

**Has the WTO Trade
Facilitation Agreement
helped reduce trade
costs? An ex-post
analysis.**



**Yann Duval
Chorthip Utoktham**

Trade, Investment and Innovation
Working Paper Series

NO. 02 | July 2022

The Economic and Social Commission for Asia and the Pacific (ESCAP) serves as the United Nations' regional hub promoting cooperation among countries to achieve inclusive and sustainable development. The largest regional intergovernmental platform with 53 Member States and 9 Associate Members, ESCAP has emerged as a strong regional think-tank offering countries sound analytical products that shed insight into the evolving economic, social and environmental dynamics of the region. The Commission's strategic focus is to deliver on the 2030 Agenda for Sustainable Development, which it does by reinforcing and deepening regional cooperation and integration to advance connectivity, financial cooperation and market integration. ESCAP's research and analysis coupled with its policy advisory services, capacity building and technical assistance to governments aims to support countries' sustainable and inclusive development ambitions.



Disclaimer: Views expressed through the Trade, Investment and Innovation Working Paper Series should not be reported as representing the views of the United Nations, but as views of the author(s). Working Papers describe research in progress by the author(s) and are published to elicit comments for further debate. They are issued without formal editing. The designation employed and the presentation of the material in the Working Paper do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The United Nations bears no responsibility for the availability or functioning of URLs. Opinions, figures and estimates set forth in this publication are the responsibility of the authors and should not necessarily be considered as reflecting the views or carrying the endorsement of the United Nations. Any errors are the responsibility of the authors. Mention of firm names and commercial products does not imply the endorsement of the United Nations.

Trade, Investment and Innovation

Working Paper Series

NO. 02 | July 2022

Has the WTO Trade Facilitation Agreement helped reduce trade costs? An ex-post analysis.

Yann Duval and Chorthip Utoktham ¹

Please cite this paper as: Duval, Yann and Utoktham, Chorthip (2022), Has the WTO Trade Facilitation Agreement helped reduce trade costs? An ex-post analysis. July 2022. Bangkok.

Available at <http://www.unescap.org/kp>

¹ Yann Duval is Chief, Trade Policy and Facilitation Section and Chorthip Utoktham is Research Assistant, both in the Trade, Investment and Innovation Division of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). Authors are grateful for comments received from Rupa Chanda and Tengfei Wang during the preparation of the paper.

Abstract

Five years after the entry into force of the WTO TFA, we set out to find macro-level quantitative evidence of the impact of the WTO Trade Facilitation Agreement (TFA) on trade costs. Using the updated ESCAP-World Bank Trade Cost dataset, we estimate the impact of TFA participation on trade costs. Using a variety of models, we find robust and statistically significant evidence that implementation of the WTO TFA reduces trade costs by 1 to 4 percent on average. The TFA impact in reducing trade costs is strongest between OECD and non-OECD economies, with trade costs reduction across models ranging between 3 to 5 percent. South-South trade costs reductions from TFA participation are less than 2 percent, and those between advanced economies are not significant. Participation in regional trade agreements, in turn, reduce trade costs by 2 to 10 percent on average, highlighting the complementarity between regional and global trade facilitation initiatives. Overall, the trade cost savings associated with WTO TFA found in this post-accession analysis suggest that WTO members still have much to do to implement the WTO TFA in full, both in letter and in spirit. Greater trade cost savings can be achieved through a full and digital TFA+ implementation approach focused on accelerating digitalization of trade procedures, as already enabled in Asia-Pacific by the Framework Agreement on Facilitation of Cross-Border Paperless Trade in Asia and the Pacific.

JEL: F13, F15, K33, O19

Keywords: Trade facilitation, trade costs, WTO, trade facilitation agreement, regional trade agreement

Contents

Abstract.....	4
List of tables	6
Introduction	7
A. Trade facilitation, trade costs and the TFA: A very brief literature review	7
B. Effect of WTO TFA participation on trade costs: Methodology.....	8
C. Effect of WTO TFA participation on trade costs: Results.....	9
D. Conclusion and way forward.....	13
References.....	15

List of tables

Table 1: Data Source, Definition, Treatment, Source, and Expected Sign	10
Table 2: Empirical results for all economies	11
Table 3: Empirical results for OECD and non-OECD economies.....	12

Introduction

Five years after the entry into force of the WTO Trade Facilitation Agreement,² can we find macro-level evidence of the impact of this agreement on trade costs? To answer this question, we updated the data of the ESCAP-World Bank Trade Cost database³ and estimated a variety of trade cost models with entry into force of the WTO TFA as one of the explanatory variables. We find statistically robust ex-post evidence that participation in the TFA has helped reduce overall trade costs, although by less than what might have been expected based on ex-ante analysis.

Following a brief review of the related literature, we introduce the data and methodology applied, including the specification of the trade cost models estimated. Results are presented in section 3, covering estimates of trade costs reductions associated with TFA participation based on a global dataset of economies, as well estimates when the dataset is split between OECD and non-OECD economies. Conclusions are drawn and ways forward are discussed in the last section.

A. Trade facilitation, trade costs and the TFA: A very brief literature review

A number of studies have attempted to evaluate the impact of trade facilitation on trade costs in the lead up to the adoption of the TFA. This is no easy task, as data on trade costs is not easily available, owing to the many components that add up to international trade costs. Anderson and Van Wincoop (2004) found that the overall tariff-equivalent trade costs to be as high as 170%, while tariff only costs are less than 8%. Based on Novy (2013) and his inverse-gravity equation, the United Nations ESCAP and the World Bank developed a bilateral trade cost database described in Arvis et al. (2013; 2016), covering over 180 countries.

Moisé et al. (2011 and 2013) used this database to estimate the effect of trade facilitation measures included in the WTO TFA. The study found that these trade facilitation measures would reduce trade cost of OECD economies by approximately 10%, and trade costs of developing economies by 13% to 16%. A later study by OECD (2018) found that that the reduction of trade costs from implementation of the WTO TFA would be between 10% to 18%, with greater cost reductions for the lower income groups, also depending

² The WTO TFA entered into force on 22 February 2022. See: https://www.wto.org/english/docs_e/legal_e/tfa-nov14_e.htm

³ For an introduction to the database, see Arvis et al. (2016). The current database includes data from 1995 to 2020 for 180 countries. See: <https://www.unescap.org/resources/escap-world-bank-trade-cost-database>.

on whether economies would implement the agreement in full or only seek to meet the minimum binding requirements.

Similarly, WTO (2015) found that the full implementation of the WTO TFA would cut trade costs by 14% on average and boost trade by up to USD 1 trillion per year, with the largest benefits accruing to least developed economies. ADB-ESCAP (2021) and United Nations (2021) find that the reduction of trade costs in Asia-Pacific that could be expected from implementing the WTO TFA ranges between 4% and 7% depending on the scope of implementation (binding measures only or all measures). They further find that the full and digital implementation of the TFA, including enabling cross-border paperless trade, could increase such cost reductions by an additional 7%. Duval et al. (2016) further showed that trade facilitation provisions in regional trade agreements (RTAs) could have a statistically significant impact on trade cost reduction, including on trade costs with trading partners not parties to RTAs.

All the studies mentioned above are based on data pre-dating the entry into force of the treaty (and in many cases, its adoption) and reflect potential from implementation of measures specified in the TFA – many of which were already part of national trade facilitation strategies or regional agreements - rather than the effect of participation in the TFA. This paper thus explicitly examines if the participation in the WTO TFA has contributed to the reduction of trade costs using the most recently available cross-country data.

B. Effect of WTO TFA participation on trade costs: Methodology

Our trade cost model generally follows Arvis et al. (2016), where bilateral trade costs are dependent on factors such as geography (bilateral distance, adjacency of countries, and “landlockedness”), cultural distance (common official/unofficial language, colonial relationships, having a common colonizer, and formerly same country) and trade policies (regional trade agreements or tariffs). To capture the effect of participation in the WTO TFA, specific variables are added to the model based on the date of ratification of countries included in the dataset. The model is estimated across a panel dataset of more than 150 reporting countries from 1995-2019 using pseudo-poisson maximum likelihood (PPML) as suggested in Santos Silva and Tenreyro (2006), with removal of duplicate dyads on the partner side and country and time fixed effects (model 1), as follows:

Model 1:

$$\begin{aligned}\tau_{ijt} = & \beta_0 + \beta_1 \ln(\text{gtariff}_{ijt}) + \beta_2 \ln(\text{dist}_{ij}) + \beta_3 (\text{contig}_{ij}) + \beta_4 (\text{comlang_off}_{ij}) + \beta_5 (\text{comlang_ethno}_{ij}) \\ & + \beta_6 (\text{colony}_{ij}) + \beta_7 (\text{comcol}_{ij}) + \beta_8 (\text{smctry}_{ij}) + \beta_9 (\text{rta}_{ijt}) + \beta_{10} (\text{landlocked}_{ij}) \\ & + \beta_{11} \ln(\text{TFA}_{ij}) + D_i + D_j + D_t + \varepsilon_{ijt}\end{aligned}$$

To check the robustness of the results, the study also drops time-invariant pair variables and replaces with country-pair fixed effects, as follows:

Model 2 (with pair fixed effect):

$$\tau_{ijt} = \beta_0 + \beta_1 \ln(\text{gtariff}_{ijt}) + \beta_2 (\text{rta}_{ijt}) + \beta_3 \ln(\text{TFA}_{ij}) + D_i + D_j + D_{ij} + D_t + \varepsilon_{ijt}$$

Variable definitions, data treatment and sources, as well as expected signs of explanatory variables are summarized in Table 1.

C. Effect of WTO TFA participation on trade costs: Results

Estimates from the different specifications of the trade cost model and the TFA variable are presented in Table 2. WTO TFA participation, as well as other trade policy variables, are found to be statistically significant with the correct sign across all specifications.

The impact of tariff on trade costs remains highly significant, with a 10% change in tariffs expected to result in a 2.1%-3.4% reduction in trade costs, on average across models. The results also confirm the importance of RTAs in reducing trade costs between countries, with existence of an RTA resulting in statistically significant trade cost reductions of between 2.5% (in model 2) and 10% (in model 1) depending on the model specification. As for participation in the WTO TFA, the model estimates suggest that joining the WTO TFA results in a trade cost reduction of between 1.4% (in model 1) and 2.2% (in model 2). Arguably, model 2 results may be most reliable given the stronger fixed effect specifications of that model.

In order to better understand the impact of participation in the TFA, we estimate variations of model 1 and 2 by including separate dummy variables on participation of a country i in TFA, and on participation of its partner j in the TFA (model 3-5). These models suggest that WTO TFA participation contributes to a higher range of trade cost reductions of between 3.1% to 3.6%. Interestingly, the results also provide evidence that the statistically significant trade cost reduction associated with TFA is essentially the result of self-participation in the TFA, and not associated with that of the partner country. This is not entirely surprising given the fact that most of the trade facilitation measures included in the TFA are unilateral in nature, i.e., do not require cooperation with other countries.

Table 1: Data Source, Definition, Treatment, Source, and Expected Sign

Variable	Definition	Data Treatment	Source	Expected Sign
τ_{ij}	Comprehensive trade costs.		World Bank- ESCAP Trade Cost Database	
$gtariff_{ij}$	Geometric average tariff factor (1+rate) that each reporting country (i) charges to its trade partner (j) and vice versa, which can be expressed by $gtariff_{ijt} = \sqrt{tariff_{ijt} \times tariff_{jit}}$		World Integrated Trade Solution (WITS)	+
$dist_{ij}$	Geographical distance between country i and j.	N/A	CEPII	+
$contig_{ij}$	Dummy variable of contiguity equal to 1 if country i and j share a common border and zero otherwise.	N/A	CEPII	-
$comlang_off_{ij}$	Dummy variable of common official language equal to 1 if country i and j use the same common official language and zero otherwise.	N/A	CEPII	-
$comlang_ethno_{ij}$	Dummy variable of common language equal to 1 if a language is spoken by at least 9% of the population in both countries and zero otherwise.	N/A	CEPII	-
$colony_{ij}$	Dummy variable equal to 1 if country i and j were ever in colonial relationship and zero otherwise.	N/A	CEPII	-
$comcol_{ij}$	Dummy variable equal to 1 if country i and j had a common colonizer after 1945 and zero otherwise.	N/A	CEPII	-
$smctry_{ij}$	Dummy variable equal to 1 if country i and j were or are the same country and zero otherwise.	N/A	CEPII	-
rta_{ij}	Dummy variable equal to 1 if country i and j are members of the same regional trade agreement and zero otherwise.	Latest definition in 2019	Egger, P. H. and Larch, M. (2008)	-
$landlocked_{ij}$	Dummy variable equal to 1 if either country i or j is landlocked and zero otherwise.	N/A	CEPII	+
TFA_{ij}	Dummy variable equal to 1 if either country i or j, or both have become party to the WTO TFA and zero otherwise	N/A	WTO	-
TFA_i	Dummy variable equal to 1 if country i has become party to the WTO TFA and zero otherwise	N/A	WTO	-
TFA_j	Dummy variable equal to 1 if country j has become party to the WTO TFA and zero otherwise	N/A	WTO	-

CEPII = *Le Centre d'Études Prospectives et d'Informations Internationales*, ESCAP = Economic and Social Commission for Asia and the Pacific, N/A = not applicable, WTO = World Trade Organization.

Source: ESCAP

Table 2: Empirical results for all economies

VARIABLES	(1)	(2)	(3)	(4)	(5)
	rep/par/year FE	rep/par/pair/year FE	rep/par/year FE	rep/par/pair/year FE	rep/par/pair/year FE
In_gtariff	0.335*** [6.902]	0.212*** [6.266]	0.335*** [6.918]	0.212*** [6.270]	0.212*** [6.270]
In_dist	0.352*** [66.17]		0.352*** [66.20]		
Contig	-0.261*** [-8.405]		-0.261*** [-8.398]		
comlang_off	-0.0764*** [-4.948]		-0.0763*** [-4.942]		
comlang_ethno	-0.0757*** [-4.941]		-0.0759*** [-4.949]		
Colony	-0.236*** [-8.541]		-0.236*** [-8.540]		
Comcol	-0.172*** [-12.17]		-0.172*** [-12.17]		
Smctry	-0.126*** [-3.013]		-0.126*** [-3.014]		
landlocked_ij	0.167*** [7.500]		0.167*** [7.509]		
Rta	-0.100*** [-13.30]	-0.0258*** [-3.246]	-0.1000*** [-13.25]	-0.0247*** [-3.118]	-0.0247*** [-3.110]
tfa_ij	-0.0140* [-1.784]	-0.0223*** [-3.492]			
tfa_i			-0.0315*** [-5.274]	-0.0364*** [-6.621]	-0.0364*** [-6.624]
tfa_j			0.00279 [0.470]	-5.57e-05 [-0.0104]	
Constant	2.636*** [54.58]	5.750*** [1,628]	2.637*** [54.57]	5.751*** [1,635]	5.751*** [1,684]
Observations	156,767	156,069	156,767	156,069	156,069
Reporter FE	Yes	Yes	Yes	Yes	Yes
Partner FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Pair FE	No	Yes	No	Yes	Yes
Pseudo R-squared	0.629	0.805	0.629	0.805	0.805

*** p<0.01, ** p<0.05, * p<0.1

t-stat. in square brackets

To explore the potential differential impact of TFA participation on developed and developing economies, we re-estimate the models by splitting the dataset between OECD economies and non-OECD economies. Table 3 shows the results. Using Model 5 results as a benchmark (i.e., where the trade cost reduction from TFA participation is 3.6% on average), the results show that trade cost reduction from TFA between OECD countries and all countries (2.7%) is slightly lower than that of non-OECD countries and all countries (2.8%). The trade cost reduction impact of TFA is largest between OECD and non-OECD countries, ranging from 2.8% and 5.0% (models 9 and 10). Trade cost reductions from TFA are not statistically significant intra-OECD (model 8), while the ones among non-OECD countries stand at 1.8%. Interestingly, the impact of RTA participation on trade costs stands at about 2.5% when all economies are considered and rise to 5.3% when only trade costs among non-OECD countries are included in the estimation.

Table 3: Empirical results for OECD and non-OECD economies

VARIABLES	(5) All economies	(6) OECD	(7) non-OECD	(8) intra- OECD	(9) OECD with non OECD	(10) Non OECD with OECD	(11) Intra non- OECD
In_gtariff	0.212*** [6.270]	0.188** [2.544]	0.223*** [5.946]	0.655** [2.523]	0.185** [2.454]	0.281*** [4.101]	0.203*** [4.587]
Rta	-0.0247*** [-3.110]	-0.00980 [-0.781]	-0.0232** [-2.290]	-0.0266 [-1.137]	-0.00308 [-0.219]	-0.00365 [-0.258]	-0.0526*** [-3.827]
tfa_i	-0.0364*** [-6.624]	-0.0270* [-1.873]	-0.0285*** [-4.654]	-0.0231 [-1.188]	-0.0280* [-1.713]	-0.0508*** [-5.043]	-0.0182** [-2.395]
Constant	5.751*** [1,684]	5.546*** [861.2]	5.810*** [1,433]	4.900*** [258.1]	5.670*** [841.3]	5.641*** [1,112]	5.897*** [1,042]
Observations	156,069	46,009	110,060	13,527	32,482	41,889	68,171
Reporter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Partner FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pair FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R-squared	0.805	0.821	0.784	0.721	0.770	0.758	0.782

*** p<0.01, ** p<0.05, * p<0.1
t-stat. in square brackets

D. Conclusion and way forward

Five years after the entry into force of the WTO Trade Facilitation Agreement (TFA), many countries have made progress in implementing the agreement, much technical assistance has been provided, and a lot of success stories have been highlighted at the project or national level for specific measures. Using the ESCAP-World Bank bilateral trade costs data – the same dataset used by OECD to estimate the potential impact of the TFA on trade costs during the final stages of the negotiations - we estimate the effects of participation in the TFA on trade costs. Using a variety of models, we find robust and statistically significant evidence that implementation of the WTO TFA reduces trade costs by 1 to 4 per cent on average. The TFA impact in reducing trade costs is strongest between OECD and non-OECD economies, with trade cost reduction across models ranging between 3 to 5 per cent. South-South trade cost reductions from TFA implementation (i.e., between non-OECD countries) are less than 2 per cent. Trade cost reductions between advanced economies are not significant, which is to be expected since these countries were supposed to have achieved full implementation by the time of entry into force.

Participation in regional trade agreements, which is also included in the models estimated, reduce trade costs by 2 to 10 per cent on average. This is consistent with earlier findings which indicated that trade facilitation provisions in regional trade agreements (RTA) contribute to reduce trade costs, both among RTA members but also with all trade partners. Multilateral spill overs from trade facilitation measures in RTAs on trade costs are found to exceed any discriminatory effects within three years of an RTA's entry into force, highlighting the complementarity between regional and global trade facilitation initiatives.

While significant, the trade cost savings associated with WTO TFA found in this post-accession analysis are much lower than the potential trade cost saving estimates circulated prior to adoption of the treaty. Such estimates of potential cost saving estimates typically range from 11-14 per cent on average, focusing on implementation of specific measures within the TFA. One possible implication of this dichotomy is that WTO members still have much to do to implement the WTO TFA in full, both in letter and in spirit.

Indeed, the ADB-ESCAP Asia-Pacific Trade Facilitation Report 2021 finds that achieving full implementation of the TFA could still reduce trade costs by another 6 per cent in Asia and the Pacific. It further highlights that greater trade cost savings can be achieved through a full and digital TFA+ approach focused on accelerating digitalization of trade procedures. Such an approach, already enabled in Asia-Pacific by a UN treaty called the

Framework Agreement on Facilitation of Cross-Border Paperless Trade in Asia and the Pacific,⁴ could help reduce trade cost by an additional 7 per cent, also making trade more resilient and reducing its impact on the environment.

While our results points to the positive impact of the TFA – and RTAs – on reducing trade costs, overall trade costs have increased substantially over the past few years. Arguably, this rise in trade costs has been mostly associated with disruption in transport services during the pandemic, which led to higher shipping costs, something not within the scope of the TFA. However, an additional explanation is that traditional trade procedures and facilitation measures have not been sufficiently resilient to the pandemic crisis. The UN Global Survey on Digital and Sustainable Trade Facilitation indeed revealed that many countries did not, and still do not, have adequate plans for facilitating trade and business continuity at borders during crises situations.⁵ This, and the broader topic of trade facilitation measures needed to cope with various types of crises, including the climate crisis, is certainly something that should be a focus of future research, as well as work at the WTO, as argued earlier.⁶

⁴ See <https://www.unescap.org/kp/cpta>. The updated official list of parties to the treaty and authentic text are at: https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=X-20&chapter=10&clang=_en

⁵ See United Nations (2021) global and other reports at untdsurvey.org

⁶ See Chapter 9 by Duval (2020) in Evenett and Baldwin (2020).

References

- ADB-ESCAP (2021). “Asia-Pacific Trade Facilitation Report 2021: Supply Chains of Critical Goods Amid the COVID-19 Pandemic—Disruptions, Recovery, and Resilience”, October 2021, Asian Development Bank Publication. Available at <http://dx.doi.org/10.22617/SPR210365-2>
- Anderson, J. E., and Van Wincoop, E. (2004). “Trade Costs”, National Bureau of Economic Research, Working Paper No. 10480. Available at https://www.nber.org/system/files/working_papers/w10480/w10480.pdf
- Arvis, J. F., Duval, Y., Shepherd, B., Utoktham, C. and Raj, A. (2016). “Trade Costs in the Developing World: 1995-2010”, World Trade Review, Volume 15, Issue 3, July 2016, pp. 451 – 474. Available at <https://doi.org/10.1017/S147474561500052X>
- De Melo J., Sorgho Z., and Wagner L. (2021). "Implementing the Trade Facilitation Agreement (TFA): Estimates of Reduction in Time at Customs for the United Nations' Vulnerable Economies", Ferdi Working paper 296, December 2021. Available at <https://ferdi.fr/en/publications/implementing-the-trade-facilitation-agreement-tfa-estimates-of-reduction-in-time-at-customs-for-the-united-nations-vulnerable-economies>
- Duval, Y., Neufeld, N. and Utoktham, C. (2016). “Do trade facilitation provisions in regional trade agreements matter? Impact on trade costs and multilateral spillovers”, ARTNeT Working Paper Series No. 164, November 2016, Bangkok, ESCAP. Available at <https://www.unescap.org/sites/default/d8files/knowledge-products/AWP%20No.%20164F.pdf>
- Duval, Y. “Lessons from the Pandemic for Trade Facilitation and the WTO” (2020). Chapter 9 in Evenett, Simon and Baldwin Richard, Eds. “Revitalising Multilateralism: Pragmatic Ideas for the New WTO Director-General”, Centre for Economic Policy Research (CEPR). Available at <https://voxeu.org/content/revitalising-multilateralism-pragmatic-ideas-new-wto-director-general>
- Egger, P., and Larch, M. (2008). “Interdependent Preferential Trade Agreement Memberships: An Empirical Analysis”, Journal of International Economics, Volume 76, Issue 2, December 2008, pp.384–399. Available at <https://doi.org/10.1016/j.jinteco.2008.08.003>
- Kumar, U. and Shepherd, B. (2019). “Implementing the Trade Facilitation Agreement: From Global Impacts to Value Chains”, ADB South Asia Working Paper Series No. 67, September 2019. Available at <http://dx.doi.org/10.22617/WPS190444-2>

- Moïsé, E., Orliac, T., and Minor, P. (2011). “Trade Facilitation Indicators: The Impact on Trade Costs”, OECD Trade Policy Working Papers, No. 118. Available at https://www.wto.org/english/tratop_e/tradfa_e/case_studies_e/oecd_paper_e.pdf
- Moïsé, E., Orliac, T., and Minor, P. (2013). “Trade Facilitation Indicators: The Potential Impact of Trade Facilitation on Developing Countries' Trade”, OECD Trade Policy Working Papers, No. 144. Available at <https://www.oecd-ilibrary.org/docserver/5k4bw6kg6ws2-en.pdf?expires=1655191759&id=id&acname=guest&checksum=16E27847E4D9004124768002A35F2B68>
- OECD (2018). Trade Facilitation and the Global Economy, OECD Publishing, Paris. <https://doi.org/10.1787/9789264277571-en>
- Novy, D. (2013). “Gravity Redux: Measuring International Trade Costs with Panel Data”, Economic Inquiry, Volume 51, Issue 1, pp. 101-121. Available at <https://doi.org/10.1111/j.1465-7295.2011.00439.x>
- Santos Silva, J. M. C., and Tenreyro, S. (2006). “The Log of Gravity”, The Review of Economics and Statistics, November 2006, Volume 88, Issue 4, pp. 641–658. Available at <https://personal.lse.ac.uk/tenreyro/jensen08k.pdf>
- United Nations (2021). “Digital and Sustainable Trade Facilitation: Global Report 2021”, United Nations Publication. Available at <https://unescap.org/sites/default/d8files/knowledge-products/UNTF-Global%20Report-web%2B.pdf>
- WTO (2015). “World Trade Report 2015 — Speeding up Trade: Benefits and Challenges of Implementing the WTO Trade Facilitation Agreement”, WTO. Available at https://www.wto.org/english/res_e/booksp_e/world_trade_report15_e.pdf