

The way forward: trade policies' impacts on global trade patterns

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World trade Organization

PRELIMINARY DRAFT: NOT TO BE QUOTED

Abstract

International trade relations are at a crossroads. Following a decline in worldwide activity due to the COVID-19 pandemic, continuing social and environmental challenges, and increased disagreements about a range of trade policies, the decisions about future trade policies will have a large impact on the future of global trade. This study presents four directions for future trade policy: regional co-operation (benchmark), revival of multilateralism, plurilateral cooperation, and geopolitical rivalry. The first scenario is the business as usual scenario: countries continue on their path of increased co-operation in regional trade agreements. The second scenario constitutes a revival of multilateralism. In addition to reductions in remaining tariffs, this scenario models reductions in trade costs associated with NTMs in both goods and services. The third scenario is characterized by plurilateral cooperation. Under this scenario, varying groups of countries cooperate on specific topics, such as data and e-commerce, services, and labor standards. The last scenario introduces geopolitical rivalry. Under this scenario, two main blocks emerge: US and its allies, and China and its allies. International cooperation breaks down between blocks, leading to an increase in tariffs and non-tariff barriers, with blocks of countries setting up their own set of rules. To operationalize these four scenarios, we employ existing estimates of ad valorem equivalents of various trade policies, membership of the WTO, and the presence of FTAs and develop our own estimates where necessary.

JEL Codes: F13, F17

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Keywords: Trade policy simulations, CGE modeling

Contents

1	Introduction	1
2	Scenarios description	3
3	Methodology	4
3.1	WTO Global Trade Model	4
3.2	Scenarios implementation	5
4	Results	8
5	Conclusion	8

List of Tables

A.1 Regions and sectors	12
A.2 Geopolitical blocks	12

List of Figures

1 Introduction

Recent international trade and non-trade events have considerably affected current trade relationships between countries and the global economy. Trade tensions between the United States (US) and China, changes in the US trade policies vis-à-vis some of its long-standing trade partners, difficulties to appoint new members to the Appellate Body of the World Trade Organization (WTO), and the departure of the United Kingdom from the European Union (EU) (Brexit), are changing the trade environment. In addition, the COVID-19 pandemic has affected global value chains, trade, and worldwide economic activity, increasing social tensions.

International trade relations are therefore at a crossroads. Governments may decide to cooperate all together and follow a multilateral path for freer trade. Multilateralism was the way forward at the creation of the General Agreement on Tariffs and Trade (GATT) in 1947 and of its successor, the WTO, in 1995, but recent trade tensions between WTO members suggest that national interests may not converge. Another solution for WTO members would be to cooperate on specific topics with a reduced number of trade partners. Such plurilateral cooperation could allow for further liberalization while accepting disagreements among member states. Another form of partial cooperation would be regional cooperation. Continuing on the trend that started in the 1990s, governments could decide to further liberalize trade at the regional level by entering into regional trade agreements (RTAs). On the other side of the spectrum, international co-operation could also break down. Geopolitical rivalry could emerge between China on one side and the US on the other side (see for example Rachman (2021)). In this situation, blocks of countries would start setting their own sets of rules, disregarding multilateral agreements.

These path would lead to different outcomes, more or less beneficial to member states and to the global economy. The goal of this paper is to answer the following question: How will future trade policies shape global trade patterns? We use a dynamic computable general equilibrium (CGE) model to build four stylized scenarios of potential directions for future trade policies and to evaluate their impact on global trade patterns. Since these scenarios are stylized, they are not supposed to project with precision the future state of the economy, but rather to explain the consequences of different path for future trade policy on several economic variables.

This paper complements the literature on the impact of various trade policies on trade and on the global economy. A set of recent studies focus on US trade policy. Robinson and

Thierfelder (2019) investigate a scenario in which the US would isolate itself (by raising tariffs on imports from its trading partners), and determines the impact of US isolation on trade. Demertzis and Fredriksson (2018) and Hübler and Herdecke (2020) focus on EU and/or China responses to US tariffs, while Devarajan et al. (2018) explore responses of developing countries to US tariffs. In this article, we develop scenarios involving many countries, both developed and developing, and analyse the impact of various trade policies not only on trade variables, but also on production and welfare outcomes.

Another strand of the literature focuses on trade wars. Studies by Guo et al. (2018) and Bolt et al. (2019) concern the escalating trade war between the US and China. Bolt et al. (2019) consider a 10 % rise in US tariffs on Chinese products. Under unilateral imposition of this tariff by the US, the authors demonstrate that the US gross domestic product and world output decline by 0.4 % and 0.2 %, respectively.

Bouët and Laborde (2018) provide an evaluation of potential trade wars between the US and Mexico and/or China, using a static CGE model. When the authors increase US tariffs by 35 percentage point on imports from both Mexico and China, US global exports decrease by 8 %, and both US and global welfare decrease by 0.1 %.

Global trade wars are further analysed by Ossa (2014), using a new quantitative trade model, and by Bekkers and Teh (2019), using a dynamic CGE model. Ossa (2014) implements a Nash equilibrium where the average tariff is 63.4 %, which leads to an average welfare loss of 2.9 %. In Bekkers and Teh (2019), tariffs rise on average by 32 %, leading to a reduction in global GDP of 2 %.

Finally, Bekkers (2019) analyses the impact of changes in future trade policy. The author brings together the above-mentioned investigations by constructing five scenarios: passive isolation of the US, active isolation of the US, global trade war, breakdown of international trade co-operation, and revival of multilateralism.

In this paper, we do not model a potential isolation of the US, considering that this scenario built on a potential direction for trade policy of the previous US administration. We rather focus on potential plurilateral cooperation, based on existing negotiations occurring under WTO Joint Statement Initiatives (JSIs).

Moreover, we use an updated version of the baseline model, which includes GDP and population growth, changes in labor force participation, changes in savings rates, differences in productivity growth between sectors, changes in consumer preferences, changes in oil and nat-

ural resource prices, and changes in trade costs (Bekkers et al., Forthcoming-a). The latter considers Brexit, the Trade Facilitation Agreement (TFA), forward-looking economic partnership agreements (EPAs), and recently signed free trade agreements (FTAs).

Finally, we use the latest data on ad valorem equivalents of non-tariff measures (NTMs) for both goods and services to simulate a shock on NTMs. We also develop our own estimates of ad valorem equivalents of various trade policies. For example, we construct ad valorem equivalents of data flow regulations based on the Services Trade Restrictiveness Index.

We find that...

The rest of this paper is organized as follow. Section 2 describes the four stylized scenarios for future trade policies. Section 3 presents the methodology: the model used and the technical implementation of the scenarios. Section 4 reports the results. Section 5 concludes.

2 Scenarios description

We create four scenarios to present four directions for future trade policy: regional cooperation (benchmark), revival of multilateralism, plurilateral cooperation, and geopolitical rivalry.

1. Regional cooperation: this scenario is the business-as-usual scenario and represents our benchmark. Under this scenario, countries expand their regional cooperation and continue to liberalize trade. In particular, they reduce tariffs and non-tariff measures (NTMs) with trade partners involved in free trade agreements (FTAs). Moreover, they reduce trade costs thanks to the implementation of the Trade Facilitation Agreement (TFA).
2. Revival of multilateralism: under this scenario, countries cooperate on a multilateral basis. As a result, tariffs decrease to their cooperative level, NTMs are reduced by half, and tariffs implemented between China and the USA during their trade war vanish. All reductions in trade barriers occur at the multilateral level and hence involve all regions.
3. Plurilateral cooperation: under this scenario, subsets of countries cooperate on specific topics. We explore three main subjects: data and e-commerce, services, and labor standards. Cooperation on data and e-commerce leads to a reduction in trade costs in digitally-intensive services sectors for countries who join the agreement. Cooperation on services is modelled as a 50% reduction in trade costs in all services sectors for countries involved in the agreement. Cooperation on labor standards results in an increase in collective

bargaining coverage of signatories and hence in an increase in the wages.

4. Geopolitical rivalry: this hypothetical scenario models rising trade costs between a US block and a China block. Under this scenario, international cooperation breaks down between blocks leading to an increase in trade costs outside each block. Trade costs within each block remain stable.

3 Methodology

We implement these four scenarios using the WTO Global Trade Model, described in a first subsection. Second, we explain the technical implementation of each scenario.

3.1 WTO Global Trade Model

The WTO Global Trade Model is a recursive dynamic computable general equilibrium (CGE) model, extended from the static GTAP model (Corong et al., 2017). It is appropriate to generate global trade projections and to study the impact of various trade policies on a large number of countries and sectors.

In the WTO Global Trade Model, regional households collect income and spend it on three types of final goods: government, private and savings. A global bank collects these regional savings that are used to finance investment goods. On the production side, perfectly competitive firms produce homogeneous products. They employ five factors of production (skilled-labor, unskilled labor, capital, land, and natural resources) and demand goods from other firms, reflecting intermediate linkages. Capital and labor are perfectly mobile, whereas land is a sluggish factor, and natural resources is sector-specific. The model considers international trade linkages: commodities may be produced locally or imported, according to an Armington CES specification. Imports are further differentiated by region of origin. Of particular interest for this paper, we can model a change in trade barriers either through a change in tariffs or through a change in iceberg trade costs (e.g. for NTMs). In equilibrium all markets clear: goods market, factor market, transport services market, and global savings market.¹

We calibrate the model based on GTAP 10 data base, using 2014 as the year of reference. We aggregate GTAP 10 data base comprising 65 sectors and 141 regions into 25 sectors and 25 regions. Sectoral and regional aggregations may be found in Table A.1.

¹Further description of the WTO Global Trade Model can be found in Aguiar et al. (2019).

3.2 Scenarios implementation

This subsection provides additional information on the implementation of each scenario in our model.

1. Regional cooperation

The first scenario previously mentioned corresponds to our benchmark model. We construct this scenario to observe trade patterns that would develop in the medium to long term (i.e. until 2050) if countries maintained and deepened their regional cooperation.

To build this scenario, we implement two types of changes in trade policies: changes in tariffs and changes in NTMs.

Changes in tariffs materialize in two ways. First, we model trade tensions between the USA, China and the European Union that started in 2018. We therefore raise tariffs on specific products between these regions to consider additional tariffs raised by the USA on steel and aluminium products, retaliation by its trading partners, and counter-retaliation by the USA. Second, we implement future reductions in tariffs that will emerge thanks to economic partnership agreements (EPAs) that have been signed. Data comes from the forward-looking tariffs database released by ITC (Market Access Map, 2020), which provides bilateral and sector-specific ad valorem tariffs agreed upon in EPAs, from 2014 to 2050.

We also model changes in NTMs through two mechanisms. First, trade costs decrease thanks to the implementation of the Trade Facilitation Agreement (TFA). We use the WTO Secretariat's estimates of these reductions and scale them down based on each member's rate of implementation of the TFA (World Trade Organization, 2020). Second, we expect a reduction in NTMs originating from free trade agreements (FTAs) recently signed. To model these changes, we use the Design of Trade Agreements data base on DESTA indices, which provide the depth of all agreements that have the potential to liberalize trade (Dür et al., 2014). We compute ad valorem equivalents of changes in these indices based on Egger et al. (2015)'s gravity-based sector-specific coefficient estimates of the impact of the depth of FTAs on trade costs.²

2. Revival of multilateralism

²For further description of the implementation of the benchmark scenario, please refer to Bekkers et al. (Forthcoming-a) and Bekkers al. (Forthcoming-b).

To model the revival of multilateralism, we start by reducing tariffs that had been raised in the benchmark scenario, which accounted for trade tensions between the USA, China and the European Union. Once these tariffs are equal to their previous values, we further decrease tariffs for all regions to their cooperative level. To do so, we use percentage changes in tariffs rates estimated from Adler et al. (2009), who evaluate the potential gains from liberalization in both agriculture and manufacturing sectors if modalities presented by the Doha negotiating groups were realized. We phase-in reductions in tariffs over 15 years, based on Baier and Bergstrand (2007).

Third, we assume that a revival of multilateralism would not only have an impact on tariffs, but also on NTMs. To implement a reduction in NTMs, we use their ad valorem equivalents (AVEs) estimated by Kee and Nicita (2016) for goods and by Hoekman and Shepherd (2020) for services. Kee and Nicita (2016) use a gravity equation to estimate bilateral AVEs of 40 importing countries plus the European Union, for 42 sectors, based on data from 2015.³⁴ Hoekman and Shepherd (2020) also use a gravity framework to estimate AVEs for seven services sectors, based on the OECD Services Trade Restrictiveness Index (STRI) (OECD, 2021). When data was not available, we use an extrapolation based on income categories of both importers and exporters for goods sectors since we have bilateral data, and of importers only for services sectors, in order to estimate AVEs for missing observations.⁵ Finally, we also phase-in reductions in AVEs over 15 years.

3. Plurilateral cooperation

We develop three sub-scenarios in this model. In a first scenario, a subset of countries cooperate on data and e-commerce. To implement such topic in the model, we compute AVEs of changes in STRI scores based on Benz and Jaax (2020)’s gravity-based sector-specific coefficient estimates of the impact of services restrictiveness regulation (i.e. STRI) on trade flows.⁶ We calculate changes in STRI scores thanks to the OECD STRI Simulator

³⁴Since Kee and Nicita (2016) report AVEs for technical and non-technical barriers separately, we add both values of AVEs to obtain total AVEs

⁴Kee and Nicita (2016) use GTAP 9 data base sector categories, which doesn’t exactly include the same sectors as GTAP 10 data base. For example, “Minerals nec” now refers to “Other Extraction”. Moreover, “Chemical, rubber, plastic products” is now divided into two sectors: “Chemical products” and “Rubber and plastic products”. In this latter case, we assume that AVEs obtained in Kee and Nicita (2016) for “Chemical, rubber, plastics products” apply to both “Chemical products” and “Rubber and plastic products” sectors.

⁵Data on AVEs for services sectors for low-income countries was not available. We therefore assumed that iceberg trade costs decreased by 10 %, following Bekkers (2019).

⁶Benz and Jaax (2020) aggregate OECD sectors into five larger services sectors (business, insurance, finance, transport, and communication). We use Benz and Jaax (2020)’s estimated trade elasticity of transport for our three sectors related to transport (air transport, water transport, and other transport). Furthermore, we assume

and allow for changes in five provisions related to data flows, namely:

- Cross-border transfer of personal data is possible when certain private sector safeguards are in place;
- Cross-border data flows: cross-border transfer of personal data is possible to countries with substantially similar privacy protection laws;
- Cross-border data flows: cross-border transfer is subject to approval on a case-by-case basis;
- Cross-border data flows: certain data must be stored locally;
- Cross-border data flows: transfer of data is prohibited.

The OECD STRI reports data for 48 countries and 22 sectors. We mapped these 22 sectors into 10 GTAP 10 sectors.⁷ We also extrapolate STRI values for countries with missing data, based on income categories. Finally, we assume that only countries involved in the current Joint Statement Initiative (JSI) on Electronic commerce benefit from these reductions in trade costs.

In a second scenario, we assume that countries involved in the JSI on Services Domestic Regulation cooperate to liberalize trade in services. We model this agreement on services through a reduction in iceberg trade costs. In particular, we implement a 50 % reduction in AVEs of NTMs for services, based on Hoekman and Shepherd (2020).

In a third scenario, countries cooperate on labor standards. This is represented by an increase in collective bargaining coverage that leads to an increase in wages. To compute the increase in collective bargaining coverage, we extrapolate data based on GDP per capita and predict the rate of collective bargaining coverage for all reporting countries based on their GDP per capita. We further assume that: i) if the actual rate of collective bargaining coverage is greater than predicted, there is no change in the collective bargaining coverage rate, ii) if the actual rate is lower than predicted, we increase the collective bargaining coverage rate to its predicted value, and iii) when the rate is not available, we assume that it increases by 10 %, which corresponds to the average percentage increase in reporting countries. We then apply estimated increases in collective bargaining

the trade elasticity of three sectors uncovered in Benz and Jaax (2020) equal -5.

⁷We couldn't map three sectors from the OECD STRI: logistics cargo-handling, logistics freight forwarding, and logistics customs brokerage. Our data therefore do not cover these three sectors.

coverage to wage premiums. Wage premiums provide percentage increases in wages of unionized workers, compared to non-unionized workers. We can hence compute increases in wages by multiplying the percentage point increase in collective bargaining coverage by wage premiums for each country. Data on collective bargaining coverage come from the International Labor Organization (ILO) (ILO, 2021) and data on wage premium come from the OECD (OECD, 2018) and from Hayter and Weinberg (2011).⁸ We assume that only countries that are currently part of the three JSI on electronic commerce, services domestic regulation, and investment, agree to impose labor standards.

Once again, we phase-in all shocks on iceberg trade costs over 15 years, based on Baier and Bergstrand (2007).

4. Geopolitical rivalry

In this last scenario, we model the formation of two blocks: a US block and a China block. Geopolitical blocks are described in Table A.2. We reflect this breaking down of international cooperation by an increase in tariffs and in iceberg trade costs between countries that do not belong to the same block. In particular, we use the gravity-based coefficient of the impact of joining the World Trade Organization (WTO) on trade, computed by Larch et al. (2019) to estimate the AVE of a breakdown of international cooperation. We further distribute this AVE between an increase in tariffs (representing 50 % of the AVE) and iceberg trade costs (also representing 50 % of the AVE). Finally, we phase-in this shock over 15 years.

4 Results

Include final results here.

5 Conclusion

Draft conclusion.

⁸Missing data on wage premium were also estimated using an extrapolation based on income categories.

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Appendix

Table A.1: Regions and sectors

	Region	Region description	Sector	Sector description
1	asl	Asia LDC	cro	Crops
2	aus	Australia	lvs	Livestock
3	bra	Brazil	oil	Oil
4	can	Canada	onr	Other extraction
5	chn	China	prf	Processed Food
6	e27	European Union 27	p_c	Petroleum, coal products
7	gbr	United Kingdom	chm	Chemicals
8	eft	EFTA	prp	pharma, rubber, and plastics
9	idn	Indonesia	twl	Textiles, apparel, leather
10	ind	India	otg	Other Goods
11	jpn	Japan	met	Metals
12	kor	Korea	eeq	Computer, electronic and optic
13	lac	Latin America	ele	Electrical Equipment
14	mex	Mexico	ome	Machinery and equipment
15	min	Middle East and North Africa	mvh	Motor vehicles
16	oas	Other Asian countries	otn	Transport equipment nec
17	row	Rest of World	utc	Utilities and Construction
18	rus	Russia	trd	Trade
19	sau	Saudi Arabia	ars	Accomodation and recreation
20	sea	Southeast Asia	tra	Transport
21	ssl	Sub-Saharan Africa LDC	com	Communication
22	sso	Sub-Saharan Africa other	rsa	Real estate activities
23	tur	Turkey	obs	Business Services
24	usa	United States	fin	Finance and Insurance
25	zaf	South Africa	ots	Other Services

Table A.2: Geopolitical blocks

USA and allies	China and allies
Korea	Middle East and North Africa
Japan	Other Asian countries
Australia	Russia
EFTA	Rest of World
Latin America	Saudi Arabia
Turkey	Indonesia
Brazil	India
EU27	Asia LDC
Mexico	South Africa
United Kingdom	Sub-Saharan Africa LDC
Canada	Sub-Saharan Africa other
	Southeast Asia