Sustainability impacts of digital trade policies in the Asia-Pacific

Erwin Corong, Center for Global Trade Analysis, Purdue University, US

Alex Kravchenko, United Nations ESCAP, Bangkok, Thailand

Anna Strutt, University of Waikato, Hamilton, New Zealand

Yann Duval, United Nations ESCAP, Bangkok, Thailand

Sustainability impacts of digital trade policies in the Asia-Pacific

Digital technologies are reshaping global supply and demand, including by helping to reduce trade costs (Smeets, 2021; World Trade Organization, 2018). The contribution of digital services to global trade is not currently well understood (World Trade Organization, 2019), however, the impacts of policy changes are likely to be large. This paper uses a global computable general equilibrium (CGE) model to examine the impact of various digital trade-related policies.

While digital trade is becoming increasingly important, formal modelling of the impact of digital trade, including using global CGE analysis, has been limited to date. The current study uses the GTAP model (Corong et al., 2017; Hertel & Tsigas, 1997) and the latest version 11 of the GTAP database with a 2017 base year (Aguiar et al., 2022), extended to include emissions. This approach enables us to capture intersectoral and international linkages within a consistent framework. We use the OECD database on digital services restrictions to explore the impacts of trade restrictions on digital trade-related goods and services among different groups of economies, with a particular focus on Asia-Pacific economies. Modelling mechanisms that aim to represent the policy changes as appropriately as possible are used (Walmsley & Strutt, 2021). We analyse a range of potential impacts, including GDP, trade, sectoral impacts and CO_2 emissions.

We focus our analysis on the Asia-Pacific region, including exploring the differential impacts on real GDP, emissions and trade, as well as examining broad sectoral impacts to draw insights into the sectors likely to be most heavily impacted by these policies. Due to the current paucity of empirical evidence supporting the notion that ICT and digital trade in services in general affects productivity, the present study does not aim to estimate these effects through further liberalization or other related policies.

We model seven scenarios. The first four scenarios, dubbed "trade policy scenarios", are related to tariff and non-tariff liberalization applied to products covered under ITA I and II.[1] In the first and second scenarios, we model liberalization of tariffs in ICT goods on imports into the Asia Pacific region. The reductions are largest under ITA II and primarily in the Computer Equipment sector. This is because more countries have already implemented cuts to products covered under the ITA I Agreement. However, the tariff cuts are generally relatively small and impact only a few sectors in a few countries. The third and fourth scenarios consider the impact of reductions in NTBs[2] on all imports into the Asia-Pacific region, as well as the US, EU27 and UK, based on ad-valorem equivalent estimates of NTMs (Kravchenko et al, 2022). In particular, in scenario 3 we model the impacts of a 10 per cent reduction in the AVE of non-technical NTMs corresponding to ITA I. In Scenario 4, we apply the same 10 per cent reduction in non-technical NTMs, but now to ITA II goods.

[1] The WTO's Information Technology Agreement (ITA) was the first multilateral agreement signed under the auspices of the WTO in 1996. The membership grew from just 29 WTO members to 83 in 2023.
[2] We refer to non-technical NTMs as NTBs, following ESCAP (2019).

In the last three scenarios, dubbed collectively as "digital policy scenarios", we model the impact of digital trade restriction changes and digitalization of trade procedures (digital trade facilitation). For the fifth scenario, we simulate the average annual impact of estimated changes in OECD's DSTRI scores. We use AVEs from González (2023) and corresponding countries' DSTRI scores to estimate the average annual impact of DSTRI changes for each country or region modelled in the five years since 2017 (the GTAP base data year). The changes range from zero for North America to an average annual increase of more than 1.2% for North and Central Asia, driven largely by the average annual increase in the Russian Federation of approximately 1.4%. While these regional differences will drive regional differences in results, there is also sectoral differentiation as we combine the average annual DSTRI changes with sectoral AVE estimates for changes in the index. For the sixth scenario, we model the impact of liberalization of trade in selected cross-border data flows. In particular, we consider the impact of a 10 per cent change in these measures for imports from all trading partners into the Asia-Pacific region. In both the fifth and sixth scenarios, the changes in DSTRI for each country are combined with the sectoral AVE estimates for changes in the index, enabling us to model the impacts differentiated by country and sector. These overall sectoral AVE estimates are based on estimates of reducing the domestic DSTRI by corresponding economy-level changes (average of the actual five-year annual change of DISTRI in scenario five and for scenario six it is a hypothetical 10% reduction in the latest DSTRI score of cross-border data flow from González, Sorescu & Kaynak, 2023). Finally, Scenario 7 uses a WB-ESCAP trade cost database AVE estimates of the impact of trade facilitation on trade costs (Duval, Utoktham and Kravchenko, 2018)[3] to contrast previous scenarios against reduction of trade costs associated with full implementation of digital trade facilitation for all imports of goods into the Asia Pacific.

In terms of traditional trade policy, our results suggest there is relatively little scope to boost trade from tariff liberalization under ITA I and II, but many gains remain untapped in addressing non-tariff barriers. In terms of digital trade policies, the overall growth in digital trade restrictiveness over the past five years is modelled to have slowed both trade and GDP growth. Reversal of such policies, even if partial, is modelled to offer significant benefits, orders of magnitude higher than that of traditional trade policies. Digitalization of cross-border paperless trade procedures, in particular, offers the most benefits in the simulations we model. With regard to sectoral impacts, sectoral output expansion, particularly of services sectors, may lead to some contraction of other sectors. However, it should be kept in mind that these trade-offs should be considered in tandem with the overall growth in GDP and trade, which may help to offset negative short-run resource reallocation effects. In addition, policymakers may consider putting in place support policies to address these types of short-run reallocation dynamics.

[3] Updated using the latest available data.

References

Aguiar, A., Chepeliev, M., Corong, E., & van der Mensbrugghe, D. (2022). The Global Trade Analysis Project (GTAP) Data Base: Version 11. *Journal of Global Economic Analysis, 7*(2). https://jgea.org/ojs/index.php/jgea/article/view/181

Corong, E. L., Hertel, T. W., McDougall, R., Tsigas, M. E., & van der Mensbrugghe, D. (2017). The standard GTAP model, version 7. *Journal of Global Economic Analysis*, *2*(1), 1-119. https://doi.org/doi:http://dx.doi.org/10.21642/JGEA.020101AF

Duval, Y., C. Utoktham, and A. Kravchenko (2018). Impact of implementation of digital trade facilitation on trade costs. ARTNeT Working Paper series 174. Available at https://www.econstor.eu/handle/10419/177771.

González, J. L., Sorescu, S., & Kaynak, P. (2023). Of bytes and trade: Quantifying the impact of digitalisation on trade. OECD Trade Policy Paper May 2023 no 273. https://doi.org/doi:https://doi.org/10.1787/11889f2a-en

Hertel, T. W., & Tsigas, M. E. (1997). Structure of GTAP. In T. W. Hertel (Ed.), *Global Trade Analysis: modeling and applications* (pp. 13-73.). Cambridge University Press.

Kravchenko, A., Strutt, A., Utoktham, C., & Duval, Y. (2022). New Price-based Bilateral Ad-valorem Equivalent Estimates of Non-tariff Measures. *Journal of Global Economic Analysis, 7*(2). https://doi.org/10.21642/JGEA.070202AF

Smeets, M. (2021). *Adapting to the Digital Trade Era: Challenges and Opportunities*. World Trade Organization. https://www.wto.org/english/res_e/publications_e/adtera_e.htm

Walmsley, T., & Strutt, A. (2021). A Comparison of Approaches to Modelling Non-Tariff Measures. *Journal of Global Economic Analysis, 6*(1), 1-33. https://doi.org/http://dx.doi.org/10.21642/JGEA.060101AF

World Trade Organization. (2018). World Trade Report 2018. The future of world trade: how digital technologies are transforming global commerce.

World Trade Organization. (2019). *World Trade Report 2019*. WTO. https://doi.org/https://doi.org/10.30875/7e6f8c91-en