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Economic Impact of Further US Tariff Hikes

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Abstract

US president-elect Trump has proposed further hikes to US import tariffs. This paper quantitatively investigates the economic impact of US tariff hikes by means of simulation studies using a computable general equilibrium (CGE) model of global trade. If the US hiked import tariffs further, the US would be a primary loser in the world economy rather a winner. Protectionism has not been found to create jobs at the macro level. The adverse impact of proposed US tariff hikes would be larger than that of past tariff hikes and the next largest to those under the two recent recessions. Industry structures would be distorted among economies in a less resource efficient manner than previously. That said, the adverse economic impact on other economies would be limited, and several economies would even benefit from the resultant decline in prices, and moreover from trade diversion effects, depending on the policy scenario. In that light, the impact on the economy at both the macro and sector levels needs to be considered when introducing policy measures moving toward protectionism.

Key words: US. tariff hike, computable general equilibrium (CGE) model
JEL classification: C68, F13, F14, F17

[1] The author is grateful for the useful comments of Professor Yuqing Xing, GRIPS. That said, any remaining errors will be attributed to the author only.

Economic Impact of Further US Tariff Hikes[2]

I. Introduction

Former United States (US) president Trump was re-elected in the November 2024 presidential election and is scheduled to be appointed US president in January 2025. He hiked US tariffs on imports of steel and aluminum and on imports from China during his first administration, from 2017 to 2021. During his presidential campaign he proposed the introduction of universal baseline tariffs of 10% to 20%, and tariffs of even 60% on imports from China. There has been concern regarding the adverse impact of those tariff hikes on US and world trade and economy. Recent studies including Budget Lab (2024), IMF (2024) and McKibbin, Hogan and Nolan (2024), alongside Kawasaki (2024), have found that the US GDP would decrease if the proposed tariff hikes were imposed.

During the previous Trump regime, the US withdrew from the Trans-Pacific Partnership (TPP) on the first day of the term of President Trump in January 2017, and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) entered into force in 2018 without the US. The Trump administration appeared to be prioritizing bilateral trade policy, and separately implemented the US-Japan Trade Agreement (USJTA) in January 2020, followed by the United States-Mexico-Canada Agreement (USMCA) in July 2020, which substituted the North American Free Trade Agreement (NAFTA). That said, USJTA has not applied to reduce tariffs covering "substantially all the trade" and has not been included in the Regional Trade Agreements (RTAs) Database by the World Trade Organization (WTO). The Indo-Pacific Economic Framework for Prosperity (IPEF) was launched in May 2022 under the Biden administration, but it differs substantially from standard trade agreements, in that it has not necessarily been legally binding, and tariff reductions were not included. Global trade policy making should be watched from the perspective of the emergent movement toward protectionism and against further trade liberalization.

The world economy has recovered from the 2020 recession caused by the Corona Virus Disease pandemic that emerged in 2019 (COVID-19). On the other hand, commodity prices rose sharply from their bottom of 2020, peaking in June 2022 as an effect of Russia's military invasion of Ukraine (starting in February 2022), in conjunction with the effects of expansionary fiscal and monetary policies after the COVD-19 pandemic. Monetary policy was tightened to overcome inflation but easing has begun in

[2] This is an updated and expanded version of an earlier policy brief, Kawasaki (2024).

the US, the Euro area and others since mid-2024, as inflation has been lowered to moderate rates. The impact of US tariff hikes would also be watched from the perspective of the development of inflation and implications for monetary policy.

The objective of this paper is to investigate the economic impact of US tariff hikes. A computable general equilibrium (CGE) model of global trade is used in the quantitative examinations of that impact. It is useful to study the impact of various policy scenarios via model simulations something like a social science laboratory, which could clarify the relative significance of, as well as the balance of possible various positive and negative impacts of, economic and trade policies in advance of their implementation.

The remainder of this paper is organized as follows. Chapter II reviews the development of US tariff hikes and their impact on trade since 2018. Chapter III presents a framework for modeling studies, including CGE model structure and policy scenarios. The estimated results of the model simulations on trade, economy and industry are discussed in Chapter IV. Chapter V provides a summary and concluding remarks.

II. Development of US tariff hikes and trade

1) Steel and aluminum tariffs

In March 2018, then US president Trump issued a presidential proclamation imposing a 25% additional tariff on US steel imports and a 10% additional tariff on aluminum imports. Those measures were based on US Department of Commerce (USDOC) investigations of the effect of imports of steel and aluminum on national security, according to section 232 of the Trade Expansion Act of 1962 in January 2018. The US Secretary of Commerce recommended a few alternatives to the US president, to "enable an 80% capacity utilization rate at 2017 demand." Those measures included an additional 24% global tariff on all US steel imports (USDOC, 2018a) and a 7.7% tariff on unwrought and other aluminum imports (USDOC, 2018b).

The sources of US imports of steel and aluminum have been concentrated in a limited number of economies, as is shown in Table 1. More than half of US steel was imported from five economies, led by Canada, followed by Brazil, Korea, Mexico and Russia in 2017. US imports of aluminum were predominantly from Canada, which had a 43.0% share of US world imports. It may be noted that crude steel production in 2023 was the largest in China, amounting to 1,019 million metric tons (MT), more than half of

Table 1 Major US imports of steel and aluminum (2017)

(thousand MT, %)

	Steel				Aluminum		
1	Canada	5,800	(16.1)	1	Canada	2,974	(43.0)
2	Brazil	4,679	(13.0)	2	Russia	751	(10.9)
3	Korea	3,654	(10.2)	3	UAE	683	(9.9)
4	Mexico	3,249	(9.0)	4	China	657	(9.5)
5	Russia	3,124	(8.7)	5	Bahrain	256	(3.7)
6	Turkey	2,249	(6.3)	6	Argentina	218	(3.2)
7	Japan	1,781	(5.0)	7	South Africa	170	(2.5)
8	Germany	1,371	(3.8)	8	India	158	(2.3)
9	Chinese Taipei	1,252	(3.5)	9	Qatar	124	(1.8)
10	India	854	(2.4)	10	Venezuela	98	(1.4)
11	China	784	(2.2)	11	Indonesia	78	(1.1)
12	Viet Nam	728	(2.0)	12	Mexico	68	(1.0)
13	Netherlands	590	(1.6)	13	Germany	59	(0.8)
14	Italy	515	(1.4)	14	Saudi Arabia	49	(0.7)
15	Thailand	417	(1.2)	15	Brazil	40	(0.6)
	Above 15	31,047	(86.4)		Above 15	6,384	(92.3)
	World	35,927	(100.0)		World	6,917	(100.0)

Note: Figures are annualized based on source data (US Census Bureau) from January to October 2017.

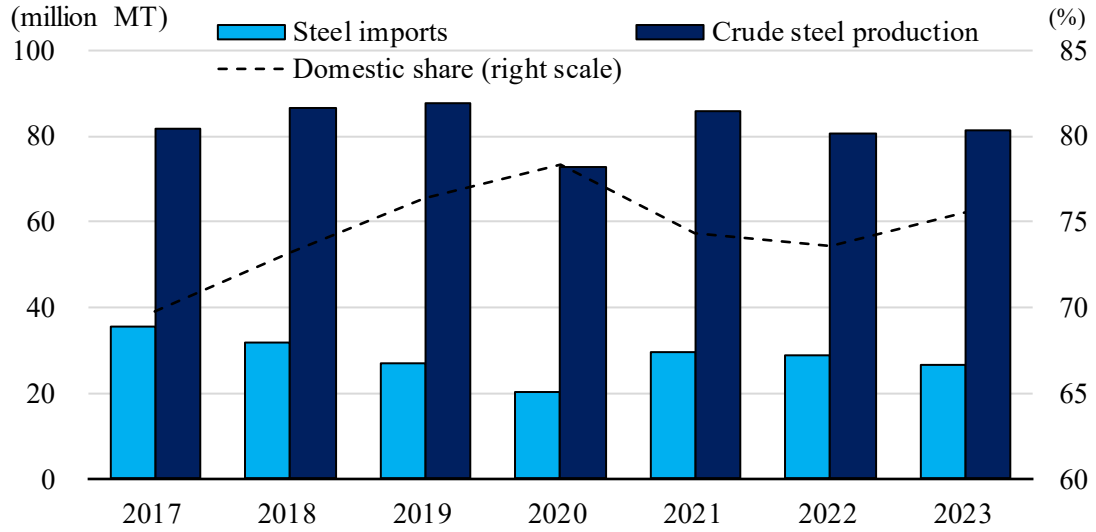
Source: Based on USDOC (2018a) and USDOC (2018b).

world production (1,888 million MT) according to Data, World Steel Association.[3] The economic impact of US import tariff hikes on steel and aluminum would be larger for the above economies than for other economies, but not necessarily for heavy steel and aluminum producers in the world including China, which had a share of around 2% of US steel imports in 2017.

The development of US steel imports and production is shown in Chart 1. US steel imports decreased by 23.3% from 2017 to 2019, smaller than the 37% expected by USDOC (2018a). Meanwhile, crude steel production increased by 10.7% in the same period, in line with satisfying the 80% in capacity utilization rate, but the effect of the COVID-19 pandemic since 2020 remains to be seen. The ratio of domestic production to total supply including imports was seen to rise to 78% toward 2020, but it has been lower since that time. It is thought that domestic supply ratio of products, rather than capacity utilization rate, which may be lower under excess domestic capacity of production alongside domestic business downturns, would be a more appropriate indicator for assessing the state of national security.

[3] https://worldsteel.org/data/

Chart 1 US steel imports and production



Source: Based on Data, World Steel Association.

2) Bilateral tariffs between the US and China

On the other hand, the US started to hike tariffs on imports from China on the day after the release of the report by the US Trade Representative (USTR), which investigated China's acts, policies and practices related to technology transfer, intellectual property and innovation under section 301 of the Trade Act of 1974, and released its findings in March 2018 (USTR, 2018). Those US tariff hikes were followed by corresponding hikes in China's tariffs on imports from the US shortly thereafter. US average tariff rate on imports from China was hiked from 2.6% in January 2018 to 16.0% in January 2020, and China's average tariff rate on imports from the US was also hiked, from 6.2% to 16.4% in the same period, according to Bekker and Schroter (2020). Meanwhile, it was indicated that US imports from China subject to tariffs totaled 470 billion US dollars (USD) in 2019, which accounted for almost all trade (486 billion USD). On the other hand, China's tariffed imports from the US (79 billion USD) represented a share of around 64% of trade in all products (124 billion USD).

2017 US exports to and imports from China, and their balance, are shown in Table 2. The US imported more than 3.5 times more goods from China than it exported to China that year.[4] By sector, the US is a large exporter of agriculture, forestry and

[4] It is important to note that conventional measurement of trade statistics does not distinguish between intermediate and final products, which would overlap intermediate imports for final production, crossing borders multiple times. US gross exports of final products to China totaled 89.7 billion USD in 2017, a share of around 40% of total gross exports, according to Trade in Value Added (TiVA) 2023 edition by the Organisation for Economic Co-operation and Development (OECD). On the other hand, US gross imports of final products from China were

Table 2 US merchandise trade with China, by sector

(billion USD, %)

	Exports		Imports		Balance
Agriculture, forestry and fisheries	18.5	(9.8)	1.0	(0.2)	17.5
Mining	5.4	(2.8)	0.4	(0.1)	5.0
Processed foods	4.2	(2.2)	7.4	(1.5)	-3.2
Textiles and apparel	1.7	(0.9)	75.8	(15.0)	-74.2
Other manufacturing	10.4	(5.5)	69.5	(13.8)	-59.0
Chemical products	26.2	(13.8)	46.7	(9.3)	-20.5
Metals	9.2	(4.9)	24.5	(4.9)	-15.3
Motor vehicles	14.1	(7.5)	18.4	(3.6)	-4.3
Other machinery	14.3	(7.5)	90.0	(17.8)	-75.8
Electronic products	27.4	(14.5)	151.7	(30.1)	-124.4
Goods total above	131.2	(69.4)	485.3	(96.2)	-354.1
Services	57.9	(30.6)	19.0	(3.8)	38.9
Total	189.1	(100.0)	504.4	(100.0)	-315.2

Source: Author's calculations based on GTAP 11c Data Base, 2017, GTAP.

fisheries to China but is not as large an importer in that sector, which resulted in a trade surplus. The US does not export much in light manufacturing products including textiles and apparel, but imports substantially in those sectors, contributing to large trade deficits. Chemical products, metals and motor vehicles have larger shares of US exports than of US imports, but there are trade deficits in those sectors. Other machinery and electronic products in particular have larger ratios in imports than in exports, and generate larger trade deficits than other sectors. On the other hand, the US does not import much in total services from China, resulting in a service trade surplus.

The US merchandise trade deficit in 2017 was largest with China, with a share of close to 50% of the world total, followed by Mexico, Japan and Germany, according to International Trade by US Census Bureau,[5] as is shown in Table 3. Those trade deficits with China decreased from 375 billion USD in 2017 to 279 billion USD in 2023, partly as a result of the bilateral tariff hikes between the US and China discussed above, but overall trade deficits increased from 793 to 1,063 billion USD during the same years (including increases with Canada (52 billion USD); Mexico (83 billion USD); and Viet Nam (66 billion USD)). It has been shown that the US trade balance with China could have been improved but trade balances with other economies would have deteriorated due to trade diversion effects. US imports from China have been replaced by imports from

259.6 billion USD in the same year, a shared in total gross imports of around 60%. It is indicated that the US trade deficit with China in terms of final products was 170.0 billion USD, much smaller than that shown in Tables 2 and 3. That said, it should also be noted that three fourths of the US trade deficit with China was generated by final products rather than intermediate products. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html

[5] https://www.census.gov/foreign-trade/index.html

Table 3 US trade deficits: top 15 partners in 2017

(billion USD)

	2017	2018	2019	2020	2021	2022	2023
China	-375.2	-418.2	-342.6	-308.0	-352.9	-382.3	-279.4
Mexico	-69.1	-77.7	-99.4	-111.0	-105.5	-130.5	-152.4
Japan	-68.8	-67.1	-69.1	-55.5	-60.1	-67.9	-71.2
Germany	-63.6	-68.0	-67.1	-56.9	-69.5	-74.1	-83.0
Viet Nam	-38.3	-39.5	-55.6	-69.7	-90.9	-116.1	-104.6
Ireland	-38.2	-46.7	-52.1	-55.4	-60.1	-66.6	-65.3
Italy	-31.5	-31.8	-33.6	-29.5	-39.3	-41.4	-44.0
Malaysia	-24.5	-26.4	-27.3	-31.8	-40.9	-36.0	-26.7
India	-22.9	-21.1	-23.7	-24.2	-33.3	-38.4	-43.7
Korea	-23.1	-17.9	-21.0	-25.0	-29.2	-43.3	-51.4
Thailand	-20.1	-19.3	-20.2	-26.3	-34.7	-42.8	-40.7
Canada	-16.3	-18.8	-25.8	-13.8	-47.7	-80.1	-67.9
Chinese Taipei	-16.7	-15.2	-23.0	-30.2	-40.2	-47.5	-48.0
France	-15.3	-15.9	-19.9	-15.7	-20.2	-11.3	-13.4
Switzerland	-14.3	-18.9	-26.7	-56.9	-39.9	-22.7	-24.3
World	-792.4	-870.4	-845.8	-901.5	-1,071.1	-1,177.4	-1,063.4

Source: Based on International Trade, US Census.

other economies, but not necessarily by US domestic production.

III. Framework of model simulations

1) Model

The economic impacts of possible US tariff hikes under various scenarios are estimated using a CGE model of global trade, here the modified version of the standard Global Trade Analysis Project (GTAP) model, version 7 (Corong, Hertel, McDougall, Tsigas and van der Mensbrugghe, 2017). The model is solved by the General Equilibrium Modelling PACKage (GEMPACK) software (Horridge, Jerie, Mustakinov and Schiffman, 2018).[6]

The standard GTAP model is a multi-region, multi-sector CGE model linking economies through international trade. Products are distinguished by place of production but not by producing firms, assuming imperfect substitution of goods and services among regions, known as the Armington assumption (Armington, 1969). Imperfect substitution

[6] Euler 5-step is applied as a solution method throughout all simulations in this paper. Accuracy applying Gragg 2, 4, 6-step was too low, and Gragg 2, 4, 6-step was not able to produce a solution in a few cases with large shocks from 60% tariff hikes.

is structured in two steps in the current model. The first relates to the allocation of products to home and abroad production. The second relates to the allocation of imported products among the production of different regions. Substitution elasticities in the second step are assumed to be twice of the first step.

A few closure options are provided by the standard GTAP model. In the model used in this study, trade balance, and therefore national saving and investment balance, is not fixed based on the assumption of medium-term equilibrium. Capital balance is also endogenously determined. Meanwhile, another option is chosen, in which the expected rates of return on capital resulting from induced investment are equalized among regions. This would distinguish the allocation of investment and capital stock among regions, which would differentiate the economic impact of policy scenarios among regions. If expected rate of return on capital is not equalized among regions, investment will be allocated such that the composition of capital stock among regions remains unchanged.

Moreover, two dynamic effects are incorporated into the standard framework of fixed production endowments (capital and labor) with perfect competition and constant return to scale. First, capital stock is endogenous, choosing one option which incorporates the equation below, which links changes in investment to capital stock by employing the methodology in Francois, McDonald and Nordström (1996). The estimated macroeconomic impact would be larger than otherwise, as it incorporates growth effects among induced income, saving, investment and capital stock:

qinv (r) = qe (capital, r)

qinv (r): change in demand for investment goods in region r

qe (capital, r): change in supply of capital stock in region r

Second, labor supply is also endogenous as per the following equation, which links changes in real wage to labor supply, following the methodology in CS (2015) and USITC (2016), which studied the economic impact of TPP on Japan and US economies respectively. The real wage elasticity of labor supply (EWL) is assumed here to be 0.4, following USITC (2016).[7] The magnitudes of estimated macroeconomic impacts would be dependent on the sizes of introduced elasticities above.[8]

qe (labor, r) = EWL * (pe (labor, r) - ppriv (r))

qe (labor, r): labor supply change in region r

[7] USITC (2016) used 0.4 for developed economies and 0.44 for developing economies. CS (2015) assumed this elasticity to be 0.8, based on the results of empirical studies in Japan.

[8] CS (2015) provided sensitivity analysis for this parameter: Japan's real GDP is estimated to increase by 2.6%, resulting from the implementation of TPP, using an elasticity of 0.8, compared with an estimated impact of 1.9% under an elasticity of 0.4.

EWL:	real wage elasticity of labor supply
pe (labor, r):	labor price change in region r
ppriv (r):	change in private consumption price in region r

2) Data

The model is built based on the GTAP 11c Data Base released in April 2024, the most recent version of the GTAP 11 Data Base (Aguiar, Chepeliev, Corong and van der Mensbrugghe, 2022), which fixed a few bugs from earlier versions. Data for model simulations are aggregated here

-from data for 65 commodities/industries in GTAP 11c database to data for 15 sectors;

-from data for 141 individual economies and 19 composite regions in GTAP 11c database to data for 17 economies;

as is shown in Table 4.[9]

Export and import values in the aggregated database are shown by economy in Table 5. It can be seen that China exports are largest among individual economies; on the other hand, the US imports are largest. Meanwhile, European Union (EU) trade, including intraregional trade within the EU, is also substantial. It may be interesting to note that the

Table 4 Aggregation of GTAP database

Commodities/industries		Economies	
AFF	Agriculture, forestry and fisheries	AUS	Australia
MNG	Mining	NZL	New Zealand
PFD	Processed foods	CHN	China
TXL	Textiles and apparel	JPN	Japan
OMF	Other manufacturing	KOR	Korea
CHM	Chemical products	TWN	Chinese Taipei
MTL	Metals	SEA	ASEAN
MVH	Motor vehicles	IND	India
OME	Other machinery	USA	US
ELE	Electronic products	CAN	Canada
EGW	Electricity, gas and water	MEX	Mexico
CNS	Construction	EUM	EU
T_T	Transportation	GBR	UK
OSP	Other private services	RUS	Russia
OSG	Public services	OAO	Other Asia-Pacific
		CSA	Central and south America
		ROW	Rest of the world

Source: Author's compilation based on GTAP 11c Data Base, GTAP.

[9] Motor vehicles sector includes auto parts, even in the disaggregated GTAP sector.

Table 5 Trade values by economy

	Exports		Imports		Trade balance	
	(billion USD)	(% of GDP)	(billion USD)	(% of GDP)	(billion USD)	(% of GDP)
AUS	316	23.8	296	22.3	21	1.5
NZL	54	25.9	48	23.2	6	2.8
CHN	2,392	19.4	2,162	17.6	230	1.9
JPN	868	17.6	859	17.4	9	0.2
KOR	693	42.7	562	34.6	131	8.1
TWN	335	56.6	298	50.4	37	6.2
SEA	1,457	52.0	1,418	50.6	39	1.4
IND	408	15.4	520	19.6	-112	-4.2
USA	2,228	11.4	2,850	14.6	-622	-3.2
CAN	478	29.0	519	31.5	-41	-2.5
MEX	454	39.2	439	37.9	15	1.3
EUM	6,461	43.6	6,027	40.7	434	2.9
GBR	756	28.0	900	33.3	-144	-5.3
RUS	406	25.8	286	18.1	120	7.7
OAO	349	27.9	471	37.6	-121	-9.7
CSA	818	17.4	798	17.0	20	0.4
ROW	2,609	34.2	2,630	34.4	-22	-0.3
World	21,082	25.9	21,082	25.9	0	0.0

Source: Based on GTAP 11c Data Base, 2017, GTAP.

trade deficit in terms of per cent of GDP is large in the US, who withdrew from TPP; in India, who withdrew from the Regional Comprehensive Economic Partnership (RCEP) Agreement; and in the United Kingdom (UK), who left the EU.

Trade and economic data are provided for a few reference years up to 2017 by GTAP 11 Data Base. The baseline data of GDP and population are updated to those for 2025 based on the World Economic Outlook (WEO) Database, October 2024, International Monetary Fund (IMF).

3) Policy scenarios

The economic impact of the following three main scenarios is estimated in an incremental manner. It is assumed here that tariffs would additionally be hiked by specified magnitudes on all imports of goods regardless of the levels of existing tariffs,[10] which may vary by economy and by sector:

WR10: 10% US tariffs on all other economies in the world

CH60: 60% US tariffs on China alongside 10% on all other economies

CHEU: 10% EU tariffs and 60% China tariffs on the US in addition to CH60

[10] Tariff data in the baseline is not updated from that in GTAP 11c Data Base in 2017; this would not materially affect simulation outcomes.

The impact of another scenario related to 100% US tariff hikes on imports from Mexico will also be discussed, later. Meanwhile, the estimated impact of 20% US universal tariffs and the two associated scenarios above are discussed in Annex.

IV. Estimated results

1) Impact on trade

The estimated impact of the above three scenarios on exports of all economies to the US, which are imports of the US from all economies, are shown in Table 6. Exports to the US are estimated to decrease by 10.0% on average globally, with variations among economies under 10% universal tariffs.

If the US imposed 60% tariffs on imports from China alongside 10% tariffs on all other economies, China's exports to the US are estimated to be reduced to close to zero, a serious decrease of 92.4%. On the other hand, the exports of other economies to the US are suggested to decrease by at least less than the case where China was equally subject to 10% tariffs, and possibly to increase in many economies enjoying trade diversion effects in line with the improvement of international price competitiveness with

Table 6 Impact on trade

(%, * billion USD)

	Exports to US			Exports to world			Trade balance*		
	WR10	CH60	CHEU	WR10	CH60	CHEU	WR10	CH60	CHEU
AUS	-4.2	6.1	1.6	0.2	0.4	0.4	-1.0	-1.2	-1.2
NZL	-7.5	2.6	-2.8	-0.2	0.1	0.1	-0.1	-0.1	0.0
CHN	-11.4	-92.4	-93.0	-0.7	-5.0	-6.5	-10.8	-17.9	-19.1
JPN	-9.9	11.3	6.9	-0.8	0.2	0.6	-0.3	-0.3	-1.2
KOR	-11.7	20.7	15.7	-0.5	0.5	1.0	-0.6	0.9	1.1
TWN	-10.9	27.6	22.5	-0.7	0.7	1.3	-0.4	0.2	0.2
SEA	-9.7	37.2	32.6	-0.2	2.4	2.8	-2.0	-0.9	-1.6
IND	-8.6	9.5	6.0	-0.8	0.3	0.4	-0.8	-2.1	-3.9
USA	-	-	-	-16.7	-21.5	-23.9	30.3	33.7	41.0
CAN	-8.6	-3.5	-4.9	-3.7	-2.0	-1.7	2.4	0.3	-0.2
MEX	-11.2	2.9	2.9	-7.5	0.9	1.7	-2.4	0.2	-0.1
EUM	-9.3	9.1	3.9	-0.2	0.1	0.1	-4.1	-0.5	0.6
GBR	-4.4	5.2	1.7	-0.4	-0.2	0.1	1.0	-0.8	-2.5
RUS	-11.6	1.9	-3.3	0.4	0.8	0.9	-3.0	-2.9	-1.8
OAO	0.0	18.0	15.0	0.2	1.0	1.1	-0.1	-0.4	-1.0
CSA	-10.2	-1.6	-6.0	-0.6	0.2	0.4	-1.2	-1.2	-1.3
ROW	-12.6	-1.3	-6.3	0.2	0.7	1.0	-7.0	-7.0	-8.8
World	-10.0	-13.0	-15.9	-2.3	-2.6	-2.9	0.0	0.0	0.0

Source: Author's simulations.

respect to China in the US market. As a result, world exports to the US would decrease by 13.0%, a decrease not so much larger than the impact of universal 10% tariffs, as the above two effects would offset each other to some extent.

Meanwhile, if China and the EU retaliated their hikes on their tariffs on imports from the US, China's exports to the US would decrease more than, and EU exports to the US would increase less than, exports under no retaliation, given the associated rise in export costs in the two economies. Those rising costs in China and the EU would be exported to the other economies, who would lose above trade diversion gains to some extent. World exports would decrease by 15.9%, which is a larger decrease than without retaliation.

On the other hand, US overall exports are estimated to decrease to a large extent by 16.7% to 23.9% in the three scenarios studied here, due to rising production and export prices in the US economy resulting from import tariffs. Those magnitudes are estimated to be much larger than the decreases in US overall imports, which correspond to world exports to the US, as discussed above (by 10.0% to 15.9%).

The US holds a share of around 70% to 80% of the export markets of Canada and Mexico in the world, much higher than the world average of around 14%, according to the GTAP 11c Data Base. Exports are estimated to decrease by 3.7% in Canada and by 7.5% in Mexico, more than in other economies under universal 10% tariffs. Meanwhile, if China was subject to higher US tariffs (60%) than the other economies at 10%, China's exports are estimated to decrease more, by 5.0%, than the case where China was subject to 10% tariffs (0.7%).

That said, the magnitudes of changes in overall exports of the rest of US economies would be much smaller than those changes in exports to the US. World exports including those of the US are estimated to decrease by 2.3% to 2.9%, and those excluding the US are estimated to decrease by 0.3% to 0.6% (not shown in Table 6). It is highlighted here that there would likely be a single serious loser resulting from US tariff hikes: the US.

One key concern of the incoming US president may have been huge trade deficits, which amounted to 1,063 billion US dollars (USD) in 2023, accounting for around 3.8% of US GDP in the same year. US trade balance in goods and services is estimated to improve by 30.3 to 33.7 billion USD as a result of unilateral US tariff hikes here, and by 41.0 billion USD under the case of China and EU retaliation, which may not be smaller

than that without those retaliations.[11]

The estimated improvement of US nominal trade balances would be explained by the improvement of terms of trade for the US, despite the adverse impact on real net exports, which must be noted for later discussion of real GDP impact. US import prices before tariffs would decline due to decreased US demand in the world market. On the other hand, US export prices would rise due to tariffs costs.

That said, the magnitude of improvement of the balance of trade in goods and services would be limited in terms of their ratios to GDP, around 0.1%. China's trade balances are estimated to deteriorate by 10.8 to 19.1 billion US dollars, the largest among the rest of US economies in terms of absolute values, though they still only account for around 0.1% of China's GDP.

2) Impact on economy

The impact on the real GDP would be similar to that on overall exports, as is shown in Table 7. US real GDP is estimated to decrease by 1.7% to 3.4% under the three scenarios used here. Real GDP is also estimated to decrease in Canada (by 1.4%) and Mexico (by 4.8%) under 10% universal tariff hikes. Meanwhile, China's real GDP would decrease by 1.4% to 1.9% if China was subject to 60% US tariffs. All in all, world real GDP is estimated to decrease by 0.5% to 0.9%. If the retaliation of China and the EU expanded world-wide, the adverse impact of protectionism would be larger.[12]

It will be noted that those decreases in real GDP would be larger than the adverse impact of earlier US tariff hikes. US real GDP is estimated to decrease by 0.4%[13] as a result of an additional 25% US tariff on the imports of metals[14] from the world, and by

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[11] By sector, trade balances in goods are estimated to be improved from 118.0 to 131.6 billion USD, led by mining (40.5 to 55.1 billion USD), textiles and apparel (16.0 to 27.8 billion USD), other manufacturing (34.1 to 55.2 billion USD) and electronic products (19.5 to 23.1 billion USD). On the other hand, trade balances in services are estimated to deteriorate by 77.0 to 128.8 billion USD.

[12] Earlier studies, IMF (2016), Australia Productivity Commission (2017), and Kawasaki (2018), coincidently found a similar impact of 10 percentage points higher worldwide import prices, which would lower global trade by 15 to 17 per cent and global output by 2 per cent, though the details of the analytical methodology vary among the three estimates.

[13] It is estimated that US import of metals would decrease by 44.2% and US domestic production of metals would increase by 10.2%, but total production would still decrease due to rising price costs of metals as intermediate inputs for the other industries. It is indicated that protectionism at the sector level would not necessarily yield benefits at the macro level.

[14] A 25% tariff on steel and a 15% tariff on aluminum were imposed in 2018, as discussed earlier.

Table 7 Impact on economy

(%)

	Real GDP			Employment			Private consumption price		
	WR10	CH60	CHEU	WR10	CH60	CHEU	WR10	CH60	CHEU
AUS	-0.2	-0.1	0.0	-0.1	0.0	0.0	-0.8	-0.9	-0.5
NZL	0.0	0.2	0.3	0.0	0.1	0.1	-0.5	-0.5	-0.1
CHN	0.1	-1.4	-1.9	0.0	-0.5	-0.7	-0.7	-3.8	-2.9
JPN	0.0	0.5	0.8	0.0	0.2	0.2	-0.5	-0.3	0.1
KOR	0.1	0.6	0.9	0.0	0.2	0.3	-0.5	-0.2	0.2
TWN	-0.2	0.7	1.0	-0.1	0.2	0.3	-0.6	0.0	0.4
SEA	0.1	1.5	1.8	0.0	0.5	0.6	-0.6	0.0	0.4
IND	0.2	0.6	0.7	0.1	0.2	0.2	-0.4	0.4	0.7
USA	-1.7	-3.2	-3.4	-0.5	-0.8	-0.9	2.8	4.5	3.4
CAN	-1.4	-0.8	-0.6	-0.7	-0.4	-0.3	-1.2	0.4	0.2
MEX	-4.8	-0.7	0.0	-1.7	0.0	0.2	-1.5	1.5	1.1
EUM	0.1	0.3	0.4	0.0	0.1	0.1	-0.5	-0.2	0.3
GBR	0.0	0.2	0.3	0.0	0.1	0.1	-0.5	0.0	0.3
RUS	0.1	0.4	0.6	0.1	0.1	0.2	-0.9	-1.1	-0.6
OAO	0.4	0.9	1.0	0.1	0.3	0.3	-0.5	-0.8	-0.4
CSA	-0.1	0.2	0.4	-0.1	0.1	0.1	-0.5	-0.1	0.2
ROW	0.1	0.4	0.6	0.0	0.1	0.2	-0.7	-0.6	-0.1
World	-0.5	-0.9	-0.9	-0.2	-0.3	-0.3	0.5	0.9	0.9

Source: Author's simulations.

0.6% due to bilateral tariff hikes between the US and China, discussed earlier. Meanwhile, world real GDP is estimated to decrease by around 0.1% in the two cases[15] above.

It may also be noted that actual impact of those US tariff hikes under the previous Trump administration could not be well identified through historical observation, since that administration overlapped with the serious impact of COVID-19 pandemic in 2020. That said, it appears that the estimated potential impact of proposed US tariff hikes may not be much smaller than the adverse impact of recent recessions, as is shown in Table 8.

Table 8 Development of world economic growth

(%)

	2007	2008	2009	2010	2017	2018	2019	2020	2021	2022	2023
China	14.2	9.6	9.4	10.6	6.9	6.7	6.0	2.2	8.4	3.0	5.3
Japan	1.5	-1.2	-5.7	4.1	1.7	0.6	-0.4	-4.2	2.7	1.2	1.7
US	2.0	0.1	-2.6	2.7	2.5	3.0	2.6	-2.2	6.1	2.5	2.9
EU	3.3	0.9	-4.2	2.0	3.0	2.2	2.0	-5.6	6.4	3.7	0.6
Russia	8.6	5.2	-7.8	4.5	1.8	2.8	2.2	-2.7	5.9	-1.2	3.6
World	5.3	2.9	-0.4	5.2	3.8	3.6	2.9	-2.7	6.6	3.6	3.3

Source: Based on World Economic Outlook Database, October 2024, IMF.

[15] The impact of two cases of tariff hikes introduced in 2018 is estimated here based on data for 2017 but not 2025 for the main scenarios in this paper, which reflect economic growth among economies in the world from 2017 to 2025.

US real GDP decreased by 2.6% in 2009 due to the global financial crisis and by 2.2% in 2020 due to the COVID-19 pandemic. World real GDP also decreased, by 0.4% in 2009 and by 2.7% in 2020.

On the other hand, if the US returned to TPP by joining CPTPP, the US would enjoy macroeconomic benefits. US real GDP is estimated to increase by 0.3%, and even more by 1.3%, if China joined CPTPP alongside the US, according to Kawasaki (2023).[16] The first scenario for US trade policy would be to improve access to US markets joining the multilateral framework of trade liberalization, particularly including China, but not to protect US markets by hiking tariffs.

The impact on employment would be proportional to the impact on real GDP though to a smaller extent, reflecting labor shares in the economy. US employment is again estimated to decrease (rather than increase) by 0.5% to 0.9%. Employment is also estimated to decrease by 0.7% in Canada and by 1.7% in Mexico, larger than for other economies under universal tariff hikes. It is made clear here that protectionism in the form of tariff hikes would not create jobs, but rather would cause job losses.

Another key concern would be the impact on prices under inflation, which has so far been controlled within moderate rates by tightening monetary policy. Monetary policy has responded to commodity price inflation resulting from expansionary macroeconomic policies after the COVID-19 pandemic and again after Russia's military invasion of Ukraine. US private consumption prices are estimated to rise from 2.8% to 4.5%[17] under the three scenarios examined here, while conversely, private consumption prices are estimated to decline in the other economies due to decreased demand in the world market, as discussed before. World prices are still estimated to rise by 0.5% to 0.9% including the increase in the US but they would decline by 0.3% to 0.8% excluding the US. Those price decreases would be one reason why real GDP in several economies other than North America and China is estimated to increase.

One possible alternative scenario for model simulations would be the blocking

[16] The absolute magnitudes of those estimated impacts would be larger than those estimated by the model used in this paper. Kawasaki (2024) used larger real wage elasticity of labor supply (0.8) alongside incorporated productivity improvement effects in line with trade openness resulting from trade liberalization.

[17] This does not necessarily indicate that annual inflation rate would rise by those magnitudes. CGE model simulations give the estimated impact of shock cases in comparison with business as usual standard cases, without any shocks over the medium-term in a comparatively static manner. This does not necessarily clarify the adjustment procedures over time horizon each year.

of US imports from Mexico in relation to 100% US tariff hikes on imports from Mexico, which have also been proposed.[18] The magnitudes of world-wide effects are again suggested to be limited relative to the bilateral effects discussed in Box[19] though the

Box. Impact of US blockage of imports from Mexico

If the US blocked imports of all goods from Mexico alongside imposing 60% tariffs on China and 10% tariffs on the other economies (which is the reference scenario here), exports to Mexico are estimated to decrease most significantly in the US, by 60.3%, and in the world on average by 52.9%, with the smallest decrease in China, 28.7%, as is shown in the table below. This suggests that indirect exports of the other economies to the US through Mexico would be affected adversely.

On the other hand, direct exports of those economies to the US would increase due to trade diversion effects resulting from the blocking of Mexico's exports to the US. World exports to the US excluding those of Mexico are estimated to decrease by 7.1%, a smaller decrease than 15.4% in the reference scenario here. Overall exports of Mexico are estimated to decrease by 43.7% despite a marginal increase in the reference scenario (0.9%). World exports are estimated to decrease by 3.7%, also larger than the 2.6% decrease in the reference scenario.

That said, world exports excluding those of the US and Mexico are again estimated to decrease by 1.0%, which is smaller than the decrease for all economies including the US and Mexico. Overall exports of the other economies would not necessary be seriously affected by the blocking of US imports from Mexico. In fact, the decrease in US overall exports (26.9%) would be greater than that in the reference scenario (21.5%).

Impact on exports

(%)

	10% tariffs and 60% on China			Additional Mexico import blocks		
	to Mexico	to US	to world	to Mexico	to US	to world
China	51.6	-92.4	-5.0	-28.7	-91.2	-5.2
Japan	19.9	11.3	0.2	-45.6	31.0	1.1
US	-15.7	-	-21.5	-60.3	-	-26.9
Canada	12.8	-3.5	-2.0	-48.8	4.4	1.9
Mexico	-	2.9	0.9	-	-86.2	-43.7
EU	17.6	9.1	0.1	-43.7	20.5	0.5
World	0.1	-13.0	-2.6	-52.9	-17.5	-3.7
Excl. US and MX	29.2	-15.4	-0.3	-39.2	-7.1	-1.0

Source: Author's simulations.

[18] Another argued scenario has been that the US would impose 200% and higher tariffs on imports of autos from Mexico.

[19] The model is solved by swapping an endogenous variable for US import volumes of goods from Mexico for an exogenous variable for US tariff rates on imports from Mexico in the standard closures. 100% reductions of US imports from Mexico could be generated by increases in US tariff rates of around 75% on average across goods sectors, according to the current model simulation in this paper. If the impact of US import tariff hikes by 100% from Mexico were estimated by the current model, US goods imports from Mexico in total are estimated to decrease by close to 100%, but that overshoots to a decrease of more than 100% in a certain sector, which is thought to be not an appropriate solution of model simulations.

individual impact on Mexico and the US would still be sizable.

3) Impact on industry

Trade liberalization through tariff reductions is theoretically expected to generate more efficient resource allocation among sectors, reflecting comparative advantage and disadvantage among economies. Agriculture, forestry and fisheries production would increase in physically large economies. Textiles and apparel, and light manufacturing production would increase in labor intensive developing economies. Motor vehicles and heavy manufacturing production would increase in capital intensive developed economies. Electronic equipment production would increase in technologically advanced developed economies. On the other hand, protectionism and tariff hikes would generate less efficient resource allocation, as is shown in Table 9.

In the US, agriculture, forestry and fisheries production is estimated to decrease by 1.0% to 3.6%, similar in magnitude to real GDP decreases. Motor vehicle production is estimated to decrease more than that, by 2.5% to 6.1%. On the other hand, textiles and apparel production is estimated to increase to a large extent, by 1.9% to 16.2%. Meanwhile, electronic equipment production is estimated to decrease by 2.4% under

Table 9 Impact on major sector production

(%)

	Agriculture, forestry & fisheries			Textiles and apparel			Motor vehicles			Electronic equipment		
	WR10	CH60	CHEU	WR10	CH60	CHEU	WR10	CH60	CHEU	WR10	CH60	CHEU
AUS	0.2	0.1	0.9	0.4	-3.3	-2.7	1.2	2.4	2.3	1.0	3.1	3.2
NZL	-0.2	-0.6	0.6	-0.6	-3.0	-2.8	0.7	1.7	1.8	-0.3	1.8	1.8
CHN	0.0	-0.1	0.5	-0.6	-4.1	-5.0	0.6	-1.2	-0.5	-0.5	-7.2	-8.1
JPN	0.2	0.3	0.1	-0.5	-3.7	-2.9	-0.9	1.1	1.4	0.1	0.8	1.4
KOR	0.1	0.1	0.0	-0.8	-0.7	-0.1	-0.8	1.6	1.3	-0.2	1.4	2.1
TWN	0.0	0.0	-0.1	-0.3	-2.2	-1.4	-0.8	0.7	0.8	-0.3	2.6	3.3
SEA	0.0	0.0	0.1	-1.7	14.7	14.4	0.9	1.8	2.4	-0.2	4.0	4.8
IND	0.0	0.2	0.2	-0.7	0.8	1.1	0.6	1.1	1.3	0.6	-1.6	-1.0
USA	-1.0	-1.7	-3.6	1.9	13.6	16.2	-2.5	-4.5	-6.1	-2.4	5.6	5.5
CAN	0.0	-1.7	-0.8	-1.9	20.3	21.5	-10.7	-8.7	-8.9	0.5	24.9	26.5
MEX	-0.5	-1.8	-2.2	-2.7	10.5	12.5	-8.4	-8.4	-7.9	-9.5	31.7	33.3
EUM	-0.1	-0.1	0.2	-0.7	-3.0	-2.8	0.2	0.9	1.5	-0.3	0.9	1.0
GBR	-0.1	-0.1	0.0	-1.0	-3.5	-2.4	-0.7	-0.4	1.2	-0.9	1.2	2.1
RUS	0.2	0.3	0.7	0.9	-3.2	-2.5	1.0	1.6	1.9	1.5	-0.3	0.2
OAO	0.0	0.4	0.6	-0.8	3.6	4.2	0.9	1.8	2.1	0.6	-0.6	0.3
CSA	-0.3	-0.6	0.1	-1.3	3.1	3.2	0.9	1.5	1.6	0.7	1.1	1.4
ROW	0.0	0.1	0.2	-0.3	-1.2	-0.4	0.9	1.7	2.5	0.6	2.2	2.7
World	-0.1	-0.2	-0.1	-0.6	-0.7	-0.9	-0.9	-1.1	-1.0	-0.7	0.6	0.7

Source: Author's simulations.

universal 10% tariffs but increase by 5.5% to 5.6% if China was subject to 60% US tariffs either with or without retaliation by China and the EU. US industrial production structure would be distorted: production in comparatively advantageous sectors would decrease and that in comparatively disadvantageous sectors would increase as a result of tariff hikes.

In the other economies, restructuring of industrial production among comparatively advantageous and disadvantageous sectors is also suggested, as discussed below. The adverse impact on China's production under 60% tariffs is estimated to be large in textiles and apparel, in which China has comparative advantage, and in electronic equipment.

Agriculture, forestry and fisheries: Production is estimated to decrease generally in America including Canada and Mexico, but increase in Australia, Asia including China and Japan, and Russia.

Textiles and apparel: Production is estimated to decrease globally including in Canada and Mexico, but not in Australia and Russia under universal 10% tariffs. That said, if China was subject to 60% US tariffs, higher than those on other economies, that decrease would shift to a significant increase in ASEAN, Canada and Mexico, and in other Asia and America to a smaller extent, but would shift to a decrease in Australia and Russia alongside decreases in China.

Motor vehicles: Production under universal 10% US tariffs is estimated to decrease in auto producing economies including Japan, Korea, Chinese Taipei, the UK, and significantly in Canada and Mexico, but to increase in other economies. That said, the adverse impact would be mitigated once China was subject to 60% tariffs.

Electronic equipment: Production is estimated to decrease significantly in Mexico under universal 10% US tariffs, but to increase significantly in Canada alongside Mexico if China was subject to 60% tariffs. Production is also estimated to increase more or even increase in other economies, though to a small extent.

All in all, it is important to note at the outset that the impact at the sector level would be larger than that at the macro level. Moreover, there may be concerns that tariff hikes would generate less efficient resource allocation among sectors: that would be one reason for the adverse economic impact of US tariff hikes at the macro level.

V. Summary and concluding remarks

In 2017, former US president Trump withdrew the US from TPP, and hiked US tariffs on steel and aluminum and on imports from China during his first administration in 2017–2021. Since his presidential campaign, he proposed further US tariff hikes. The adverse impact of those tariff hikes on US and world trade and economy has been a matter of concern. The objective of this study is to investigate the economic impact of those US tariff hikes using a CGE model of global trade in a quantitative manner. Key findings from the model simulation discussed in this paper are summarized below.

If the US hiked import tariffs, the US would be a prime loser in the world economy rather a winner. US imports would decrease, and the trade balance would improve though to a small extent, and rising import costs would prompt inflation in the US domestic market, which would adversely affect US exports in the international market, and eventually domestic production and employment. That adverse economic impact stemming from the future enactment of proposed US tariff hikes would be larger than that caused by other tariff hikes since 2018. Moreover, that adverse impact would be the largest next to those under the negative economic growth of the 2009 and 2020 recessions.

Bilateral exports of other economies to the US would decrease but their impact on overall exports would be limited. Several economies would even enjoy macroeconomic benefits from declining prices in the international market and then in the domestic market as a result of decreases in demand in the world market due to declining US import demand. Meanwhile, if the US imposed higher tariffs on imports from China than on other economies, those other economies would benefit from trade diversion effects resulting from the replacement of bilateral trade between the US and China.

The impact of tariff hikes would be much larger at the sector level than at the macro level. Moreover, the US would gain in the less competitive textiles and apparel sector, but would lose in the competitive agriculture and auto sectors. Industrial structure would also be distorted in the other economies to a less resource efficient configuration, in contrast to trade liberalization.

When introducing policy measures moving toward protectionism, it is important to consider the impact on economy at both the macro and sector levels. Model simulation studies of the impact of various policy scenarios are useful: they can clarify the relative significance of economic and trade policies, and the balance of positive and negative impacts, ahead of implementation, in the manner of a social science laboratory.

References

Aguiar, A., M. Chepeliev, E. Corong and D. van der Mensbrugghe (2022), "The GTAP Data Base: Version 11," *Journal of Global Economic Analysis*, 7(2), 1-37, Center for Global Trade Analysis, Department of Agricultural Economics, Purdue University.

Armington, P. (1969), A Theory of Demand for Products Distinguished by Place of Production, *IMF Staff Paper* 16(1): 159-178, International Monetary Fund (IMF), January 1969.

Bekkers, E. and S. Schroeter (2020), "An Economic Analysis of the US-China Trade Conflict," *Staff Working Paper* ERSD-2020-04, World Trade Organization (WTO), March 19, 2020.

Budget Lab (2024), *Fiscal, Macroeconomic, and Price Estimates of Tariffs Under Both Non-Retaliation and Retaliation Scenarios*, October 2024.

CS (2015), *The Economic Impact Analysis of TPP Agreement*, TPP Headquarters Office, Cabinet Secretariat (CS), December 24, 2015. (in Japanese)

Corong, E., T. Hertel, R. McDougall, M. Tsigas and van der Mensbrugge (2017), "The Standard GTAP Model, Version 7," *Journal of Global Economic Analysis*, 2(1), 1-119, Center for Global Trade Analysis, Department of Agricultural Economics, Purdue University.

Francois, J., B. McDonald and H. Nordström (1996), "Liberalization and Capital Accumulation in the GTAP Model," *GTAP Technical Paper* No. 7, Global Trade Analysis Project (GTAP), Department of Agricultural Economics, Purdue University, July 1996.

Horridge, M., M. Jerie, D. Mustakinov and F. Schiffmann (2018), *GEMPACK manual*, GEMPACK software, 2018, ISBN 978-1-921654-34-3.

IMF (2024), *World Economic Outlook, October 2024*, IMF.

Kawasaki, K. (2018), "Economic Impact of Tariff Hikes –A CGE model analysis-," *GRIPS Discussion Paper* 18-05, National Graduate Institute for Policy Studies (GRIPS), June 2018.

Kawasaki, K. (2023), "Review of Economic Impact of CPTPP," *GRIPS Discussion Paper* 23-10, GRIPS, October 2023.

Kawasaki, K. (2024) "Economic Impact of US Tariff Hikes," *Policy Analysis Focus* 24-3, GRIPS, May 2024.

McKibbin, W., M. Hogan and M. Nolan, "The International Economic Implications of a Second Trump Presidency," *Working Paper* 24-20, Peterson Institute for International Economics (PIIE), September 2024.

PC (2017), *Rising protectionism: challenges, threats and opportunities for Australia*, Productivity Commission Research Paper, Australia Productivity Commission

(PC).

USDOC (2018a), *The Effect of Imports of Steel on the National Security, An Investigation Conducted under Section 232 of the Trade Expansion Act of 1962, as Amended*, Unted States Department of Commerce (USDOC), January 11, 2018.

USDOC (2018b), *The Effect of Imports of Aluminum on the National Security, An Investigation Conducted under Section 232 of the Trade Expansion Act of 1962, as Amended*, USDOC, January 17, 2018.

USITC (2016), *Trans-Pacific Partnership Agreement: Likely Impact on the U.S. Economy and on Specific Industry Sectors*, United States International Trade Commission (USITC), 18 May 2016.

USTR (2018), *Findings of the Investigation into China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property and Innovation under Section 301 of the Trade Act of 1974*, Office of the United States Trade Representative (USTR), March 22, 2018.

Annex: Impact of 20% US tariff hikes.

The economic impact of the following three scenarios under 20% US tariff hikes is estimated as a sensitivity analysis of policy scenarios with respect to the magnitudes of US tariff hikes compared with the impact of those scenarios under 10% US tariff hikes, which are the main scenarios studied here.

Universal:	10% or 20% US tariffs on all the economies in the world
China:	60% US tariffs on China alongside uniform 10% or 20% tariffs
China and EU:	Additional 10% or 20% EU and 60% China tariffs on the US

The estimated impact of universal 20% tariff hikes is suggested to be around twice that of 10% tariffs as is summarized in Annex Table 1. If China was subject to 60% US tariffs, the trade diversion effects discussed earlier would be smaller under uniform 20% tariffs, whose adverse impact would be mitigated in China, but whose beneficial impact would be reduced in other economies.

Those differences in the impact of tariff hikes between that under 10% and 20% US tariff hikes would vary by economy and by sector, depending on their trade and industry structures. The estimated impact under 20% US tariff hikes is shown in Annex Tables 2-1 on trade, in Annex Table 2-2 on economy and in Annex Table 2-3 on industry; these could be compared with the impact under 10% US tariff hikes shown in Table 6 on trade, in Table 7 on economy and in Table 9 on industry.

Annex Table 1 Comparison of impact between 10% and 20% tariff hikes: Summary

(%)

	Exports						Real GDP					
	Universal		China		China and EU		Universal		China		China and EU	
	10%	20%	10%	20%	10%	20%	10%	20%	10%	20%	10%	20%
US	-16.7	-30.0	-21.5	-34.1	-23.9	-36.6	-1.7	-3.2	-3.2	-4.5	-3.4	-4.7
China	-0.7	-1.4	-5.0	-4.9	-6.5	-6.1	0.1	0.2	-1.4	-1.1	-1.9	-1.5
EU	-0.2	-0.4	0.1	-0.2	0.1	-0.3	0.1	0.1	0.3	0.3	0.4	0.2
Japan	-0.8	-1.5	0.2	-0.7	0.6	-0.3	0.0	0.1	0.5	0.4	0.8	0.7
World	-2.3	-4.1	-2.6	-4.4	-2.9	-4.7	-0.5	-1.0	-0.9	-1.3	-0.9	-1.3

Source: Author's simulations.

Annex Table 2-1 Impact on trade under 20% US tariffs

(%, * billion USD)

	Exports to US			Exports to world			Trade balance*		
	WR20	CH60	CHEU	WR20	CH60	CHEU	WR20	CH60	CHEU
AUS	-7.4	1.1	-4.1	0.4	0.6	0.6	-1.9	-2.1	-2.0
NZL	-13.4	-5.3	-11.1	-0.4	-0.2	-0.1	-0.1	-0.1	-0.1
CHN	-21.2	-87.9	-89.0	-1.4	-4.9	-6.1	-19.4	-24.5	-26.3
JPN	-18.0	-0.6	-5.6	-1.5	-0.7	-0.3	-0.5	-0.5	-1.4
KOR	-21.3	5.0	-0.4	-0.9	-0.2	0.3	-1.3	-0.2	0.1
TWN	-19.9	11.6	6.1	-1.3	-0.2	0.3	-0.8	-0.3	-0.3
SEA	-17.8	20.5	15.4	-0.5	1.6	2.0	-3.7	-2.7	-3.4
IND	-15.6	-0.9	-5.2	-1.5	-0.6	-0.5	-1.2	-2.0	-4.0
USA	-	-	-	-30.0	-34.1	-36.6	54.5	56.0	64.4
CAN	-16.2	-11.8	-13.8	-6.9	-5.6	-5.2	4.4	2.7	2.2
MEX	-20.6	-8.7	-9.0	-13.8	-6.9	-6.0	-4.4	-2.2	-2.6
EUM	-16.8	-1.9	-8.1	-0.4	-0.2	-0.3	-7.8	-5.0	-3.8
GBR	-7.6	0.3	-4.6	-0.8	-0.6	-0.3	2.0	0.7	-1.2
RUS	-20.9	-9.8	-15.9	0.7	1.0	1.1	-5.5	-5.6	-4.4
OAO	0.4	15.1	11.4	0.3	1.0	1.1	0.0	-0.2	-0.9
CSA	-18.0	-11.1	-16.0	-1.1	-0.5	-0.3	-2.1	-2.1	-2.2
ROW	-22.0	-12.8	-18.6	0.4	0.7	1.0	-12.4	-12.2	-14.1
World	-18.3	-20.8	-24.4	-4.1	-4.4	-4.7	0.0	0.0	0.0

Source: Author's simulations.

Annex Table 2-2 Impact on economy under 20% US tariffs

(%)

	Real GDP			Employment			Private consumption price		
	WR20	CH60	CHEU	WR20	CH60	CHEU	WR20	CH60	CHEU
AUS	-0.3	-0.3	-0.1	-0.1	-0.1	-0.1	-1.4	-1.6	-1.1
NZL	0.0	0.1	0.3	0.0	0.0	0.1	-1.0	-1.0	-0.6
CHN	0.2	-1.1	-1.5	0.1	-0.4	-0.6	-1.4	-4.0	-3.1
JPN	0.1	0.4	0.7	0.0	0.1	0.2	-1.1	-0.9	-0.5
KOR	0.2	0.5	0.8	0.0	0.2	0.3	-1.0	-0.8	-0.4
TWN	-0.3	0.3	0.6	-0.1	0.1	0.2	-1.1	-0.7	-0.3
SEA	0.2	1.3	1.5	0.0	0.4	0.5	-1.2	-0.8	-0.3
IND	0.4	0.7	0.8	0.2	0.3	0.3	-0.9	-0.3	0.0
USA	-3.2	-4.5	-4.7	-1.0	-1.2	-1.3	5.5	7.1	5.8
CAN	-2.5	-2.1	-1.9	-1.2	-1.0	-0.9	-2.3	-1.0	-1.2
MEX	-8.9	-5.5	-4.8	-3.1	-1.7	-1.5	-2.8	-0.3	-0.7
EUM	0.1	0.3	0.2	0.0	0.1	0.1	-1.0	-0.9	-0.2
GBR	-0.1	0.1	0.2	0.0	0.0	0.1	-0.9	-0.6	-0.2
RUS	0.2	0.4	0.7	0.1	0.1	0.2	-1.8	-1.9	-1.4
OAO	0.7	1.1	1.2	0.2	0.3	0.3	-1.0	-1.3	-0.9
CSA	-0.3	0.0	0.2	-0.1	0.0	0.0	-1.0	-0.7	-0.4
ROW	0.2	0.4	0.6	0.1	0.1	0.2	-1.3	-1.3	-0.8
World	-1.0	-1.3	-1.3	-0.3	-0.4	-0.5	0.9	1.3	1.3

Source: Author's simulations.

Annex Table 2-3 Impact on production by major sector

(%)

	Agriculture, forestry & fisheries			Textiles and apparel			Motor vehicles			Electronic equipment		
	WR20	CH60	CHEU	WR20	CH60	CHEU	WR20	CH60	CHEU	WR20	CH60	CHEU
AUS	0.3	0.3	1.0	0.6	-2.5	-2.0	2.2	3.1	3.1	1.5	3.1	3.2
NZL	-0.3	-0.6	0.5	-1.2	-3.3	-3.0	1.3	2.0	2.2	-0.7	0.8	0.9
CHN	0.1	0.0	0.5	-1.1	-4.1	-5.0	1.0	-0.4	0.2	-1.2	-7.2	-7.9
JPN	0.4	0.5	0.3	-0.9	-3.6	-2.8	-1.8	0.0	0.3	0.0	0.5	1.0
KOR	0.1	0.1	0.1	-1.6	-1.6	-1.0	-1.4	0.7	0.4	-0.5	0.6	1.2
TWN	0.1	0.0	0.0	-0.6	-2.2	-1.4	-1.5	-0.2	-0.2	-0.8	1.5	2.1
SEA	0.0	0.0	0.1	-3.3	10.1	9.9	1.6	2.4	3.0	-0.6	2.8	3.4
IND	0.1	0.2	0.2	-1.4	-0.2	0.1	1.1	1.5	1.7	1.0	-0.9	-0.3
USA	-1.9	-2.6	-4.6	5.1	16.0	18.9	-4.3	-6.0	-7.6	-2.5	5.6	6.1
CAN	0.1	-1.4	-0.4	-4.1	13.5	14.9	-19.8	-18.0	-18.2	0.0	20.7	22.4
MEX	-1.0	-2.0	-2.5	-5.2	5.5	7.6	-15.5	-15.3	-14.9	-17.7	16.3	17.7
EUM	-0.2	-0.2	0.2	-1.4	-3.4	-3.4	0.4	0.9	1.5	-0.7	0.1	0.0
GBR	-0.2	-0.2	0.0	-2.0	-4.2	-3.1	-1.5	-1.2	0.5	-1.9	-0.4	0.5
RUS	0.4	0.4	0.9	1.5	-1.9	-1.3	1.7	2.2	2.6	2.6	1.1	1.4
OAO	0.1	0.3	0.6	-1.7	1.8	2.4	1.6	2.3	2.7	0.9	-0.2	0.7
CSA	-0.5	-0.7	-0.1	-2.5	0.7	0.9	1.6	2.0	2.2	1.0	1.2	1.5
ROW	-0.1	0.0	0.2	-0.6	-1.5	-0.8	1.5	2.2	3.1	0.8	2.0	2.5
World	-0.2	-0.3	-0.2	-1.2	-1.3	-1.5	-1.5	-1.5	-1.7	-1.3	0.1	-0.2

Source: Author's simulations.