

ERIA Discussion Paper Series**No. 302****FTA Strategies to Strengthen Indonesian Exports:
Using the Computable General Equilibrium Model***

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Abstract: *This paper aims at evaluating the economic impacts of the various Indonesian free trade agreement (FTA) strategies in enhancing export-led growth. The potential impact of abolishing tariffs on three key sectors or commodities – (i) oil seeds, vegetable oils, and fats (VegOil); (ii) fishery and processed foods (FisheryPFD); and (iii) textile and apparel products (TextWapp) – with three trading partners – the European Union (EU28), members of the Gulf Cooperation Council (GCC), and India – is calculated using a computable general equilibrium model. To explore the long-term influence, we also take into account capital deepening and technological spillovers induced by trade. We derive the following implications from the exercise. First, amongst the three key sectors or commodities, TextWapp generates the largest spillover effects in the economy, as it uses more intermediary inputs. By contrast, although Indonesia has a comparative advantage in VegOil, that sector does not create large spillover effects in the economy. Second, amongst the three trading partners, it would be best to liberalise trade barriers further with the EU28 and India since India would bring gains to Indonesia by correcting a large price distortion in VegOil, while the EU28 would do so through TextWapp as well as VegOil. Since the initial trade volume of the GCC with Indonesia is not large, we might underestimate gains from trade with that region. Finally, the economic merits of abolishing tariffs are generated primarily through improvement of resource allocation in the affected countries. Improved resource allocation generates additional income, which increases imports. Without these income effects, Indonesia can only increase its exports via substitution effects.*

Keywords: Indonesia, tariff, trade policy, computable general equilibrium model

JEL classification: F13, F17, F51, O24

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1. Introduction

It is widely acknowledged that Indonesia has been a powerful emerging country since the 21st century, participating internationally in production networks and global value chains developed in East Asia and using its abundant low-wage labour force of about 260 million. Overall, Indonesia has achieved tremendous growth in gross domestic product (GDP) to date, with increasing domestic demand. However, Indonesia's imports have also risen because of the rapid expansion in domestic consumption and the shortage of domestic capacity to supply. Given this background, it has been argued in policy circles that Indonesia must nurture domestic industries and expand exports to obtain foreign currencies to maintain a sound financial environment.

Despite its need for exports to compensate for domestic demand, Indonesia remains at the low end of both the trade scale and export growth compared with other Association of Southeast Asian Nations (ASEAN) Member States (AMS). For example, Viet Nam recorded a ratio of total trade (exports plus imports) to GDP of 185% and export growth of 144% in 2016 in comparison with exports in 2010, but Indonesia only achieved 37% and -8% growth, respectively – far below the AMS average.¹ Moreover, Indonesia's exports depend heavily on primary products such as palm oil, coal, and rubber. In terms of its trade balance, although Indonesia recorded a trade surplus, this becomes a deficit if oil, coal, and gas are excluded from exports. Indonesia has been shrinking its trade balance by decreasing imports to improve the trade deficit, which causes a rise in consumer purchasing prices and a stagnation of economic growth at around 5%.

While a lack of competitiveness in its manufacturing sector makes Indonesian policymakers concerned that the country may fall into the middle-income trap, Indonesia's potential to become a major economic power should be explored. For this goal, Indonesia would need not only to grow out of an export structure that depends primarily on exporting natural resources but to transform its industrial and trade policies aimed at strengthening domestic sectors to obtain foreign demand. Two key points are pertinent to achieving this goal: which industries should be targeted and how

¹ The 2016 ratio of total trade to GDP (2016 export growth in comparison with 2010) for other AMS is as follows: Cambodia 127% (80%); Lao People's Democratic Republic 68% (64%); Malaysia 128% (-5%); Myanmar 43% (53%); the Philippines 65% (9%); and Thailand 123% (9%).

should exports be increased? This paper follows the ‘strategic hypothesis’ stipulated in Deloitte Tohmatsu Consulting LLC (henceforth, Deloitte, 2019), and the remainder of this section is dedicated to answering these questions.

After carefully evaluating the industrial potential in Indonesia, Deloitte (2019) prioritises the following six industries: (i) automobiles, (ii) heavy machines (especially for agriculture), (iii) electronics, (iv) palm oil, (v) fishery and processed foods, and (vi) textiles and apparel. While industries (i) to (iii) are regarded as ‘stars’ in forming industrial foundations such as supporting industries in Indonesia, this paper focuses on the more conventional industries (iv) to (vi). This choice is due to the following reasons. First, since these industries were formed in Indonesia a long time ago, industrial promotion policies are likely to generate economic impacts in the short term. The second reason is that the Government of Indonesia needs to maintain them as a social policy or a business at the bottom of the pyramid. Lastly, such industrial promotion is congruent to regional advantages and enhances regional industries, firms, and employment.

Next, trade policy is also required in tandem with industrial promotion policy to improve global competitiveness and increase exports. Specifically, it seems effective for Indonesia to expand free trade agreements (FTAs), especially with new foreign partners. In general, FTAs are expected to increase exports from Indonesia (as well as imports from partner countries) by liberalising trade, typically decreasing the tariff rates of partner countries. While Indonesia has thus far concluded FTAs with regional partners, Deloitte (2019) indicates that the European Union (EU), the Gulf Cooperation Council (GCC),² and India could be future strategic trade partners because they have further leeway to accept imports from Indonesia. The EU is a potentially important trade partner with respect to its market scale, and the Government of Indonesia has sought the possibility of concluding an FTA with the EU following the EU–Viet Nam FTA.³ Indonesia also has the geographical advantage of good access to countries in the Indian Ocean (e.g. India, the GCC, and East Africa) and cultural proximity to the GCC countries in terms of Islamic culture and business customs. In particular, Indonesia could export its brand products to GCC countries

² The GCC comprises Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

³ The EU–Viet Nam FTA was concluded in December 2012 and is expected to come into effect in 2019.

which are left behind from industrialisation. Moreover, although the ASEAN–India FTA came into effect in 2010, room remains for further trade liberalisation between Indonesia and India.

To examine whether the aforementioned ‘strategic hypothesis’ is valid for Indonesia, this paper uses the Global Trade Analysis Project – Computable General Equilibrium (GTAP CGE) model to analyse the quantitative consequences of abolishing the import tariffs of specific strategic sectors (i.e. palm oil, fishery and processed foods, and textiles and apparel) with key trading partners (i.e. the EU, the GCC, and India).

The remainder of this paper is organised as follows. Section 2 provides an overview of Indonesian industry and trade policy by studying data and existing literature. Section 3 describes the evaluation method of the GTAP CGE model. Section 4 presents simulation results in accordance with the ‘strategic hypothesis’, while section 5 concludes.

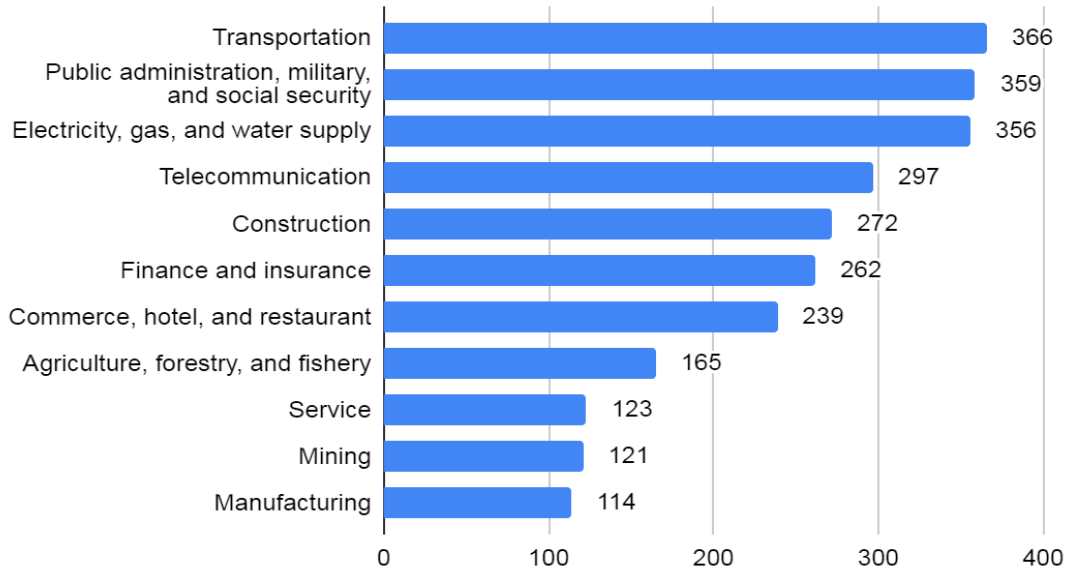
1. Overview of Indonesian Industry and Trade Policy

1.1. Industrial Structure

Let us first examine Indonesia’s overall industrial structure. Figure 1 shows the nominal GDP growth rate in the main sectors from 2008 to 2018. From this figure, it is observed that the growth rates of the manufacturing and agricultural, forestry, and fishery sectors were relatively low while transportation, public service (public administration, military, and social security), and utilities (electricity, gas, and water supply) grew by more than 300% because of increased public expenditure on infrastructure. Figure 2, presenting sectoral shares of nominal GDP, also shows that the manufacturing sector decreased its share from 28% to 21% while the agricultural, forestry, and fishery sector share reduced from 14% to 13% during 2008–2018. In the long-term Masterplan for Acceleration and Expansion of Indonesia’s Economic Development (MP3EI) unveiled in 2011, the Government of Indonesia set the ambitious goal to become a top 10 developed country with GDP per capita of \$15,000 by 2025. Toward this goal, the MP3EI aims to nurture such prioritised sectors as natural resources (including palm oil), agriculture, fishery, transport machinery, food processing, and textiles. Thus, the ‘strategic hypothesis’ presented in this paper is

consistent with the MP3EI.

Figure 1: Growth Rate of National GDP Share by Sector, 2008–2018 (%)



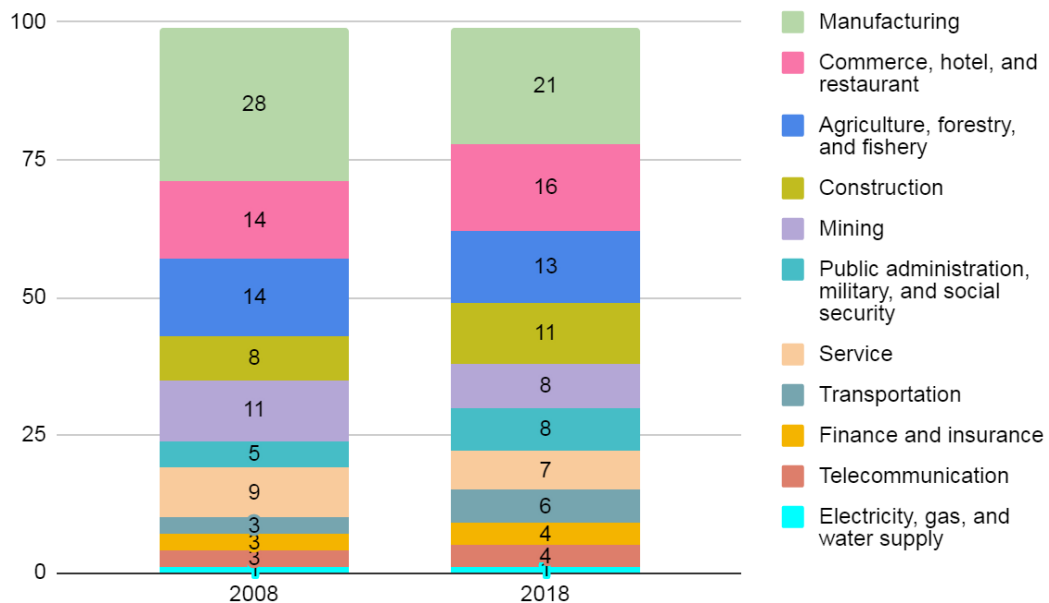
GDP = gross domestic product.

Source: Authors' compilation based on Statistics Indonesia (Badan Pusat Statistik), GDP per sector online data (2010 and 2011 series). <https://www.bps.go.id/subject/11/produk-domestik-bruto--lapangan-usaha-.html#subjekViewTab3> (accessed 27 June 2019).

1.2. Strategic Sectors and Commodities

The territory of Indonesia is geographically large and heterogenous, which poses a challenge for promoting regional development and narrowing development gaps. Thus, the 'strategic hypothesis' explained in section 1 highlights the importance of formulating effective industrial policies which can enhance distinguishing sectors or commodities and export competitiveness in individual regions as regional growth engines. In this paper, the regional bases for sectors are assumed as follows: palm oil for Sumatra and Kalimantan; fishery for Bali, Nusa Tenggara, and Sulawesi; and textiles and apparel for Java.

Figure 2: Nominal GDP Share by Sector
(%)



GDP = gross domestic product.

Source: Authors' compilation based on Statistics Indonesia (Badan Pusat Statistik), GDP per sector online data (2000 and 2011 series). <https://www.bps.go.id/subject/11/produk-domestik-bruto--lapangan-usaha-.html#subjekViewTab3> (accessed 27 June 2019).

1.2.1. Palm Oil

Palm oil is a main export commodity of Indonesia, recording the largest amount of exports, at \$18,513 million, in 2017. Indonesia produced 55% of the world's palm oil, followed by Malaysia at 29%. The consumption of palm oil is increasing globally because of the huge expansion in demand for food oil in China, Middle Eastern countries, and Africa, and for biodiesel in the EU. Since palm oil generally has higher productivity and a smaller risk of price hikes than other oils, it is expected to help developed countries shift away from petroleum oil, whose prices have risen in recent years. Hence, demand for palm oil is likely to increase in the long run. However, the EU currently has import restrictions on palm oil from developing countries including Indonesia, which may cause global excessive supply in the short run, so Indonesia needs to address the EU's concerns such as environmental destruction.

1.2.2. Fishery and Processed Foods

Indonesia is the second largest fishery producer in the world, at 23 million tons, following China's 82 million tons in 2017. It has great potential in the sector, but its exports are rather small, at \$1,720 million – only about one tenth of China's \$20,131 million and less than those of Viet Nam (\$7,320 million) and Thailand (\$5,893 million). Cheap, unprocessed wet fish is exported from Indonesia to Thailand, where fishery products are processed and exported to the EU, the United States, and Japan. In line with recent market trends, the consumption of prepared and preserved products is expected to increase in Middle Eastern countries, which have huge halal markets, in addition to the aforementioned countries. Therefore, Indonesia needs to enhance the sector's capacity to make such products and extend its market to large growing markets.

1.2.3. Textile and Apparel

The textile and apparel sector has played a significant role in job creation in Indonesia. While it contributes only 2% to nominal GDP, it provided 17% of employment in the manufacturing industry in 2017. The sector thereby acts as a social safety net for the bottom of the pyramid, so Indonesia needs to continue to maintain its competitiveness in terms of exports. However, growth in Indonesia's apparel exports seems to have stagnated at 2.3% per year from 2007 to 2017 despite dramatic growth in China (4.5%), Cambodia (17.1%), and Viet Nam (10.8%). Since the textile and apparel sector is extremely labour-intensive, production bases have moved to low-wage countries such as Bangladesh, Cambodia, and Ethiopia. Despite rapidly rising wages in West Java, which decrease its export competitiveness as a textile industrial centre, such a wage rise has not yet been observed in Central Java.

1.3. Trade Policy

The trade policy of the Government of Indonesia has inclined towards protectionism on several occasions despite efforts to liberalise trade and investment, according to Ing, Pangestu, and Cadot (2018) and Pangestu, Rahardja, and Ing (2015), who comprehensively reviewed the history of Indonesia's trade policy from 1965 to 2015. They argued that, after the import-substitution policy in 1971–1985 escalated the effective rates of protection through local content, import licensing, and banning

exports of resources – which resulted in the devaluation of the rupiah – bold deregulation and aggressive export diversification policies were adopted in 1985–1999. This policy change was prompted by participation in the multilateral global trade system such as the ASEAN Free Trade Area (AFTA) (1992), the Bogor Goals of the Asia-Pacific Economic Cooperation Leaders’ Meeting (1994), and the World Trade Organization (1995). Still, firms that are assured to exclusive access to imports retained an influential power to distort domestic prices.

Since the 1997–1998 Asian Financial Crisis and the subsequent International Monetary Fund structural reform programme, Indonesia has made continuous efforts to reform its trade policy by reducing trade restrictions and increasing transparency, despite its shortcomings and the occasional surge of trade protectionism. As Basri and Patnuru (2012) expect against trade protectionism, international trade agreements – multinational, regional, and bilateral – have been an important tool for Indonesia to achieve this trade policy goal. Indonesia has concluded six regional and two bilateral trade agreements: the AFTA; the ASEAN–Australia–New Zealand Free Trade Agreement; the ASEAN–China Free Trade Agreement; the ASEAN–India Free Trade Agreement; the ASEAN–Japan Comprehensive Economic Partnership; the ASEAN–Korea Free Trade Agreement; the Indonesia–Japan Economic Partnership Agreement; and the Indonesia–Pakistan Preferential Trade Agreement. Indonesia subsequently signed the bilateral Indonesia–Australia Comprehensive Economic Partnership in March 2019 and largely agreed to the Comprehensive Economic Partnership Agreement with the European Free Trade Association (EFTA) in November 2018.⁴ To the best of the authors’ knowledge, however, the Government of Indonesia does not have any definite plans to negotiate trade agreements with the EU, the GCC, or India.

⁴ The EFTA comprises Iceland, Lichtenstein, Norway, and Switzerland.

2. Evaluation Method

2.1. Data and Model

2.1.1. Data

We use the GTAP data version 9.0 (R9.0A_2011_Apr2016) and the benchmark year is 2011. Some protection data are not updated from previous versions, and the national accounts data and trade statistics are adjusted to replicate the balance amongst regions.⁵ The original database consists of 140 countries or regions and 57 commodities or industries. For our analytical purposes, we aggregate them into 15 countries or regions and 14 commodities or industries (see Appendices 1 and 2). There are four initial endowments for production – land, labour, capital, and natural resources.

2.1.2. Model

We use the version 6.2 GTAP model, with an additional equation to link trade openness and technological change.⁶ The model has a social welfare function composed of private consumption, government consumption, and national savings. Since the function takes the form of the Cobb-Douglas type (which is popular in economic analyses), each share is held constant. Each commodity demand for private consumption is driven by income, relative prices, and initial quantity of demand. Domestic demand is comprised of domestic supply and aggregate imports, which are elastic to relative price changes.

Firms are assumed to produce commodities by mixing value-added and intermediary inputs. The value-added inputs are land, labour, capital, and natural resources, with varying composition weights by industry. The intermediary inputs are in fixed proportions to the output – the Leontief structure. The intermediary inputs are composed of domestic supply and aggregate imports. Substitution between domestic and imported goods is determined by the fixed elasticity of substitution. We assume that the import destinations have the same substitution structure, but different elasticities (Appendix 3).

⁵ See Aguiar, Narayanan, and McDougall (2016) and related GTAP technical papers on data construction.

⁶ For a detailed account of the GTAP model and data, see GTAP, GTAP Models, Current GTAP Model. <https://www.gtap.agecon.purdue.edu/models/current.asp> (accessed 26 June 2019). Note that the GTAP 7 is the latest version of the model.

The national savings rate is fixed by the Cobb-Douglas type social utility function. National investment is derived from production activities, and the gap between savings and investment is set equal to net imports. To solve the model, it is assumed that national investment is allocated to equalise the expected rate of return on capital amongst regions.

One equation is added to the standard model above for this exercise – a link between the trade openness variable and the nationwide technological change variable. Prior studies have often claimed that trade openness nurtures innovation by creating a competitive environment for firms, meaning that there is a greater degree of diversity in goods and firms in markets. For example, Lee, Ricci, and Rigobon (2004) analysed a relation between per capita growth and trade openness and concluded that a 10 percentage point increase in trade openness led to 0.27% growth. Wolszczak-Derlacz (2014) also showed a positive relationship between total factor productivity and trade openness through a competitive environment by using panel data for Organisation for Economic Co-operation and Development (OECD) countries. Given these arguments, it is worthwhile taking into account the endogenous growth mechanism that generates an explicit link between trade and technology, although this is an ad hoc treatment (Appendix 4).⁷

2.2. Simulation Plan

While a popular CGE model simulation incorporates a comprehensive tariff reduction schedule consistent with an actual negotiation, this analysis focuses on a marginal impact from a few selected Indonesian export commodities focused on by the government in accordance with the aforementioned ‘strategic hypothesis’: (i) oil seeds, vegetable oils, and fats (VegOil); (ii) fishery and processed foods (FisheryPFD); and (iii) textile and apparel products (TextWapp). Out of Indonesia’s many prominent trading partners or importers of these commodities, we examine the EU (EU28), members of the GCC, and India.

The economic impact of abolishing tariffs on selected Indonesian export commodities or sectors is calculated under two different forms of macroeconomic

⁷ The formula is $AOREG=0.15 * (\text{gross trade change} - \text{GDP change})$, where AOERG is the percentage change of the output augmenting the technical change. See Government Headquarters for the Trans-Pacific Partnership, Japan (2015) for a detailed account of this issue.

closure to analyse the cause of the changes. The primary or direct cause of the economic change (short-term impact) would be a tariff cut. Based on the tariff data in the GTAP version 9.0, Table 1 shows the effective changes to the import prices of three targeted commodities in three selected regions. According to this exercise, the changes to import prices in the EU28 and GCC are similar, at around 5%, while the changes in India are the largest, indicating that India has the largest tariff barriers to trade.

Table 1: Changes in Import Prices Due to Tariff Cut (%)

No.	Commodity/Sector	EU28	GCC	India
1	GenMach	0	0	0
2	VegOil	-4.1159	-4.7593	-43.8970
3	FishryPFD	-7.1533	-4.5152	-25.0792
4	Electronics	0	0	0
5	TextWapp	-6.7139	-4.7612	-10.2383
6	Agriculture	0	0	0
7	PaperWood	0	0	0
8	MineralFuel	0	0	0
9	PetroChem	0	0	0
10	MngMetal	0	0	0
11	MotorTran	0	0	0
12	Utilities	0	0	0
13	TransCom	0	0	0
14	Services	0	0	0

Agriculture = agricultural products; Electronics = electronic equipment; EU = European Union; FishryPFD = fishery and processed foods; GCC = Gulf Cooperation Council; GenMach = machinery and equipment; MineralFuel = coal, oil, and gas; MngMetal = mining and metal products; MotorTran = motor vehicles, parts, and transportation equipment; PaperWood = paper and wood products; PetroChem = petroleum and chemical; Services = finance, insurance, and other services; TextWapp = textile and apparel products; TransCom = transport and communication; Utilities = electricity, gas, water, and construction; VegOil = oil seeds, vegetable oils, and fats.

Note: See Appendix 2 for the items in each data classification.

Source: Authors' calculation.

The secondary or indirect cause of the economic change (long-term impact) would be capital accumulation and/or the technological change induced by trade. Tariff cuts influence commodity prices and quantities, which renew income, savings, and investment levels. Changes in savings are, by definition, linked to capital accumulation in the long run. In addition, trade expansion may have a positive effect on technological development and innovation over time. As noted in subsection 3.1, an ad hoc equation to capture trade-induced technological change creates additional changes which shape long-term economic development.

3. Simulation Results

3.1. The EU28 Case

3.1.1. Short-Term Impact

Table 2 presents the short-term changes to key indicators after abolishing tariffs with the EU28. Exports of the three targeted commodities – VegOil, FisheryPFD, and TextWapp – from Indonesia to the EU28 increase by 26.04%, 47.76%, and 64.00%, respectively. The additional exports stimulate Indonesian domestic production of the commodities by 0.81%, 0.43%, and 6.77%, respectively, though they are not large enough to increase GDP. In the targeted sectors, demand for employment and capital services in Indonesia expands in line with the growth in production, as the relative price between labour (wage) and capital (rental rate) does not change significantly. Since the short-term simulation fixes the total amount of labour and capital in each country, an expansion in one sector necessarily causes a contraction in other sectors, so net income effects are small.

With respect to the EU28, aggregate imports and exports do not change much, as Indonesia's share of its imports is small. Unilateral abolition of tariffs on imports from Indonesia may have a negative but small impact on the region's economic welfare evaluated by equivalent variation.

Table 2: Changes in Key Indicators in Indonesia and EU28 (Short Term)

Targeted sector (Import share in EU28)		VegOil (7.3%)	FishryPFD (1.5%)	TextWapp (2.7%)
Exports to EU28	%	26.04	47.76	64.00
Exports to the world	%	1.48	6.25	15.04
Production	%	0.81	0.43	6.77
Employment	%	0.89	0.47	6.75
Capital service	%	0.90	0.48	6.81
Total economy in Indonesia				
Total exports	%	0.02	0.02	0.39
Total imports	%	0.05	0.06	0.81
Trade balance	\$ million	18.18	-4.32	-338.55
Equivalent variation	\$ million	76.49	76.17	535.62
Real GDP change	%	0.00	0.00	0.01
Total economy in EU28				
Total exports	%	0.00	0.00	0.01
Total imports	%	0.00	0.00	0.01
Trade balance	\$ million	-7.12	41.03	157.17
Equivalent variation	\$ million	-20.06	-57.74	-413.88
Real GDP change	%	0.00	0.00	0.00

EU = European Union; FishryPFD = fishery and processed foods; GCC = Gulf Cooperation Council; GDP = gross domestic product; TextWapp = textile and apparel products; VegOil = oil seeds, vegetable oils, and fats.
Source: Authors' calculation.

3.1.2. Long-Term Impact

Table 3 presents the long-term changes in key indicators after abolishing tariffs with the EU28. The difference between the short-term and long-term results stems from changes in capital and technology levels. Exports of the targeted commodities from Indonesia to the EU28 increase by almost the same percentages as in the short-term case, suggesting that additional changes in capital and technology levels do not stimulate the targeted sectors further. Instead, capital accumulation and trade-induced technological changes increase GDP, total exports, and total imports, which suggests that they could weaken the negative substitution effects from the targeted sectors to other tradable sectors, while positive income effects could stimulate non-tradable sectors.

Out of the three targeted sectors or commodities, TextWapp has the greatest impact on GDP. This is simply because, of the three, it has the largest initial price shock, the largest output weight within the economy, and the strongest production linkages or intermediate demand with other sectors.

Table 3: Changes in Key Indicators in Indonesia and EU28 (Long Term)

Targeted sector (Import share in EU28)		VegOil (7.3%)	FishryPFD (1.5%)	TextWapp (2.7%)
Exports to EU28	%	26.04	47.78	65.07
Exports to the world	%	1.48	6.26	15.78
Production	%	0.81	0.44	7.30
Employment	%	0.89	0.47	6.94
Capital service	%	0.91	0.50	7.60
Total economy in Indonesia				
Total exports	%	0.03	0.04	0.76
Total imports	%	0.06	0.07	0.97
Trade balance	\$ million	27.88	20.49	-35.34
Equivalent variation	\$ million	139.58	152.63	2,931.27
Real GDP change	%	0.01	0.01	0.38
Total economy in EU28				
Total exports	%	0.00	0.00	0.02
Total imports	%	0.00	0.00	0.01
Trade balance	\$ million	-9.94	-8.16	-44.54
Equivalent variation	\$ million	106.77	228.16	1,014.13
Real GDP change	%	0.00	0.00	0.01

EU = European Union; FishryPFD = fishery and processed foods; GDP = gross domestic product; TextWapp = textile and apparel products; VegOil = oil seeds, vegetable oils, and fats.
Source: Authors' calculation.

3.2. The GCC Case

3.2.1. Short-Term Impact

Table 4 presents the short-term changes in key indicators after abolishing tariffs with the GCC. The exports of the three targeted commodities – VegOil, FisheryPFD, and TextWapp – from Indonesia to the GCC increase by 30.41%, 27.74%, and 42.99%, respectively. However, the increase in exports to the GCC is not large enough to boost Indonesia's domestic production. Indeed, Indonesia's production of VegOil, Fishery_PFD, and TextWapp increases by just 0.16%, 0.03%, and 0.52%, respectively. Demand for employment and capital services expand in line with production, as a relative price between labour (wage) and capital (rental rate) does not change significantly.

For the GCC, aggregate imports and exports do not change much, as Indonesia's share of its imports is small – only 8.1%, 0.7%, and 2.6% for VegOil, FisheryPFD, and TextWapp, respectively. Unlike the EU28 case, the negative impact on economic welfare, as evaluated by equivalent variation, is almost zero.

Table 4: Changes in Key Indicators in Indonesia and GCC (Short Term)

Targeted sector (Import share in GCC)		VegOil (8.1%)	FishryPFD (0.7%)	TextWapp (2.6%)
Exports to GCC	%	30.41	27.74	42.99
Exports to the world	%	0.29	0.51	1.15
Production	%	0.16	0.03	0.52
Employment	%	0.17	0.04	0.52
Capital service	%	0.18	0.04	0.52
Total economy in Indonesia				
Total exports	%	0.00	0.00	0.03
Total imports	%	0.01	0.01	0.06
Trade balance	\$ million	3.52	-0.31	-25.31
Equivalent variation	\$ million	15.07	6.15	40.37
Real GDP change	%	0.00	0.00	0.00
Total economy in GCC				
Total exports	%	0.00	0.00	0.00
Total imports	%	0.00	0.00	0.01
Trade balance	\$ million	-7.39	-4.41	-18.73
Equivalent variation	\$ million	-0.03	0.73	-0.46
Real GDP change	%	0.00	0.00	0.00

FishryPFD = fishery and processed foods; GCC = Gulf Cooperation Council; GDP = gross domestic product; TextWapp = textile and apparel products; VegOil = oil seeds, vegetable oils, and fats.

Source: Authors' calculation.

3.2.2. Long-Term Impact

Table 5 presents the long-term changes in key indicators after abolishing tariffs with the GCC. Exports of the three commodities from Indonesia to the GCC increase by almost the same percentages as those in the short-term case, which means that additional changes in capital and technology levels do not stimulate the targeted sectors further. This property is consistent with the results from the EU28 case.

Out of the three targeted sectors or commodities, TextWapp again has the largest impact on GDP. This is simply because, of the three, it has the largest initial price shock, the largest output weight within the economy, and the strongest production linkages and intermediate demand with other sectors.

Table 5: Changes in Key Indicators in Indonesia and GCC (Long Term)

Targeted sector (Import share in GCC)		VegOil (8.1%)	FishryPFD (0.7%)	TextWapp (2.6%)
Exports to GCC	%	30.41	27.75	43.06
Exports to the world	%	0.29	0.51	1.20
Production	%	0.16	0.04	0.55
Employment	%	0.17	0.04	0.53
Capital service	%	0.18	0.04	0.58
Total economy in Indonesia				
Total exports	%	0.01	0.00	0.06
Total imports	%	0.01	0.01	0.07
Trade balance	\$ million	5.41	1.64	-2.63
Equivalent variation	\$ million	27.81	12.36	220.95
Real GDP change	%	0.00	0.00	0.03
Total economy in GCC				
Total exports	%	0.00	0.00	0.01
Total imports	%	0.00	0.00	0.01
Trade balance	\$ million	-0.92	-0.09	-1.99
Equivalent variation	\$ million	17.82	14.72	69.94
Real GDP change	%	0.00	0.00	0.01

FishryPFD = fishery and processed foods; GCC = Gulf Cooperation Council; GDP = gross domestic product; TextWapp = textile and apparel products; VegOil = oil seeds, vegetable oils, and fats.
Source: Authors' calculation.

3.3. The India Case

3.3.1. Short-Term Impact

Table 6 presents the short-term changes in key indicators after abolishing tariffs with India. Exports of the three targeted commodities – VegOil, FisheryPFD, and TextWapp – from Indonesia to India increase drastically by 230.42%, 348.06%, and 123.00% respectively, thanks to double-digit price shocks. Since India accounts for more than half of Indonesia's VegOil exports, Indonesia's exports to the world increase by 44.11%. Following the surge in exports, production increases to meet demand and the production of VegOil increases by 23.48%. The other two sectors only expand marginally with a small increase of exports. Demand for employment and capital services expand in line with production, as the relative price between labour (wage) and capital (rental rate) does not change significantly.

In India, aggregate imports and exports do not change considerably, except in the case of VegOil. Economic welfare in the VegOil case, as evaluated by equivalent

variation, increases significantly because of improved resource allocation within India, whereas it does not change significantly in the other two cases.

Table 6: Changes in Key Indicators in Indonesia and India (Short Term)

Targeted sector (Import share in India)		VegOil (56.3%)	FishryPFD (2.7%)	TextWapp (1.9%)
Exports to India	%	230.42	348.06	123.00
Exports to the world	%	44.11	1.64	0.82
Production	%	23.48	0.11	0.37
Employment	%	26.43	0.12	0.37
Capital service	%	26.77	0.13	0.37
Total economy in Indonesia				
Total exports	%	0.71	0.01	0.02
Total imports	%	1.73	0.02	0.04
Trade balance	\$ million	560.50	-1.19	-18.29
Equivalent variation	\$ million	2,556.63	20.06	29.05
Real GDP change	%	0.01	0.00	0.00
Total economy in India				
Total exports	%	3.07	0.02	0.03
Total imports	%	1.71	0.01	0.01
Trade balance	\$ million	-347.39	2.96	6.49
Equivalent variation	\$ million	1,066.16	-13.39	-23.41
Real GDP change	%	0.23	0.00	0.00

FishryPFD = fishery and processed foods; GDP = gross domestic product; TextWapp = textile and apparel products; VegOil = oil seeds, vegetable oils, and fats.

Source: Authors' calculation.

3.3.2. Long-Term Impact

Table 7 presents the long-term changes in key indicators after abolishing tariffs with India. Exports of the three commodities from Indonesia to India increase by almost the same percentage as in the short-term case, suggesting that additional changes in capital and technology levels do not stimulate the targeted sectors further. This finding is consistent with results from the EU28 and GCC cases. Capital accumulation and trade-induced technological changes increase GDP, total exports, and total imports, suggesting that they could weaken the negative substitution effects from the targeted sectors to other tradable sectors, while the positive income effects stimulate the non-tradable sectors. It should be noted that the gains in India from abolishing tariffs are much larger than the gains in Indonesia. This is simply because India can reallocate resources amongst sectors more efficiently, accumulate more capital, and achieve an

additional trade-induced technological innovation.

Out of the three targeted sectors or commodities, VegOil has the largest impact on GDP, although it does not account for much of the Indonesian economy's output. Indeed, 44.85% growth in VegOil exports generates just 1.08% growth in total exports and only 0.34% growth in GDP. TextWapp exports increase by just 0.85%, but that increases total exports and GDP by 0.04% and 0.02%, respectively. TextWapp's elasticity of GDP to exports is 2.4%, which is three times larger than VegOil's 0.8%.

Table 7: Changes in Key Indicators in Indonesia and India (Long Term)

Targeted sector (Import share in India)		VegOil (56.3%)	FishryPFD (2.7%)	TextWapp (1.9%)
Exports to India	%	233.84	348.12	123.09
Exports to the world	%	44.85	1.64	0.85
Production	%	23.93	0.11	0.39
Employment	%	26.83	0.12	0.38
Capital service	%	27.45	0.13	0.41
Total economy in Indonesia				
Total exports	%	1.08	0.01	0.04
Total imports	%	1.87	0.02	0.05
Trade balance	\$ million	979.18	5.70	-1.41
Equivalent variation	\$ million	4,775.19	39.68	157.50
Real GDP change	%	0.34	0.00	0.02
Total economy in India				
Total exports	%	3.81	0.02	0.03
Total imports	%	2.81	0.02	0.02
Trade balance	\$ million	-3,823.68	-20.10	-19.77
Equivalent variation	\$ million	28,938.09	162.85	177.63
Real GDP change	%	1.98	0.01	0.01

FishryPFD = fishery and processed foods; GDP = gross domestic product; TextWapp = textile and apparel products; VegOil = oil seeds, vegetable oils, and fats.

Source: Authors' calculation.

3.4. Aggregate Impact of All Three Commodities

The last simulation case abolishes tariffs with the three trading partners on all three commodities simultaneously. As shown in Table 8, in the short term, the India case has the largest impact on Indonesia from the viewpoint of equivalent variation and GDP change, followed by the EU28 and GCC cases. This can be largely explained by the differences in the size of the initial shocks. However, in the long term, the impact of the EU28 case is almost equivalent to the India case, implying that liberalising trade

with a large economy creates an opportunity to promote capital accumulation and trade-induced technological innovation.

Table 8: Aggregated Changes in Key Indicators

Changes in Indonesia		EU28	GCC	India
Short-term impact				
Total exports	%	0.44	0.04	0.74
Total imports	%	0.92	0.08	1.79
Trade balance	\$ million	-324.46	-22.10	541.36
Equivalent variation	\$ million	685.63	61.55	2,603.84
Real GDP change	%	0.01	0.00	0.01
Long-term impact				
Total exports	%	0.83	0.07	1.13
Total imports	%	1.09	0.09	1.94
Trade balance	\$ million	12.63	4.41	983.47
Equivalent variation	\$ million	3,213.34	261.02	4,967.43
Real GDP change	%	0.40	0.03	0.36

EU = European Union, GCC = Gulf Cooperation Council, GDP = gross domestic product.

Source: Authors' calculation.

4. Conclusion

This paper aims at evaluating the economic impact of the various Indonesian FTA strategies in enhancing export-led growth, following the 'strategic hypothesis' outlined by Deloitte (2019). The potential impact of abolishing tariffs on three key sectors or commodities – palm oil (VegOil), fishery and processed foods (FishryPFD), and textiles and apparel (TextWapp) – with three specific trading partners – the EU, the GCC, and India – is calculated using a CGE model. To explore the long-term economic influence, we also take into account capital deepening and technological spillover induced by trade. We derive the following implications from the exercise.

First, amongst the three key sectors or commodities, TextWapp generates the largest spillover effects in the economy, as it uses more intermediary inputs. Although Indonesia has a comparative advantage in VegOil, that sector does not create large spillover effects in the economy. Second, it would be best to liberalise trade barriers further with the EU and India since India would bring gains to Indonesia by correcting a large price distortion in VegOil, while the EU would bring gains to Indonesia through TextWapp as well as VegOil. Since the initial trade volume of the GCC with Indonesia is not large, we might underestimate gains from trade with that region. Finally, the

economic merits from abolishing tariffs are generated primarily through improvement of resource allocation in the affected countries. Improved resource allocation generates additional income, which increases imports. Without these income effects, Indonesia can only increase its exports via substitution effects.

If we consider that Indonesia's real GDP growth has been around 5%, in a few years the long-term impact of 0.8% on real GDP induced by this 'strategic hypothesis' is not absolutely miniscule. Therefore, we can say that Indonesia can expect a significant economic benefit overall by carrying out such industrial and trade targeting policies.

At the same time, however, we need to recognise the need to facilitate supporting policies. For example, Ing, Pangestu, and Cadot (2018) showed the very low usage rate of FTAs by Indonesian firms – 25%–41% for exports and 6%–34% for imports. Ing, Fukunaga, and Isono (2014) also demonstrated that 60% of firms surveyed across the AMS claimed that little information was available on FTAs. Thus, one challenge of micro trade policies for Indonesia is to increase the usage rate of FTAs to derive the maximum benefit from the expansion of FTA partners. Furthermore, micro industrial policies matter. Indonesia needs to address the EU's concern about environmental and workers' protection to increase exports of palm oil through FTAs. This paper does not describe the details of the necessary policies (see Deloitte (2019)). However, in addition to the 'strategic hypothesis', appropriate supporting policies should be well aligned.

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Appendix 1: Regional Aggregation

No.	Country/Region	Countries and Regions in GTAP Data
1	EU28	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom
2	GCC	Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, UAE
3	Near Middle East and North Africa	Islamic Republic of Iran, Israel, Jordan, Turkey, Rest of Western Asia; Egypt, Morocco, Tunisia, Rest of North Africa
4	EAC	Burundi, Kenya, Republic of South Sudan, Rwanda, Tanzania, Uganda
5	Sub-Saharan Africa	Benin, Burkina Faso, Botswana, Cameroon, Côte d'Ivoire, Ethiopia, Ghana, Guinea, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Nigeria, Senegal, South Africa, Togo, Zambia, Zimbabwe, Rest of Central Africa, Rest of Eastern Africa, Rest of South African Customs, Rest of Western Africa, South Central Africa
6	India	India
7	Indonesia	Indonesia
8	ASEAN (excluding Indonesia)	Brunei Darussalam, Cambodia, Lao People's Democratic Republic, Malaysia, Philippines, Singapore, Thailand, Viet Nam, Rest of Southeast Asia
9	China	China, Hong Kong
10	East Asia	Japan, Mongolia, Republic of Korea, Taiwan, Rest of East Asia
11	South Asia	Bangladesh, Nepal, Pakistan, Sri Lanka, Rest of South Asia
12	Oceania	Australia, New Zealand, Rest of Oceania
13	NAFTA	Canada, Mexico, United States
14	Central and South America	Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Trinidad and Tobago, Uruguay, Venezuela, Rest of Caribbean, Rest of Central America, Rest of South America
15	Rest of World	Albania, Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Norway, Russian Federation, Switzerland, Ukraine, Rest of Eastern Europe, Rest of EFTA, Rest of Europe, Rest of Former Soviet Union, Rest of North America, Rest of the World

ASEAN = Association of Southeast Asian Nations, EAC = East African Community, EFTA = European Free Trade Association, EU = European Union, GCC = Gulf Cooperation Council, GTAP = Global Trade Analysis Project, NAFTA = North American Free Trade Agreement, UAE = United Arab Emirates.

Source: GTAP Data version 9.0.

Appendix 2: Commodity/Industry Aggregation

No.	Commodity/Sector	GTAP Data Classification
1	GenMach	41 other machinery & equipment, 42 other manufacturing
2	VegOil	5 oil seeds, 21 vegetable oils and fats
3	FishryPFD	14 fishing, 19 cattle meat, 20 other meat, 22 milk/dairy, 23 processed rice, 25 other food
4	Electronics	40 electronic equipment
5	TextWapp	7 plant fibres, 12 wool, 27 textiles, 28 wearing apparel, 29 leather
6	Agriculture	1 paddy rice, 2 wheat, 3 other grains, 4 vegetable & fruit, 6 cane & beet, 8 other crops, 9 cattle, 10 other animal products, 11 raw milk, 24 sugar, 26 beverages and tobacco products
7	PaperWood	13 forestry, 30 lumber, 31 paper & paper products
8	MineralFuel	15 coal, 16 oil, 17 gas
9	PetroChem	32 petroleum & coke, 33 chemical rubber products
10	MngMetal	18 other mining, 34 non-metallic minerals, 35 iron & steel, 36 nonferrous metals, 37 fabricated metal products
11	MotorTran	38 motor vehicles & parts, 39 other transportation equipment
12	Utilities	43 electricity, 44 gas distribution, 45 water transport, 46 construction
13	TransCom	47 trade, 48 other transport, 49 water transport, 50 air transport, 51 communication
14	Services	52 other financial intermediation, 53 insurance, 54 other business services, 55 recreation & other services, 56 government, 57 dwelling

Agriculture = agricultural products; Electronics = electronic equipment; FishryPFD = fishery and processed foods; GenMach = machinery and equipment; GTAP = Global Trade Analysis Project; MineralFuel = coal, oil, and gas; MngMetal = mining and metal products; MotorTran = motor vehicles, parts, and transportation equipment; PaperWood = paper and wood products; PetroChem = petroleum and chemical; Services = finance, insurance, and other services; TextWapp = textile and apparel products; TransCom = transport and communication; Utilities = electricity, gas, water, and construction; VegOil = oil seeds, vegetable oils, and fats.

Source: GTAP Data version 9.0.

Appendix 3: Substitution Parameters (Armington Parameters) in Key Sectors

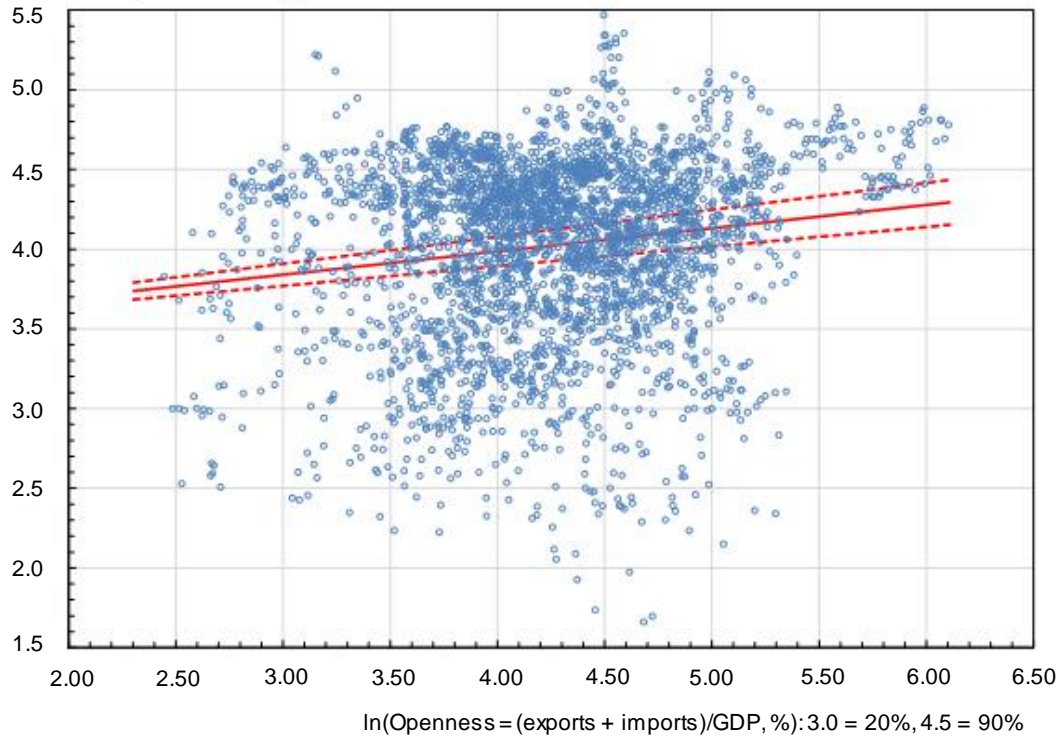
No	Commodity/Sector	Domestic and imports				Source of imports			
		EU28	GCC	India	Indonesia	EU28	GCC	India	Indonesia
1	GenMach	4.00	3.97	3.98	4.00	8.03	7.91	8.01	8.08
2	VegOil	3.02	3.07	2.97	2.87	6.02	6.13	6.59	5.70
3	FishryPFD	2.86	2.71	2.48	2.32	5.43	5.79	4.75	5.18
4	Electronics	4.40	4.40	4.40	4.40	8.80	8.80	8.80	8.80
5	TextWapp	3.79	3.77	3.76	3.76	7.60	7.54	7.73	7.14
6	Agriculture	1.89	2.02	2.75	2.64	4.02	4.02	3.96	5.31
7	PaperWood	3.04	3.17	2.89	3.00	6.26	6.40	5.89	6.09
8	MineralFuel	7.49	8.28	5.46	6.14	15.59	25.68	10.93	10.42
9	PetroChem	2.72	2.70	2.66	2.85	5.88	6.09	6.06	5.33
10	MngMetal	3.28	2.99	3.21	3.02	6.51	6.14	6.43	6.33
11	MotorTran	3.19	3.16	3.37	3.50	6.31	6.48	6.91	6.83
12	Utilities	2.14	2.10	2.13	1.99	4.81	3.98	4.39	3.85
13	TransCom	1.90	1.90	1.90	1.90	3.80	3.80	3.80	3.80
14	Services	1.90	1.90	1.90	1.90	3.80	3.80	3.80	3.80

Agriculture = agricultural products; Electronics = electronic equipment; EU = European Union; FishryPFD = fishery and processed foods; GCC = Gulf Cooperation Council; GenMach = machinery and equipment; MineralFuel = coal, oil, and gas; MngMetal = mining and metal products; MotorTran = motor vehicles, parts, and transportation equipment; PaperWood = paper and wood products; PetroChem = petroleum and chemical; Services = finance, insurance, and other services; TextWapp = textile and apparel products; TransCom = transport and communication; Utilities = electricity, gas, water, and construction; VegOil = oil seeds, vegetable oils, and fats.

Source: GTAP Data version 9.0.

Appendix 4: Trade Openness and TFP

$\ln(\text{TFP level}(\text{US 2005} = 100\%))$: 4.0 = 54.6%



TFP = total factor productivity.

Notes:

1. The sample size is 109 countries from 1980 to 2011.
2. Estimated correlation (red line) is as follows:

$$\ln(\text{TFP}) = 7.20 + 0.15 \times \ln(\text{Openness}) - 0.41 \times \ln(\text{Population}) + \text{Country Dummy}$$

(26.31) (6.34)
(-13.30)
Adjusted R² = 0.79

The values in the parentheses are t-values.

- 3: Dotted lines are sensitivity results of the 'Openness' parameter (one standard deviation).

Sources: Figures 2–8 in Government Headquarters for the TPP, Japan (2015); University of Groningen, Groningen Growth and Development Centre, The Database, Penn World Table version 9.0. <https://www.rug.nl/ggdc/productivity/pwt/> (accessed 27 June 2019); World Bank, World Development Indicators. <http://datatopics.worldbank.org/world-development-indicators/> (accessed 27 June 2019).

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