

Philippine Journal of Development Volume 45 (2021) Number 1

# The Japan-Philippines Economic Partnership Agreement, a Decade After: Evaluating the Impact on Philippine Trade

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# ABSTRACT

Free trade agreements (FTAs) and regional trade agreements have proliferated in recent decades as countries perceived them to effectively reduce trade barriers, thus helping nations expand market access, protect local markets, and enhance efficiency and productivity of domestic industries. Such preferential trade agreements, however, can have both advantages and disadvantages. The Japan-Philippines Economic Partnership Agreement (JPEPA), the first bilateral FTA that the Philippines entered into, aims to facilitate and promote free transborder flow of goods, services, capital, and people between the two countries. Whether the JPEPA has been able to deliver its intended benefits for both countries and what determines its success are two focal national interests. Evaluating such an agreement can be done through detailed examinations of the countries' economic conditions before and after its implementation. It requires a comparison group whose outcomes are analyzed in contrast with a reference group of factors. This paper explores the use of synthetic control method to understand the effects of JPEPA on Philippine exports without being hampered by the limitations in its existing approaches. The results reveal that the Philippines benefited from the JPEPA as determined by the difference in the actual exports and the counterfactual exports. The country's exports to Japan grew by about 26 percent after the agreement was signed. Investigating the effects of JPEPA at the sectoral level, however, yields varying results.

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#### INTRODUCTION

The Philippines and Japan have strengthened their economic partnership through the years by engaging in various cooperation agreements in economic development and other areas of mutual benefit. Such is the comprehensive Japan-Philippines Economic Partnership Agreement (JPEPA)<sup>2</sup> signed by the two countries on September 9, 2006. The agreement was ratified in the Philippine Senate two years later and was finally entered into force on December 11, 2008. As the first bilateral agreement of the Philippines,<sup>3</sup> the JPEPA covers a diverse number of cooperation on several fields, including human resource development, financial services, information and communications technology, energy and environment, science and technology, trade and investment, small and medium enterprises, tourism, and transportation (PHILEXPORT 2007).

Anchored on three key pillars—liberalization, facilitation, and cooperation—the JPEPA aims to facilitate and promote free transborder flow of goods and services, capital, and people across Japan and the Philippines, and strengthen existing ties between the two countries. With the proliferation of bilateral agreements due to the globally observed slow progress in the World Trade Organization (WTO)'s facilitation of trade, the Philippines took a similar action in advancing its relationship with Japan (PHILEXPORT 2007). As a comprehensive economic partnership, the JPEPA does not only concern eliminating tariff and nontariff barriers but emphasizes cooperation in various areas. It is also considered as a "new age" free trade agreement developed to address the pressures of regionalism, globalization, and technological progress (Medalla et al. 2010).

Prior to the signing of the JPEPA, the Philippines' total value of trade with Japan amounted to USD 15,188 million in 2006, with a three-year average of USD 15,374 million from 2004 to 2006 (UN Comtrade 2019).<sup>4</sup> The top exports of the Philippines during the time included electronic products, woodcrafts and furniture, ignition wiring sets, fresh bananas, and iron ore agglomerates, among others. The country's imports, on the other hand, included electronic products, industrial machinery and equipment, transport equipment, iron and steel, telecommunication equipment, and electrical machinery (SEPO 2007).

Japan has been one of the top sources of the country's foreign direct investment (FDI), with an estimated total of PHP 143.5 billion from 2000 to 2006 (SEPO 2007). More recent figures show that Japan, with an average annual share of 18.8 percent, was among the Philippines' top 10 sources of approved investments from 2012 to 2016. The Bureau of Investments projected that FDIs from Japan would reach PHP 559 billion between 2007 and 2016, from PHP 137 billion between 1995 and 2005, generating more than 35,000 jobs (SEPO 2007). With regard to exported goods, Philippine exports to Japan were projected to increase by up to 13 percent in 2011. With the JPEPA, meanwhile, the growth rate of Philippine exports to Japan was expected to reach between 15.9 percent and 19.6 percent during the same year, from an initial 9 percent to 9.5 percent in 2007 (Table 1).

<sup>&</sup>lt;sup>2</sup> Interchangeably the Philippine-Japan Economic Partnership Agreement. For consistency, the JPEPA is used throughout this paper.

<sup>&</sup>lt;sup>3</sup> The Philippines is a signatory to several regional and multilateral trade agreements, including the WTO, Asia-Pacific Economic Cooperation, Association of Southeast Asian Nations (ASEAN), and the ASEAN Economic Community. Through the ASEAN, the Philippines is a party to the ASEAN Free Trade Agreement (AFTA) and the ASEAN Trade in Goods Agreement, which enhances the Common Preferential Tariff under the AFTA. The country entered six regional FTAs through the ASEAN, namely, the ASEAN-China FTA, ASEAN-India FTA, ASEAN-Japan FTA, ASEAN-Korea FTA, ASEAN-Australia, and New Zealand FTA. The remaining FTAs—the JPEPA and the recently ratified Philippines-European Free Trade Agreement (PH-EFTA) FTA—are bilateral (ILO 2019).

<sup>&</sup>lt;sup>4</sup> United Nations (UN) Comtrade data show that the average total trade of the Philippines with Japan from 2006 to 2008 was at USD 14,982 million while the average total trade of Japan with the Philippines for the same period was at USD 17,860 million.

		Projected annual growth rate	2
Year	Without JPEPA* (10%)	With ]	PEPA
		Low (15%)	High (20%)
2007	8.71	9.08	9.47**
2008	9.62	10.44	11.37
2009	10.63	12.00	13.64
2010	11.76	13.81	16.37
2011	13.00	15.88	19.64

#### Table 1. Projected increases in Philippine exports to Japan (in billion USD)

\*Based on average growth from 2001 to 2006 (annualized January-August) of 10.4% compared with total Philippine exports average growth of 13%

\*\*Based on the Philippine Export Development Plan projections

JPEPA = Japan-Philippines Economic Partnership Agreement; USD = United States dollar

Source: Department of Trade and Industry (DTI) as cited in SEPO (2007)

After the signing of JPEPA, the Philippines' total trade with Japan averaged at USD 15,956 million from 2010 to 2012, while Japan's total trade with the Philippines for the same period averaged at USD 20,121 million.

## **OBJECTIVES OF THE STUDY**

FTAs are expected to boost trade between two economies that are already conducting trade with each other. The value added by FTAs is in the expansion of market access for goods, services, and investment through the elimination of tariff duties and the expansion of preferential access. However, a study showed that there was a need for complementary domestic reforms for FTAs to have a positive impact on the economic growth of countries (Hur and Park 2012).

The interest of this paper falls particularly on export promotion. This study assesses the contribution of the JPEPA to the Philippines' export of goods to Japan. Specifically, it aims to:

- 1. explore the potential determinants of Philippine exports to Japan;
- 2. evaluate the effect of the JPEPA using the synthetic control method (SCM); and
- 3. determine how similar agreements have contributed to the exports of selected partners of Japan.

#### Significance of the study

Pursuing trade agreements and economic cooperation have been adopted as national policies by East Asian countries to expand trade and stimulate economic development (Kawai and Wignaraja 2010). For a country like the Philippines, which aims to promote its position in the global trade platform, understanding how a bilateral trade agreement can affect a country's exports to one of its major partners is an important interest. This research supports the Philippines' strategy of utilizing its existing FTAs as a means to increase both its agricultural and manufacturing exports (NEDA 2011; NEDA 2017).

The proliferation of trade agreements and its evolution from traditional to "new age" also suggest that more economies have perceived trade agreements to be more beneficial as trade liberalization under the WTO progressed very slowly (Urata 2005). For the Philippines, assessing the benefits of FTAs showed mixed results (Wignaraja et al. 2010; Aldaba 2015, 2017).

This study provides a different perspective on assessing the Philippine FTAs by looking at its effect on the country's exports to Japan. In addition, this paper contributes to the body of knowledge

on the impact assessment of FTAs through a novel method of calculating a counterfactual for the exports.<sup>5</sup> Research on the impact of FTAs on exports at the micro level has relied on surveys of establishments to understand the FTA utilization rate (Wignaraja et al. 2010; Aldaba 2015, 2017). Given the difficulty of conducting firm-level surveys, the researchers explored country data to assess the impact of FTAs using SCM.

#### Limitations of the study

This study aims to evaluate the performance of Philippine trade exports to Japan considering only its specific attributes and with reference to the exports and attributes of other export partners of Japan. Imports and importer-specific attributes are not considered in the analysis of this paper as it wishes to focus on the expansion of the Philippines' access to the Japanese market.

This paper's analysis is also limited to the effects of JPEPA on trade. Other areas of cooperation and provisions in the agreement were not discussed because of the limited information and data quantifying areas of cooperation and provisions in the JPEPA.

#### Coverage and areas of cooperation of JPEPA

Similar to other conventional free trade agreements, the JPEPA covers trade in goods and services. However, it goes beyond by including the countries' bilateral cooperation, investments, government procurements, competition, and business environments, among others. The JPEPA provides the principles of liberalization and the permitted exceptions (emergency measures), and includes commitments on lowering tariffs and other trade barriers, as well as the procedures for settling disputes (relying on the primacy of consultations). The agreement also provides the governments of the two economies with a mechanism for simplified, paperless, and transparent trade and procurement policies to address trade costs and increase trade at the same time. The agreement on investments provides equal privileges to investors from each economy.<sup>6</sup> It provides opportunities for Filipino professionals to practice their professions in Japan, including those from the areas of legal services, accounting, architecture and engineering, travel, education, and nursing and caregiving, among others (PHILEXPORT 2007). (See Annex 1 for the list of areas covered in JPEPA)

The provision on cooperation, which provides for bilateral economic assistance through the official development assistance (ODA), and the provision on dispute avoidance and settlement, which provides a mechanism to address disputes, are not typical of a traditional trade agreement, making JPEPA a comprehensive and "new age" FTA. New age FTAs, accordingly, are developed in response to the pressures of the growing trends in regionalism amid globalization and other technological progress (Yap et al. 2006).

On trade, meanwhile, a total of 5,968 lines are included in the Philippines' JPEPA tariff schedule. Out of this number, 3,947 lines (66%) are subject to immediate tariff elimination and 32 percent to gradual reduction from five to 10 years. The rest are either for renegotiation or special tariff treatment. Tariff lines of 0.10 percent are excluded from the agreement (Table 2).

<sup>&</sup>lt;sup>5</sup> Other researches (Navarrete and Tatlonghari 2018) utilized a gravity model to estimate the benefits of an FTA. Their method, however, did not resolve the identification problem common to impact evaluation studies. Yotov et al. (2016) likewise presented a methodology in using the gravity model to calculate for counterfactuals and estimate the impact of trade agreements.

<sup>&</sup>lt;sup>6</sup> Prohibitions, however, apply as provided in the Foreign Investment Negative List of the Philippines.

Lege	nd Category	Number of lines	% of Total lines
А	Immediate tariff elimination	3,947	66.14
B4	Equal annual tariff reduction starting 2006, final reduction in 2010	97	1.63
B4*	<ul> <li>* Tariff elimination on the 1st day of the</li> <li>5th year (2011)</li> </ul>	2	0.03
B5	5 years or 6 annual installments	230	3.85
B5'	5 years, 1-year grace period, 5 equal annual installments	220	3.69
B5 <sup>3</sup>	* 1 single installment at the beginning of the 6th year	14	0.23
B7	7 years or 8 equal annual installments	2	0.03
B1	10 years or 11 equal annual installments	1,077	18.05
B1	<ul> <li>* 10 years, 1-year grace period, 6 equal annual installments</li> </ul>	154	2.58
B1	<ul> <li>** 10 years, 5-year grace period, 6 equal annual installments</li> </ul>	103	1.73
R	Renegotiation	24	0.4
S	Special treatment tariff	92	1.54
Х	Excluded from any commitment of preferential or renegotiation	6	0.1
Tot	al	5,968	100

Table 2. Philippine tariff commitments in JPEPA

JPEPA = Japan-Philippines Economic Partnership Agreement

Source: Philippine Tariff Commission as cited in SEPO (2007)

Of the tariff lines subjected to immediate elimination, 92 percent are industrial goods valued at USD 2.23 billion, which include machinery and mechanical appliances, electrical machinery and equipment, clothing and textiles, organic chemicals and pharmaceutical products, and other miscellaneous manufactured products (SEPO 2007).

On the other hand, there are a total 7,476 lines of Philippine exports under Japan's commitments. Out of this number, 80 percent were subjected to immediate tariff elimination (Table 3).

Legend	Category	Number of lines	% of total lines
А	Immediate tariff elimination	5,994	80.17
B3	3 years or 4 equal annual installments	3	0.04
B5	5 years or 6 annual installments	148	1.98
B7	7 years or 8 equal annual installments	140	1.87
B10	10 years or 11 equal annual installments	368	4.92
B15	10 years, 1-year grace period, 6 equal annual installments	48	0.64
Р	Special tariff treatment	26	0.35
Q	Tariff rate quota	11	0.15

Table 3. Japan tariff commitments in JPEPA

	Legend	Category	Number of lines	% of total lines
	R	Renegotiation	215	2.88
	Х	Excluded from any commitment of preferential treatment or renegotiation	522	6.98
	Total		7,476	100
IDE	DA LD	hiliania - Errana i Denta hin Armana		

Table 3. (continuation)

JPEPA = Japan-Philippines Economic Partnership Agreement Source: Philippine Tariff Commission as cited in SEPO (2007)

Meanwhile, 93 percent of these exports are industrial products with an estimated total value of USD 575 million and include office machines and automatic data processing machines, electrical machinery and parts, road vehicles, telecommunication and sound recording equipment, textile yarn fabrics and clothing apparels (e.g., knitted and crocheted fabrics), and inorganic chemicals and pharmaceutical products (SEPO 2007). The tariff elimination applied to the Philippine exports to Japan is presented in Table 4. Before the enforcement of the JPEPA, 3,714 tariff lines (41.7% of Japan's tariff) were already duty-free on a most-favored-nation (MFN) basis. When the agreement was entered into force, the number of tariff lines almost doubled, adding 3,598 lines equivalent to 40.4 percent in Japan's schedule. In other words, immediately after the JPEPA was entered into force, 90 percent of imports from the Philippines became free of duties. The remaining lines are gradually being subjected to tariff elimination until 2023.

Duty phase-out period	Number of lines	% of total lines in Japan's tariff schedule	Value of Japan's imports from the Philippines (2004–2006) in million USD	% of Japan's total imports from the Philippines 2004–2006
MFN duty free				
2008	3,714	41.7	6,220.40	80.9
2008-2010	3,598	40.4	699.8	9.1
2011-2012	4	0	0.3	0
2013-2014	175	2	60.5	0.8
2015-2016	171	1.9	6	0.1
2017	1	0	0	0
2018-2022	377	4.2	32.3	0.4
2023	58	0.7	0.1	0
Remain duti-				
able	814	9.1	673.3	8.8
Total	8,912	100	7,692.60	100

Table 4. Tariff elimination commitments under the JPEPA and corresponding average trade (for Japan)

Note: Based on the HS 2002 nomenclature; calculations exclude tariff lines having an in-quota rate JPEPA = Japan-Philippines Economic Partnership Agreement; HS = Harmonized System; USD = United States dollar; MFN = most favored nation Source: WTO (2010)

Looking at how these rates are applied to Philippine products according to the type of goods, as classified in the HS 2002 nomenclature, more than half of the lines immediately subjected into tariff elimination are textiles, followed by chemicals (Table 5).

					Num	ber of	duty-	free	lines		able	ff
HS section	MFN Ave. %	Total no. of lines	MFN 2008	2008-2010	2011-2012	2013-2014	2015-2016	2017	2018-2022	2023	No. of lines remaining duti	Ave. final tari (dutiable)
I Live animals and animal products	8.4	508	109	60	1	69	25		4		240	15.3ª
II Vegetable products	6.1	526	165	142		38	35		39	12	95	20.5ª
III Animal or vegeta- ble fats and oils	3.8	85	20	21		6			2	2	34	14.8ª
IV Prepared foods etc.	16.4	761	77	56	3	43	70		133	44	335	23.3ª
V Minerals	0.5	219	166	27		7			18		1	-
VI Chemicals and chemical products	2.3	1.034	403	620		1	1		3		6	13.2ª
VII Plastics and rubber	2.4	296	103	170		6			17			
VIII Hides and skins	10.4	196	66	3			32	1	66		28	17.7
IX Wood and articles	3.4	233	83	72		3			37		38	6.6
X Pulp, paper etc.	0	172	172									
XI Textiles and												
textiles articles	6.5	2,058	86	1,966							6	-
XII Footwear, headgear	16.3	111	6	26			4		44		31	25.8
XIII Articles of stone	1.1	160	100	59					1			
XIV Precious stones, etc.	1.3	80	58	17					5			
XV Base metals and												
base metals products	0.9	842	604	230		2			6			
XVI Machinery	0.1	959	945	14								
XVII Transport												
equipment	0.1	147	146	1								
XVIII Precision equipment	0.2	294	285	6			3					
XIX Arms and												
ammunition	6.9	24	24									
XX Misc. manufac-	17	200	112	0 /			1		2			
VVI Works of art ata	0	200 7	115	04			1		Z			
Total	19	/ 8 01 2	/ 3.71 <i>1</i>	3 509	1	175	171	1	377	50	Q1 <i>1</i>	10.2
10(a)	4.0	0,912	3,/14	3,390	4	1/3	1/1	1	3//	50	014	19.2

#### Table 5. Tariff elimination under the JPEPA, by HS section (for Japan)

Note: Based on the HS 2002 nomenclature; for tariff lines subject to TRQs, only the out-of-quota duty is included in the tariff-related calculations.

JPEPA = Japan-Philippines Economic Partnership Agreement; HS = Harmonized System; MFN = most favored nation; Ave = average; Misc = Miscellaneous; a = combination of *ad valorem* and specified duties; - = specific duty Source: WTO (2010)

#### FTAs and EPAs of Japan

Japan has several other bilateral agreements, apart from the one it signed with the Philippines. Urata (2005) identified two motivations for Japanese negotiation of FTAs: promoting economic growth in the East Asian region and improving the business environment for Japanese firms. Japan currently has 16 bilateral agreements in force, including its first, with Singapore, which was concluded in 2000, and the latest, with Mongolia, in 2016 (Table 6).

Partner	Year signed	Year in force
Singapore	2002	2002
Mexico	2004	2005
Malaysia	2004	2006
Philippines	2006	2008
Indonesia	2008	2008
Chile	2007	2007
Thailand	2007	2007
Brunei	2007	2008
Viet Nam	2009	2009
Switzerland	2009	2009
India	2011	2011
Peru	2011	2012
Australia	2014	2015
Mongolia	2015	2016
EU	2018	2019
ASEAN	2008	2008
TPP	2016	Discontinued

Table 6. List of bilateral agreements of Japan

EU = European Union; ASEAN = Association of Southeast Asian Nations; TPP = Trans-Pacific Partnership Source: Compiled from ARIC (2019) database

The bilateral agreements with Japan contain a varied number of provisions. Common to all is the provision on market access of goods, trade facilitation, rules of origin, services, dispute settlement, and institutional mechanism, although each chapter may contain different specific agreements across Japan's partner economies. On the other hand, the coverage of these agreements varies on other chapters, particularly on nontariff measures, government procurement, e-commerce, labor standards, environmental policy, and technical cooperation, among others (Table 7).

#### Japanese exports and imports trade

Japan trades with more than 200 countries. The country's world exports averaged at USD 655.97 billion from 2015 to 2018 while its world imports averaged at USD 634.66. Based on the average annual trade value during the same period, Japan has no existing bilateral agreement with 11 out of its top 20 export and import partners (Table 8).

Chapters	ASEAN	BRU	IND	IDS	CHL	MYS	MEX	MON	PER	PHI	SNG	CHE	THA	VNM
Market														
access	•	•	•	•	•	•	•	•	•	•	•	•	•	•
of goods														
NTMs	•	•	•	•	•	•	•	-	•	•	•	-	•	•
Trade														
facilitation	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Export														
measures	-	•	•	•	•	•	•	•	•	•	•	•	•	•
Rules														
of origin	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Services	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Investment	-	•	•	•	•	•	•	•	-	•	•	•	•	•
Government														
procurement	-	•	•	•	•	-	•	•	•	•	•	•	•	•
Competition														
policy	-	-	•	•	•	•	•	•	•	•	•	•	•	•
Intellectual														
property	-	•	•	•	•	•	•	•	•	•	•	•	•	•
E-commerce	-	-	-	-	-	-	-	•	-	•	•	•	-	-
Dispute														
settlement	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Labor														
standards	-	-	-	-	-	•	-	-	-	•	-	-	-	-
Environ-														
mental	-	•	•	•	•	•	•	-	•	•	-	•	•	-
policy														
Technical			_		_							_		
cooperation	•	•	-	•	-	•	•	•	•	•	•	-	•	•
Institutional														
mechanism	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Other	_		_					_	_	_	_	_	_	
measures	-	•	-	•	•	•	•	-	-	-	-	-	-	•

Table 7. Provisions under different agreements with Japan

Note: "•" with provision; "-" no provision

ASEAN = Association of Southeast Asian Nations; BRU=Brunei; IND=India; IDS=Indonesia; CHL = Chile; MYS = Malaysia; MEX = Mexico; MON = Mongolia; PER = Peru; PHI = Philippines; SNG = Singapore; CHE = Switzerland; THA = Thailand; VNM = Viet Nam; NTMs = nontariff measures Source: Compiled from ARIC 2019 database

Country	Export values	Country	Import values
China	137.10	China	158.43
United States	53.87	United States	135.31
Korea, Republic of	26.81	Korea, Republic of	50.76
Australia*	22.40	Hong Kong, China	34.83
Thailand*	21.86	Thailand*	32.30
Germany	20.97	Germany	25.63
Indonesia*	17.84	Singapore*	20.35
Malaysia*	17.18	Mexico*	17.16
Singapore*	16.16	Australia*	15.69
Viet Nam*	15.19	Viet Nam*	15.40
Russian Federation	11.93	Malaysia*	14.40
Philippines*	11.10	Indonesia*	14.14
Qatar	10.58	Canada	12.49
Hong Kong, China	8.32	United Kingdom	12.14
Canada	8.30	United Arab Emirates	11.89
Switzerland*	7.45	India*	11.06
United Kingdom	7.09	France	10.68
France	7.02	Philippines*	10.04
Italy	6.70	Belgium	9.58
Chile*	5.96	Netherlands	8.34

Table 8. Top 20 exports and imports partners of Japan, average annual values in billion USD, 2015–2018

\* bilateral trade partners of Japan

USD = United States dollar

Source: UN Comtrade Database (2019)

# METHODOLOGY

#### Synthetic control method

The SCM was first proposed in the seminal works of Abadie and Gardeazabal (2003), Abadie et al. (2009), and Abadie et al. (2015) to estimate the impact of a treatment.<sup>7</sup>

Following Abadie et al. (2009), the model assumes a J+1 regions, the first of which is exposed to an intervention or treatment. The remaining J regions can be the potential controls or the "donor pool". The model has the following variables:

- $Y_{it}^N$  is the outcome observed for region *i* at time *t* in the absence of intervention, for units *i*=1, ..., *J*+1, and time periods *t*=1, ..., *T*.
- $T_0$  is the number of preintervention periods, with  $1 \le T_0 < T$ .
- $Y_{it}^{I}$  is the outcome observed for unit *i* at time *t* if unit *i* is exposed to the intervention in periods  $T_0 + 1$  to *T*.

<sup>&</sup>lt;sup>7</sup> Abadie and Gardeazabal (2003) introduced the method to present evidence of the negative economic impact of conflict, where a 10-percent average gap in the per capita gross domestic product (GDP) was observed between the control group and the treatment group (Basque Country). In 2009, Abadie et al. extended the model to demonstrate how the tobacco control program had reduced per-capita cigarette sales.

- The intervention is assumed to have no effect on the outcome prior to the intervention period, so for  $t \in \{1, ..., T_0\}$  and  $i \in \{1, ..., N\}$ ,  $Y_{it}^I = Y_{it}^N$ .
- $\alpha_{it} = Y_{it}^{I} Y_{it}^{N}$  is the effect of the intervention for unit *i* at time *t*, and  $D_{it}$  is an indicator that takes the value of 1 if the unit *i* is exposed to the intervention at time *t*, and takes 0, otherwise. The observed outcome for unit *i* at time *t* is then  $Y_{it} = Y_t^N \alpha_{it}D_{it}$ . Since the first region (region "one") is exposed to the intervention only after period (with  $1 \le T_0 < T$ ):

$$D_{it} = \begin{cases} 1 \text{ if } i = t > T_0, \\ 0 \text{ otherwise.} \end{cases}$$

The aim is to estimate  $(\alpha_{1T_0+1}, ..., \alpha_{1T})$ . For  $t > T_0$ ,

$$\alpha_{1t} = Y_{1t}^I - Y_{1t}^N = Y_{it} - Y_{1t}^N.$$

Since  $Y_{1t}^I$  is observed, to estimate  $\alpha_{it}$  requires estimating the  $Y_{1t}^N$ . It can be assumed that  $Y_{it}^N$  is given by the factor model:

$$Y_{it}^N = \delta_t + \theta_t Z_i + \lambda_t \mu_i + \varepsilon_{it},$$

where  $\delta_t$  is an unknown common factor with constant factor loadings across units;  $Z_i$  is a  $(r \times 1)$  vector of observed covariates (not affected by the intervention);  $\theta_t$  is a  $(1 \times r)$  vector of unknown parameters;  $\lambda_t$  is a  $(1 \times F)$  vector of unobserved common factors;  $\mu_i$  is an  $(F \times 1)$  vector of unknown factor loadings; and the error terms  $\varepsilon_{it}$  are unobserved transitory shocks at the region level with zero mean.

Abadie et al. (2009) further discussed that  $(J \times 1)$  the vector of weights =  $(W_2, ..., W_{J+1})'$ , such that  $w_j \ge 0$  for j = 2, ..., J+1 and  $w_{2+...+} w_{J+1} = 1$ . This means that the weights as originally suggested by Abadie et al. (2009) are nonnegative and sum up to one. Each particular value of W represents a potential synthetic control or weighted average of control regions. The weights are, therefore, chosen to match both the pretreatment outcomes and a set of fixed characteristics (Doudchenko and Imbens 2016). The value of the outcome variable for each synthetic control indexed by W is:

$$\sum_{j=2}^{J+1} w_j Y_{jt} = \delta_t + \theta_t \sum_{j=2}^{J+1} w_j Z_t + \lambda_t \sum_{j=2}^{J+1} w_j \mu_j + \sum_{j=2}^{J+1} w_j \varepsilon_{jt}$$

Supposing that there are  $(w_2^*, ..., w_{J+1}^*)$  such that

$$\sum_{j=2}^{J+1} w_j^* Y_{j1} = Y_{11}, \qquad \sum_{j=2}^{J+1} w_j^* Y_{j2} = Y_{12}, \qquad \dots,$$
$$\sum_{j=2}^{J+1} w_j^* Y_{jT_0} = Y_{1T_0}, \qquad \text{and} \qquad \sum_{j=2}^{J+1} w_j^* Z_j = Z_1.$$

Thus, the weights are determined to minimize the root mean square predictor error (RMSPE), which measures the lack of fit between the path of the outcome variable for the donor pool and its synthetic counterpart (Abadie and Gardeazabal 2003; Abadie et al. 2009), and can be defined as

$$RMSPE = \left(\frac{1}{T_o} \sum_{t=1}^{T_o} \left(Y_{1t} - \sum_{j=2}^{J+1} w_j^* Y_{jt}\right)^2\right)^{1/2}$$

The treatment or intervention effect can be estimated then by

$$\hat{\alpha}_{1t} = Y_{1t} - \sum_{j=2}^{J+1} w_j^* Y_{jt} \quad \forall \quad t \in \{T_0 + 1, \dots, T\}.$$

The first step in employing the SCM is to identify different units involved in the analysis, particularly the treated unit affected by the intervention and the pool of untreated units (donor pool or the set of potential control units), and the outcome of interest observed both in the pre and posttreatment. The donor pool or control units are determined to be similar to the treated units in terms of factors that might generate the outcome. Both treated and untreated units contain observed and pretreatment outcomes, as well as posttreatment outcomes. From these potential control unit, the SCM selects weights (W) to establish a linear combination of the control outcomes (synthetic control), which is the difference between the synthetic outcome and the treated unit outcome. Since the outcome (Y) is dependent on the observed (Z) and unobserved (U) factors (Y=BZ + U), the SCM determines the weight W that can result in similar Y, Z, and U in the pretreatment period. Since all differences cannot be minimized at the same time, except for some combinations of characteristics and outcomes differences, another vector V is used to assign weights to Z variables and to each year in the pretreatment Y. The next steps will then be to compare the pretreatment "actual" and "synthetic" outcomes, and the posttreatment "actual" and "synthetic" outcomes for treatment effect. How closely the weighted synthetic outcomes match the outcomes for the treated unit in the pretreatment period determines the quality of the synthetic control (Sills et al. 2015).





Source: Sills et al. (2015)

Using this donor pool, the synthetic export trade between the Philippines and Japan is constructed by getting the weighted average of past observable covariates and past realizations of the outcome variable. To determine the covariates to be used, the gravity model was used to explain the bilateral trade between the treated unit and used the determinants of trade from the model as the covariates and the exports between the country pair and as the outcome variable to create the counterfactual outcome. The gravity model is expressed by

$$x_{ijt} = G_t M_{jt}^{ex} M_{jt}^{im} \phi_{ijt}$$

where  $M_{jt}^{ex}$  and  $M_{jt}^{im}$  are indexes of the attributes of exporter *i* and importer *j* in year *t*, characterizing specific factors that represent the total amount exporters are willing to supply and the importer's total demand.  $G_t$  is a common year specific factor of trade that does not depend on *i* or *j*.  $\emptyset_{ijt}$  represents the variation in trade intensity or the ease of market access (Hannan 2016).

#### Advantages of using SCM

In evaluating the effectiveness and efficiency of policies, the economic conditions of countries before and after the implementation of policies (treatment) are compared. This requires a comparison (control) group from which the outcomes can be compared or contrasted with the outcome of the region (treated observation) that undergoes the policy. Determining the control group can be a difficult task, but without this, it is impossible to isolate the effects of the policy from the effects not attributable to it. In many cases, geographic proximity is used to determine the control group for the lack of an alternative, but this is a poor measure of similarity and cannot capture the differences of countries in terms of political or cultural attributes. Spillover of effects should also be considered.

Moreover, the use of existing and usually qualitative approaches limits the generalization of analysis as few quantitative results can be applied to similar cases (McClelland and Gault 2017). The SCM approach of Abadie and Gardeazabal (2003), Abadie et al. (2009), and Abadie et al. (2015) have gained increasing popularity in the field of policy evaluation as it addresses these issues. McClelland and Gault (2017) identified the following as the strengths and assumptions of SCM:

#### Strengths

- a. The SCM is transparent. The analyst can evaluate how well the outcome of synthetic control matches that of the affected region before the policy changes.
- b. The donor regions and the weights assigned to them are known and the analysts can evaluate the similarity of those regions to the policy region.
- c. The SCM does not require the same strict assumptions for accurate estimation as differencein-differences (DID) or panel data methods.<sup>8</sup>

#### Assumptions

- a. No region in the pool of potential donor regions can have a similar policy change.
- b. The policy in the affected region cannot affect the outcome in the pool of donor regions.
- c. To avoid possible interpolation bias, the variables used to form the weights must have values for the donor pool regions that are similar to those for the affected region.

<sup>&</sup>lt;sup>8</sup> The DID assumes that the trend of control group provides an adequate proxy for the trend that will be observed in the absence of treatment. The difference in slope is the actual treatment effect. The DID, therefore, requires the trends of the control group and treated unit to follow the same path during pretreatment period. Trade flows, however, might have not followed parallel trends. Even without a trade agreement, trade flows tend to change due to changes in the observed and unobserved country-specific attributes.

- d. The values of variables for the policy region cannot be outside any linear combination of the values for the donor pool (the treatment region cannot be an outlier in the pretreatment period).
- e. Those variables and the outcome must have an approximate linear relationship (the variables used in the pretreatment period for the donor pool must be comparable to that of the treatment region).

#### Data and donor pool

This paper employed the SCM to understand the bilateral export of the Philippines to Japan under the JPEPA. The JPEPA, therefore, is the "treatment" while the country pair and "treated unit" is the Philippines-Japan. A donor pool or the control group was determined to construct the counterfactual. Following Hannan (2016), the donor pool should exclude all country pairs that had trade agreements in the same year. It should also exclude all other agreements the exporting country has with other countries (Hannan 2016). Considering these criteria, the donor pool was composed of countries exporting to Japan, excluding those with existing bilateral trade agreements with Japan from 2008 to 2018. Hypothetical exports of the Philippines to Japan (as the treated unit) were reconstructed based on the exports of these countries to Japan.<sup>9</sup>

# **RESULTS AND DISCUSSION**

#### Gravity model estimates

Before the main procedure, the paper examined the Philippine exports using the gravity model (Table 9). The model was estimated using the intuitive ordinary least squares (OLS) procedure, fixed effects, and the Poisson Pseudo-Maximum Likelihood (PPML) estimator. The results of the first OLS estimation showed expected signs and were statistically significant, particularly the exchange rate, lag of exports, GDP of partner economy, and per capita of the exporter. The OLS, however, was not enough to capture fixed effects. Considering the country pair fixed effects revealed that the area and distance of exporters were an important determinant of trade with Japan. Remoteness is notably positive, which indicates that the regions isolated from the rest of the world tend to trade more with each other. Such is the case of the Philippines and Japan.

The results of the OLS estimation revealed that exports to Japan were strongly and positively affected by the GDP of Japan in the previous year and the prevailing exchange rates in the exporting countries. Exports, however, were negatively affected by the GDP of exporting countries during the previous year. The results of the fixed effects and PPML estimations, on the other hand, both revealed that exports to Japan were positively affected by the geographical size and remoteness of the exporting country while distance negatively affected exports to Japan. Exports during the previous year had a positive and strong effect as revealed in all the estimations while the PPML estimation revealed that the interaction between exporting countries was also an important determinant.

Variables	OLS	FE	PPML
GDP of exporter (ln)	.0131852 (.0357647)		
GDP of partner (ln)	14.2574 (432.3623)		

Table 9. Results of gravity model estimations

<sup>9</sup> Countries included in the donor pool were taken from the top trade partners of Japan as listed in Annex 2 except those that had bilateral agreements with Japan in 2008 (Table 6).

Table 9. (continuation)

Variables	OLS	FE	PPML
Population of exporter (ln)	.0477567 (.0316099)		
Population of partner (ln)	-26.77818 (436.0053)		
Per capita GDP of exporter (ln)	.0713138 .0539808)		
Per capita GDP of partner (ln)	-12.89679 (433.147)		
Exchange rate of exporter (ln)	.039986** (.0132634)		
Exchange rate of partner (ln)	.9687115 (.6761155)		
Area of exporter (ln)	.2468581 (.0754164)	.1618519** (.0698938)	.0122066** (.004287)
Distance of reporter (ln)	6843404 (.1896316)	3994393** (.1629106)	0294532** (.0102359)
Landlocked (Dummy, exporter)	0683796 (.183167)	0185985 (.1820848)	00219 (.0118825)
Remoteness of reporter (ln)	.015097 (.0205939)	.0356755** (.0151428)	.0024167** (.0010433)
Lag of exports	.9406363*** (.0082737)	.5022681*** (.0331183)	.03325*** (.0021701)
Lag of GDP of exporter	.0283393 (.0243242)		
Lag of GDP of partner	28.41141*** (7.80118)		
Lag of population of exporter	025913 (.0478823)		
Lag of per capita GDP of exporter	-28.10449** (8.299848)		
Reporter_n			.0007008** (.0002467)
Constant	-320.1152 (161.8821)	6.384275*** (.5234476)	2.113028*** (.0469626)
R-squared	0.9243	0.9425	.9344
Number of observations	3,021	3,027	2758

Note: Robust standard errors in parentheses; clustering by distance is specified to identify each country pair independently of the trade direction; \*\*\*p<0.01; \*\*p<0.05; \*p<0.1

OLS = ordinary least squares; FE = Fixed effects; PPML = Poisson pseudo maximum likelihood; GDP = gross domestic product; ln = natural log

Source: Authors' estimates

#### **Results of SCM procedure**

The effects of JPEPA on Philippine exports were examined using the SCM. First, the aggregate exports to Japan were evaluated using a different combination of covariates. These combinations were classified in this paper as SCM models. An "eyeball test" and robustness check can be done. The RMSPE measured the goodness-of-fit to gauge the difference between the actual and the predicted (synthetic) values. Weak predictors, or using outcome variables from problematic pretreatment years as predictors or using predictors for the treated pair with values extreme relative to the donor pool, may result in a poor fit (McClelland and Gault 2017). The RMSPE, therefore, indicates how the model can approximate (or reconstruct) the actual values during the pretreatment period and how this information is used to construct the hypothetical pattern during the treatment period, if the treatment is not implemented.

The results of the SCM procedures for the aggregate exports revealed that the JPEPA generally contributed to the growth of Philippine exports to Japan (Table 10).

Variablas				S	CM Mod	els			
variables	Ι	II	III	IV	V	VI	VII	VIII	IX
Exports value (ln)	$\checkmark$								
GDP of exporters (ln)	$\checkmark$	$\checkmark$		$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	
GDP per capita of exporters (ln)	$\checkmark$	$\checkmark$					$\checkmark$	$\checkmark$	
Population of ex- porters (ln)	$\checkmark$	$\checkmark$		$\checkmark$	$\checkmark$		$\checkmark$	$\checkmark$	
Exchange rate (ln)	$\checkmark$	$\checkmark$		$\checkmark$			$\checkmark$	$\checkmark$	
Distance (ln)	$\checkmark$		$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		$\checkmark$
Area (ln)	$\checkmark$		$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		$\checkmark$
Landlocked (Dummy)	$\checkmark$		$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		$\checkmark$
Remoteness (ln)	$\checkmark$		$\checkmark$	$\checkmark$	$\checkmark$		$\checkmark$		$\checkmark$
Lag of exports					$\checkmark$		$\checkmark$	$\checkmark$	$\checkmark$
Lag of GDP							$\checkmark$	$\checkmark$	
Lag of per capita GDP							$\checkmark$	$\checkmark$	
Lag of population							$\checkmark$	$\checkmark$	
RMSPE	.0546188	.105035	.1162155	.0820717	.0564138	.077798	.0850199	.1052392	.1180626

#### Table 10. SCM specification and robustness

SCM = synthetic control method; ln = natural log; RMSPE = root mean square prediction error; GDP = gross domestic product

Source: Authors' estimates

SCM models 1 and 5 appear to best describe the counterfactual exports but the results of 4, 6, and 8 are also plausible. The RMSPE of the predictor variables has to be minimized in an order that the treated unit and its synthetic control may resemble for predicting the pretreatment outcomes. Thus, a smaller RMSPE value indicates a better fit.<sup>10</sup> These can be visually examined using the following figures (Figure 2).

<sup>&</sup>lt;sup>10</sup> Several works, such as that of Galiani and Quistorff (2016) and Klößnerm and Pfeifer (2016), demonstrated that lower RMPSE provides a better match. Similarly, McClelland and Gault (2017) demonstrated how an increase in RMSPE indicates a worse fit.



Figure 2. Synthetic counterfactual results for Philippine exports to Japan

Prior to the signing of JPEPA in 2008, the average Philippine exports from 2005 to 2007 was at USD 7.474 billion. Immediately after the signing of the agreement, the average Philippine exports from 2009 to 2011 declined to USD 6.529 billion (with an average annual growth of -0.12 percent). It was lower than the average synthetic estimate using models I and V, which is about USD 7.088 billion, at an average annual growth rate of 3.18 percent. From 2012 to 2014, however, export averaged at USD 11.949 billion annually (23.93% average annual growth), higher than the average synthetic estimate of USD 7.882 billion (-0.70% average annual growth). Similarly, the average annual growth of exports from 2015 to 2017 was at USD 11.636 billion (-0.79% average annual growth). The average value of exports from 2009 to 2018 was at USD 9.981 billion annually, higher than the average synthetic estimate of USD 7.923 billion. This means that exports grew by about 26 percent after the signing of the JPEPA.

Using models I and V, the same procedure was done to compare the effects of the Philippines' bilateral agreement with Japan with the exports of its other selected bilateral trade partners (Figure 3). Since the trade agreements of these countries with Japan were signed and entered into force in different years, the treatment periods used in employing the SCM for these exporters varied.

Table 11 presents the data of signing and effectivity of each agreement and the treatment period in employing SCM for these agreements in Figure 3.

/		
Trading pairs	Signed and in effect	Treatment period
Philippines-Japan	December 2008	2009
Chile-Japan	September 3, 2007	2008
India-Japan	August 1, 2011	2011
Indonesia-Japan	July 1, 2008	2008
Switzerland-Japan	September 1, 2009	2010
Thailand-Japan	November 1, 2007	2008
 uther and an antipation has a day Al	DIC (2010) databasa	

Table 11. Date of effectivity and treatment period for selected pairs

Source: Authors' compilation based on ARIC (2019) database

#### Figure 3. Actual and synthetic exports of selected bilateral trade partners of Japan, using models I and V

a. Chile



I. (RMSPE: 0.1040137)



V. (RMSPE: 0.0812319)





Note: Treatment periods vary on dates the agreements were entered into force. RMSPE = root mean square percentage error Source: Authors' estimates

The figures reveal variations in the actual and counterfactual exports of bilateral partners of Japan. Noticeable differences can be observed in the exports of Chile, which seems unable to maintain the growth after the agreement took effect. For India and Thailand, the agreements seem to have benefited their exports. For Switzerland, meanwhile, the country's exports seem unable to immediately undergo the expected transition, although it may be coping. For Indonesia, actual exports appear to slightly surpass the hypothetical exports but eventually declined over the years. To understand further how Philippine exports to Japan benefited from the agreement, the SCM procedure using models I and V identified in the foregoing procedure was used to construct the counterfactual exports at the sectoral level. Goods exported to Japan were classified into 14 different sectors, which correspond to the classification of commodities in the HS Nomenclature 2002. This was the basis for the classification of goods used in the JPEPA. Table 12 presents this classification, as well as the corresponding sections used in this paper.

Classification	HS 2002 Sections	HS 2002 Section notes/chapters
Agriculture	I, II, III	1-15
Food manufactures	IV	16-24
Minerals	V	25-27
Chemicals	VI	28-38
Plastic and rubber	VII	39-40
Leather	VIII	41-43
Wood	IX, X	44-49
Textiles, textile articles,		
and other articles	XI, XII	50-67
Nonmetals	XIII, XIV	68-71
Metals	XV	72-83
Machinery and mechanical		
appliances	XVI	84
Electrical machinery		
and equipment	XVI	85
Vehicles, aircraft, vessels,		
and transport equipment	XVII	86-89
Others	XIX, XX, XXI	90-97

#### Table 12. Exports classification

HS = Harmonized System

Source: UN Trade Statistics (n.d.)

The results of the SCM estimation revealed varying effects on each sector (Figure 4). The effects on agriculture and nonmetals did not seem to prevail as much as other sectors. The results also showed that the agreement did not immediately bring improvements in the exports of a certain sector. This is evident in the patterns for agricultural products, plastic and rubber, textiles, electrical machinery and others. For these sectors, the counterfactual exports were greater than the actual exports for some years immediately after the JPEPA. Actual exports have risen above the counterfactual exports only after some time. This result implies that there are other impediments to the export of these goods to Japan, apart from tariff because the agreement has provided that upon its entry into force, most products that fall under HS sections XI (textiles), and VI (chemicals) will be immediately liberalized.

While the results generally reveal that the agreement has benefited Philippine trade exports for most of its sectors, the machinery and mechanical appliances seem to have not benefited from the JPEPA, as shown by counterfactual exports consistently being higher than actual exports to Japan.



Figure 4. Synthetic exports at sector level using models I and V











V (RMSPE 0.304694)

#### Figure 4. (continuation)



9

1995

2000

2010

---- synthetic Philippines

2005

- Philippines

year

I. (RMSPE: 0.5073863)

2015

2020





#### Figure 4. (continuation)





V (RMSPE 0.1030114)

#### Figure 4. (continuation)

n. 20.5

20

Inexport 19.5

6

18.5



1. Electrical machinery and equipment





RMSPE = root mean square percentage error Source: Authors' estimates

Looking at how the Philippine exports evolved before and after the agreement was entered into force, it can be observed that vehicles have the largest leap from the 10th export (based on average from 2006 to 2008) to becoming the 4th export (based on average from 2016 to 2018) sector. This was followed by plastic and rubber, which jumped from 12th to 7th place. The rest of the sectors did not seem to have changed ranks. The nonmetals, however, dropped immediately from 2nd to 12th, which, more or less, was its position through the years (Annex 3).

On the other hand, comparing the position of the Philippine exports before and after the agreement was entered into force, relative to the top exporters of Japan, the agriculture sector

immediately dropped from 7th (based on 2006–2008 average) to 16th (based on 2010–2012 average) and improved only by two notches in recent years. It can be noted, however, that the agriculture sector was in this position even during the previous years. Food manufactures, minerals, vehicles and others seemed to have dropped prior to the agreement but regained their position after the agreement was entered into force. The rest of the sectors seemed fluctuated through time, but most notable improvements can be observed in leather, wood, and metals. Noticeable drops can be observed in machinery and electrical machinery (Annex 4).

### CONCLUSION AND POLICY RECOMMENDATIONS

#### Conclusion

The SCM simulates the impact of JPEPA by constructing the counterfactual of the Philippines' exports to Japan using a pool of other bilateral exports of Japan. The synthetic export provides an idea on what the export would be if the JPEPA was not implemented. The SCM algorithm predicts and creates the hypothetical counterfactual of the treated unit by getting the weighted average of preintervention outcomes or predictors from the donor pool using selected covariates, such as GDP, GDP per capita, and geographic attributes, among others. This helps identify the donor units or predictors and their influence in the prediction. Thus, the covariates, which affect the outcome and the outcome variable itself before the JPEPA was implemented, determine the selection of donor units and the weights. The SCM was able to assess the effect of JPEPA on Philippine exports to Japan, which revealed the predictive capacity of the technique that could be used to complement other qualitative and quantitative techniques over a wide array of uses. Since it has fewer assumptions, it exhibits several advantages over other quantitative methods.

The results generally suggest that the agreement between Japan and the Philippines have benefited the aggregate exports to Japan. The average value of exports from 2009 to 2018 was USD 9.981 billion annually, higher than the average synthetic estimate of USD 7.923 billion. This means that exports grew by about 26 percent after the signing of the agreement. In specific sectors, however, the results suggest that the agreement did not immediately bring improvements, particularly for agricultural products, plastic and rubber, textiles, electrical machinery, and others. Immediate improvements, on the other hand, were realized for food manufacturing, minerals, chemicals, and wood products.

The results also show that trade agreements with Japan have varying effects on the exports of its bilateral partners. Improvements in the exports of India and Thailand were noted while Chile and Switzerland's exports seemed to have suffered. For Indonesia, improvements were realized immediately after the country's agreement with Japan was entered into force but eventually declined below the synthetic exports. The results verified that the realized growth in the Philippine exports to Japan during the duration of the agreement was in fact due to the strengthened trading partnership between the Philippines and Japan. Philippine exports to Japan could have potentially increased more than what was actually realized.

It should be noted, however, that the procedure used for the aggregate exports does not fit well to all sectors, particularly on chemicals, wood, nonmetals, electrical machinery and equipment, and others. This suggests further investigation and improvements in the selection of predictor variables and the use of SCM.

#### Policy recommendations

The results looked at the impact of JPEPA at the macro level and revealed that the Philippines had benefitted from the expansion of its market in Japan. The results, however, show that there were some industries to which the Philippines failed to expand its exports. There is a need to conduct further analysis to identify the factors that allow industries to expand their markets in Japan.

In particular, there is a need to support the machinery and mechanical appliances export sectors to Japan. Among the industries analyzed, it was shown that the JPEPA had a negative impact on Philippine exports from this industry. There is a need to identify what prohibits this sector from expanding its exports to Japan.

The results also imply that tariffs are not the only determinants of Philippine exports to Japan. The delays in the improvement of exports imply factors influencing the market access of Philippine exports to Japan. According to Palanca-Tan (2004, p.vii), the determinants of Philippine exports to Japan include the highly protected Japanese market and some domestic factors, such as "deficient technological know-how, high shipping and packaging costs, high labor and power costs (relative to competitors), lack of credit facilities, problems on raw materials sourcing, insufficient infrastructure facilities and lack of government support". It is recommended for the Philippines to focus more on nontariff barriers to Japan using the mechanisms available in the JPEPA. In addition, the Philippines needs to address domestic issues to further expand its access to the Japanese market.

Consistent with a number of studies on gravity model estimation, distance is a negative determinant of trade between the Philippines and Japan. The variable distance may be capturing other trade costs as well. The Philippines needs to reduce the impact of distance by improving its logistics and reducing the cost of doing business. For instance, to reduce the cost of doing business for micro, small, and medium enterprises (MSMEs), business permits and licensing procedures should be further streamlined. The Access of Small Entrepreneurs to Sound Lending Opportunities Program aims to improve the MSME sector's access to finance by lowering the effective cost of borrowing and ease down requirements, creating a wider financing system and standardized ending procedures (DTI-MSMED Council 2018). The DTI pursues initiatives to reduce the cost of doing business in the country through the provision of targeted and time-bound initiatives to strategic sectors, which can contribute to improving technology and innovation (NEDA 2017).

As the results show the potential of Philippine manufactured goods to penetrate the Japanese market through the JPEPA, the country should provide further support to its key sectors. The DTI has identified these key sectors in its most recent industrialization strategy. It is important that these sectors are aligned with the export trade strategy of the country.

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# ANNEXES

Annex 1. Areas covered in JPEPA

- a. Trade in goods reducing and eventually eliminating tariffs on industrial and agricultural products
- b. Emergency measures providing rules to address serious injury or threats from increased imports
- c. Rules of origin determining the originating foods for which preferential tariff treatment will be accorded
- d. Customs procedures provides for information exchange and cooperation to facilitate trade through simplified and harmonized customs procedures, including maximizing the use of ICT
- e. Paperless trading sharing of information on best practices and encouraging cooperation between private entities
- f. Mutual recognition facilitates trade in electrical products and other products such that both parties shall accept the results of conformity assessment as conducted by the other party
- g. Trade in services provides standstill obligation or liberalization of services sectors, including outsourcing, air transport, health and social services, tourism and travel, maritime transport, telecommunications and banking
- h. Investment provision on national treatment, MFN, and prohibition of performance requirements for the liberalization of investment, and on enhancement of transparency by specifying all exceptions to these provisions
- i. Movement of natural persons Easing the entry of qualified Filipino nurses and certified caregivers through language training, providing clear guidelines on the exercise of profession/occupation
- j. Intellectual property enhances the understanding of protecting the intellectual property, given Japanese practices; includes cooperation and appropriate protection and enforcement elements
- k. Government procurement increases the transparency of government procurement laws, regulations, and procedures and possible liberalization of government procurement activities in accordance with the development, financial, and trade needs of both parties
- 1. Competition ensuring protection of fair competition, including measure to promote competition by addressing anticompetitive activities and through cooperation
- Improvement of the business environment encourages cooperation to improve business environment; efficient and timely resolution addressing issues affecting Japanese and Filipino enterprises through a series of consultations
- n. Cooperation provision of bilateral economic assistance in 10 fields within the context of official development assistance
- o. Dispute avoidance and settlement provides a mechanism to address dispute between the two governments on the interpretation and implementation procedures while relying on the primacy of consultations

JPEPA = Japan-Philippines Economic Partnership Agreement; MFN = most favored nation; ICT = information and communications technology

Source: PHILEXPORT (2007)

Annex 2. Top 35 trade	partners of Ja	pan based on 2015-2018	annual trade values	(in billion USD)
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Country	Export values	Country	Import values
China	137.10	China	158.43
United States	53.87	United States	135.31
Korea, Republic of	26.81	Korea, Republic of	50.76
Australia*	22.40	Hong Kong, China	34.83
Thailand*	21.86	Thailand*	32.30
Germany	20.97	Germany	25.63
Indonesia*	17.84	Singapore*	20.35

Country	<b>Export values</b>	Country	Import values
Malaysia*	17.18	Mexico*	17.16
Singapore*	16.16	Australia*	15.69
Viet Nam*	15.19	Viet Nam*	15.40
<b>Russian Federation</b>	11.93	Malaysia*	14.40
Philippines*	11.10	Indonesia*	14.14
Qatar	10.58	Canada	12.49
Hong Kong, China	8.32	United Kingdom	12.14
Canada	8.30	United Arab Emirates	11.89
Switzerland*	7.45	India*	11.06
United Kingdom	7.09	France	10.68
France	7.02	Philippines*	10.04
Italy	6.70	Belgium	9.58
Chile*	5.96	Netherlands	8.34
Brazil	4.76	<b>Russian Federation</b>	8.07
India*	4.36	Saudi Arabia	7.05
South Africa	4.02	Switzerland*	4.40
Netherlands	3.81	Spain	4.22
Ireland	3.80	Brazil	4.14
Belgium	3.72	Italy	3.93
Mexico*	3.51	Turkey	3.86
Spain	2.78	Poland	3.31
New Zealand	2.15	Czech Republic	2.70
Sweden	2.14	New Zealand	2.69
Brunei*	1.98	Austria	2.27
Peru*	1.61	Chile*	2.17
Denmark	1.45	Israel	2.08
Austria	1.38	South Africa	2.07
Norway	1.25	Peru*	1.05

Annex 2. (continuation)

\* bilateral trade partners of Japan

Note: Countries included in the donor pool are selected based on this list. Countries having bilateral agreement with Japan from 2008, as listed in Table 6, were excluded from the donor pool.

USD = United States dollar

Source: UN Comtrade Database (2019)

	-			-														
Sector	1996	-2018			Pri	or to the a	greement				Initial year	in force		D	uration of	agreemei	Ŧ	
	Average	Position	Average (1996- 1999)	Position (1996– 1999)	Average (2000- 2002)	Position (2000– 2002)	Average [ (2003– 2005)	Position (2003– 2005)	Average (2006– 2008)	Position (2006– 2008)	Export Value (2009)	Position (2009)	Average (2010- 2012)	Position (2010– 2012)	Average (2013- 2015)	Position (2013– 2015)	Average 1 (2016- 2018)	osition (2016– 2018)
Electrical machinery and equipment	2,728.06	1	1,767.40	1	2,193.83	1	3,715.81	1	378.90	1	1,911.41	1	2,120.37	1	3,969.56	1	3,616.27	1
Wood	1,005.24	3	91.01	6	149.46	8	126.33	8	99.85	4	850.20	3	1,651.74	2	2,990.18	2	1,603.79	2
Machinery and mechanical appliances	1,260.34	2	976.68	2	1,608.50	7	1,515.77	7	149.60	б	1,574.43	7	926.25	ŝ	889.48	3	914.54	ŝ
Vehicles, aircraft, vessels, and transport equipment	407.26	Ŋ	104.30	8	180.84	9	327.18	4	22.39	10	238.94	80	497.33	5	706.63	9	794.21	4
Agriculture	485.31	4	389.92	3	380.37	3	374.36	3	72.89	IJ.	411.59	4	508.28	4	649.02	7	662.44	5
Others	288.75	8	133.04	7	162.21	7	231.13	5	30.86	6	186.64	6	238.57	10	559.90	8	595.46	9
Plastic and rubber	204.08	10	62.70	10	85.71	10	101.00	10	8.93	12	89.32	11	482.01	9	254.20	10	420.82	4
Minerals	369.12	9	243.91	4	215.56	4	224.65	9	67.79	4	313.06	IJ.	369.22	8	755.94	4	377.38	8
Metals	369.12	~	243.91	Ŋ	215.56	5	224.65	4	67.79	8	313.06	9	369.22	6	755.94	Ŋ	377.38	6
Chemicals	209.86	6	32.89	12	25.01	13	31.80	13	68.23	9	262.50	~	398.02	4	517.35	6	238.49	10
Textiles, textile articles, and other articles	156.87	11	160.31	9	129.65	6	116.58	6	21.43	11	118.56	10	154.54	11	232.03	11	188.92	11
Nonmetals	93.86	12	28.75	13	36.68	12	75.53	11	176.06	2	82.19	12	93.29	12	90.69	13	143.68	12
Food manufactures	73.85	13	48.67	11	42.40	11	46.73	12	1.79	13	50.17	13	80.29	13	170.57	12	96.23	13
Leather	25.40	14	15.83	14	14.55	14	12.34	14	1.69	14	14.46	14	14.60	14	54.34	14	56.32	14
Source: Authors' estima	ates base	ad on U	N Comtra	ide Datal	base (20	19)												

# Annex 3. Evolution of Philippine exports composition

# Quimba and Barral

Annex 4. Philippine exports position with respect to Japans top exporters

Sectors	-966-	-2018			н	rior to the	agreemen				Initial y	vear		Dı	rration of a	greement		
	Average	Position	Average (1996– 1999)	Position (1996- 1999)	Average (2000– 2002)	Position (2000- 2002)	Average (2003- 2005)	Position (2003- 2005)	Average (2006– 2008)	Position (2006– 2008)	Export value (2009)	Position (2009)	Average (2010- 2012)	Position (2010- 2012)	Average (2013- 2015)	Position (2013- 2015)	Average (2016- 2018)	Position (2016- 2018)
Agriculture	485.31 (5.24%)	15	389.92 (-2.92%)	14	380.37 (-1.03%)	15	374.36 (1.08%)	15	72.89 (33.01%)	~	41159 (-13.43%)	15	508.28 (14.80%)	16	649.02 (-2.04%)	16	662.44 (17.75%)	14
Food manufactures	73.85 (8.89%)	28	48.67 (-8.04%)	27	42.40 (1.02%)	23	46.73 (3.19%)	26	1.79 (4.32%)	41	50.17 (9.91%)	29	80.29 (37.49%)	26	170.57 (31.89%)	22	96.23 (-1.77%)	25
Minerals	369.12 (9.66%)	24	243.91 (-13.57%)	19	215.56 (-0.08%)	22	224.65 (16.98%)	24	67.79 (32.02%)	29	313.06 (-28.09%)	19	369.22 (0.40%)	26	755.94 (53.15%)	21	377.38 (-2.51%)	23
Chemicals	209.86 (21.10%)	24	32.89 (-14.02%)	33	25.01 (0.71%)	35	31.80 (28.00%)	37	68.23 (99.92%)	12	262.50 (-13.42%)	21	398.02 (11.87%)	18	517.35 (20.73%)	17	238.49 (-9.71%)	25
Plastic and rubber	204.08 (39.71%)	12	62.70 (11.53%)	15	85.71 (7.78%)	13	101.00 (7.25%)	15	8.93 (16.01%)	13	89.32 (-17.45%)	16	482.01 (267.09%)	10	254.20 (-25.05%)	11	420.82 (26.15%)	10
Leather	25.40 (9.30%)	15	15.83 (-5.47%)	17	14.55 (-4.85%)	17	12.34 (4.05%)	21	1.69 (11.62%)	17	14.46 (-24.64%)	18	14.60 (36.80%)	22	54.34 (44.23%)	6	56.32 (-9.57%)	10
Wood	1,005.24 (24.11%)	9	91.01 (6.51%)	19	149.46 (16.71%)	16	126.33 (6.78%)	19	99.85 (154.80%)	4	85020 (-8.62%)	9	1,651.74 (38.21%)	3	2,990.18 (11.03%)	7	1,603.79 (-35.85%)	ŝ
Textiles,	156.87 (2.68%)	16	160.31 (-12.89%)	14	129.65 (-1.60%)	15	116.58 (-1.20%)	15	21.43 (16.14%)	8	11856 (-25.83%)	17	154.54 (36.09%)	17	232.03 (-2.80%)	16	188.92 (-1.18%)	15
Nonmetals	93.86 (32.32%)	24	28.75 (11.21%)	26	36.68 (2.95%)	24	75.53 (150.98%)	18	176.06 (107.65%)	б	82.19 (21.18%)	20	93.29 (0.35%)	21	90.69 (10.14%)	21	143.68 (28.24%)	19
Metals	369.12 (18.96%)	14	243.91 (-14.33%)	21	215.56 (-9.64%)	22	224.65 (1.59%)	27	67.79 (63.05%)	20	313.06 (-67.76%)	25	369.22 (39.07%)	22	755.94 (74.99%)	8	377.38 (-0.71%)	9
Machinery	1,260.34 (3.23%)	6	976.68 (19.19%)	10	1,608.50 (9.06%)	~	1,515.77 (-2.95%)	8	149.60 (10.50%)	9	1,574.43 (-24.01%)	4	926.25 (-8.16%)	10	889.48 (-1.51%)	10	914.54 (2.34%)	10
Electrical	2,728.06 (7.03%)	6	1,767.40 (17.36%)	10	2,193.83 (4.04%)	~	3,715.81 (24.60%)	8	378.90 (16.38%)	9	1,911.41 (%00%)	~	2,120.37 (17.55%)	10	3,969.56 (15.75%)	10	3,616.27 (-8.33%)	10
Vehicles,	407.26 (22.60%)	10	104.30 (34.73%)	16	180.84 (20.37%)	13	327.18 (12.90%)	11	22.39 (1.78%)	24	238.94 (-44.56%)	11	497.33 (40.43%)	6	706.63 (48.48%)	80	794.21 (16.06%)	6
Others	288.75 (13.87%)	17	133.04 (-9.99%)	18	162.21 (16.08%)	17	231.13 (15.01%)	17	30.86 (29.22%)	15	186.64 (-19.96%)	19	238.57 (76.41%)	19	559.90 (10.44%)	14	595.46 (-2.88%)	14
Source: Aut	hors' esti	imates bā	J no base	JN Com	itrade Da	tabase (	(2019)											

# The Japan-Philippines Economic Partnership Agreement, a Decade After