTO on investment (equation (2a)),**  
*author's calculations*

Variable	Parameter Estimate	Standard error	Significance (p-value)
Intercept	118.909300	1,635.134000	0.9421
GDP	1.053795	26.830150	0.0000
GDP (-1)	-0.135185	0.039936	0.0010

**Table 5. Parameter estimates and standard errors for the model of the impact of Indonesia's membership in WTO on export (equation (3)),**  
*author's calculations*

Variable	Parameter Estimate	Standard error	Significance (p-value)
Intercept	190,228.300000	32,002.310000	0.0000
GDP Indonesia	0.381000	0.054525	0.0000
GDP US	36.139690	3.630863	0.0000
General price deflator in Indonesia	371.003600	98.689740	0.0003
General price deflator in the US	-6,539.842000	862.424300	0.0000

Based on the WTO membership equation (3), Indonesian export increased significantly, except for the period of 1997–1998. The increase was higher after Indonesia joined the WTO. This indicates that participation in WTO increases Indonesian exports growth.

The results of the analysis for equation (4) show that the general price deflator in Indonesia statistically does not have significant effect on the import (Table 6). Therefore, this variable was excluded from equation (4). The results of the analysis for equation (4a) (equation (4) without the general price deflator in Indonesia) demonstrate that statistically GDP in Indonesia and GDP in the US have significant positive impact on Indonesian import, while the general price deflator in the US has significant negative effect on Indonesian import (Table 7). One unit increase in Indonesian GDP and US GDP cause the Indonesia's import increase by 0.539701 and 19.2570 units respectively. Meanwhile, the increase in one unit of the general price deflator in the US causes the decline of Indonesian import by 5,133.5 units.

Table 6. Parameter estimates and standard errors for the model of the impact of Indonesia's membership in WTO on import (equation (4)),  
author's calculations

Variable	Parameter Estimate	Standard Error	Significance (p-value)
Intercept	121,147.400000	36026.380000	0.0010
GDP	0.529109	0.061382	0.0000
GDP US	18.524470	4.087419	0.0000
General price deflator in Indonesia	38.385130	111.099300	0.7303
General price deflator in the US	-4,951.163000	970.867000	0.0000

Table 7. Parameter estimates and standard errors for the model of the impact of Indonesia's membership in WTO on import (equation (4a)),  
author's calculations

Variable	Parameter Estimate	Standard Error	Significance (p-value)
Intercept	126,018.600000	33,031.200000	0.0002
GDP Indonesia	0.539701	0.052982	0.0000
GDP US	19.27570	5.589756	0.0000
General price deflator in the US	-5,133.468000	811.968900	0.0000

Based on the WTO membership equation (4a), Indonesian import increased significantly, except for the period of 1997–1998. The increase was higher after Indonesia joined the WTO. This indicates that participation in the WTO fosters Indonesia's import growth.

Based on the results above, the simultaneous models produced are as follows.

$$C_t = -6,899.205 + 0.109714Y_t + 0.840765C_{t-1}; \quad (1)$$

$$I_t = 118.909 + 1.053795Y_t - 0.135185Y_{t-1}; \quad (2)$$

$$X_t = 190,228.3 + 0.381Y_t + 36.13969YW_t + 371.0036PIN - 6,539.842PUS_t; \quad (3)$$

$$IM_t = 126,018.6 + 0.539701Y_t + 19.27570YW_{t-1} - 5,133.468PUS_t. \quad (4)$$

**Conclusions.** Indonesia's involvement in the WTO increased the economic growth of the country. Growth variables analyzed are consumption, investment, export and import. 5 simultaneous equations used show that Indonesia's involvement in the WTO will increase its consumption, investment, exports and imports.

The results of this study demonstrate that current consumption is the function of domestic product and the consumption of the last year. The results support the theory that consumption positively relates to current disposable income and other unspecified factors (Diulio, 1998: 50). In this case the unspecified factor is consumption during the last year.

J. Keynes (1936) also stated that consumption is strongly and stably affected by current income and that "the amount of aggregate consumption mainly depends on the amount of aggregate income (both measured in terms of wage units)." The magnitude of last year consumption has positive impact on current consumption.

Indonesia's investment is positively affected by current domestic product and negatively by domestic product last year. These results support the theory that investment is the share of domestic product minus government expenditure (Blanchard, 2006: 59). The increase in domestic production will increase the investment in Indonesia.

Indonesian export is influenced positively by domestic product, foreign income and general price deflator in Indonesia, and negatively – by the general price deflator in the US (used here as a proxy for world prices). These results support the macroeconomic theory (Case et al. 2012: 416) that export is affected by economic activity, such as the rest-of-the-world real wages, wealth, non-labor income, interest rate and prices for Indonesian goods relative to prices for the rest-of-the-world goods. Specifically about foreign income, this supports the economic theory which states that under open economy foreign income has positive impact on export (Blanchard, 2006: 397; Case et al., 2012).

Indonesian import positively depends on domestic product and Indonesia's price deflator and negatively – on the world price deflator. These findings also support the macroeconomic theory (Blanchard, 2006: 397). If Indonesian income increases then consumption and import will increase, as what happen to consumption and investment (Case et al., 2012: 416).

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