Does Digital Trade Change the Purpose of a Trade Agreement?

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- We live in an increasingly digital world

  - search

  - order and payment

  - delivery of goods and services

Motivation

- We live in an increasingly digital world

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  - order and payment
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- We have a constitution of the world trading system put in place at the dawn of the Internet

  - GATT covers market access for goods: shallow integration, highly successful
  - GATS covers market access for services: deep integration, much less successful
  - TRIPS covers private rights over trade-related intellectual property

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- Are the WTO's global trade rules fundamentally out of date for the digital age?

Approach

- I adopt a basic premise from the literature on the economics of trade agreements

  - The design of a trade agreement should reflect its purpose, the "problem" it is supposed to "solve"

  - I ask: Does digital trade change the purpose of a trade agreement?

  - The answer can illuminate the nature of the challenge that digital trade poses for the WTO and the world trading system

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- I first present a partial equilibrium model of trade between two countries in a pre-digital world

  - I review what the theoretical literature on the economics of trade agreements has to say about the purpose of a trade agreement in this setting, considering both trade in goods and trade in services
  - I describe how this purpose can be seen to be reflected in the broad design features of both GATT and GATS

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- I then introduce digital trade into the model world economy and revisit the purpose of a trade agreement

  - I assume that a more open digital policy reduces the costs of trade, and that in choosing digital policies governments weigh this effect against any non-pecuniary externalities that may be implied
  - I investigate whether the problem for the agreement to solve has changed
  - From this perspective I evaluate whether the rise of digital trade warrants changes in the design of the WTO

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  - This implies that the existing shallow-integration features of GATT can in principle be applied to digital policies impacting goods trade in such a world

  - And while GATS is a deep-integration agreement, a GATT-like shallow-integration approach to trade in services is possible and could be applied to digital policies impacting services trade as well

Main Findings

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- Where the non-pecuniary externalities associated with digital openness cross international borders

  - The purpose of a trade agreement is more complex
  - But even in this case there may be an approach to integration for goods and services trade in a digital world that lies somewhere between the WTO's shallow integration approach and a fully deep approach

What is Digital Trade?

- For modeling purposes, I adopt the definition of digital trade ("e-commerce") from the WTO's Work Programme on Electronic Commerce

  - "the production, distribution, marketing, sale or delivery of goods and services by electronic means"
  - Covers digital aspects of search, order and payment, and delivery of goods and services

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- Classification issues

    - A good versus a service (e.g., instructions for 3-D printing of a wallet)
    - Mode of supply (e.g., visiting a foreign website and making a purchase)
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- Taxonomy: partition digital trade into "digital trade in goods" and "digital trade in services"

  - Trade is "digital" if it involves digital elements in any of the three stages of search, order and payment, or delivery
  - A transaction involves a "good" ("service") if at the moment of consumption that transaction is a good (service) as traditionally defined, i.e., as defined in the pre-digital world
  - Some transactions (e.g., the importation of a smart appliance) may involve digital trade in both goods and services

- What kinds of policies impact digital trade?

What are the Policies that Impact Digital Trade?

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- Tariffs
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    - May require adjustments to de minimis levels
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    - Data localization
    - Source-code transfer requirements

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- A reduced-form approach to modeling regulatory barriers to digital trade

  - Digital ("Internet") policies $I \in [0, \infty)$ and $I^* \in [0, \infty)$, with $I = 0$ ($I^* = 0$) $\Rightarrow$ absence of workable Internet in the home (foreign) country, higher level of I (I^*) $\Rightarrow$ a more open digital policy environment
  - I and I^* jointly determine the efficiency of trade transactions between the two countries
  - $\iota(I, I^*)$ the per-unit (specific) trade cost for exports from foreign to home, where $\iota(0, 0)$ is non-prohibitive with $\iota(I, I^*)$ decreasing and convex in both arguments and non-negative for all I and I^*

Digital Trade in Goods

- The home country imports a competitively produced good from the foreign country

  - Arbitrage: $\qquad P = P^* + \iota(I, I^*) + \tau + \tau^*$
  - Market clearing: $M(P^* + \iota(I, I^*) + \tau + \tau^*) = E^*(P^*)$
  - world prices

$$\hat{P}^{w*}(\iota(I, I^*) + \tau, \tau^*) \quad \equiv \quad \hat{P}^*(\iota(I, I^*) + \tau + \tau^*) + \tau^*$$
$$\hat{P}^{w}(\iota(I, I^*) + \tau^*, \tau) \quad \equiv \quad \hat{P}(\iota(I, I^*) + \tau + \tau^*) - \tau$$
$$\hat{P}^{w} - \hat{P}^{w*} \quad = \quad \iota(I, I^*)$$

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- Terms-of-trade effects

  - Tariffs: standard

$$\frac{\partial \hat{P}^{w}}{\partial \tau} \quad = \quad \frac{\partial \hat{P}^{w*}}{\partial \tau} = \frac{M'}{E^{*'} - M'} < 0$$
$$\frac{\partial \hat{P}^{w*}}{\partial \tau^*} \quad = \quad \frac{\partial \hat{P}^{w}}{\partial \tau^*} = \frac{E^{*'}}{E^{*'} - M'} > 0$$

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    - Digital policies: novel

$$
\frac{\partial \hat{P}^{w}}{\partial \iota} \frac{\partial \iota}{\partial I} = \frac{E^{*\prime}}{E^{*\prime} - M'} \times \frac{\partial \iota}{\partial I} < 0; \quad \frac{\partial \hat{P}^{w*}}{\partial \iota} \frac{\partial \iota}{\partial I} = \frac{M'}{E^{*\prime} - M'} \times \frac{\partial \iota}{\partial I} > 0
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- Non-pecuniary externality associated with digital openness: $c(I)$ and $c^*(I^*)$

Digital Trade in Goods

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- Home welfare

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\begin{aligned}
W &= CS(\hat{P}(\iota(I, I^*) + \tau + \tau^*)) \\
&\quad + [\hat{P}(\iota(I, I^*) + \tau + \tau^*) - \hat{P}^w(\iota(I, I^*) + \tau^*, \tau)] \times M(\hat{P}(\iota(I, I^*) + \tau + \tau^*)) \\
&\quad - [c(I) + \theta c^*(I^*)] \\
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- Foreign welfare

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\begin{aligned}
W^* &= CS^*(\hat{P}^*(\iota(I, I^*) + \tau + \tau^*)) + PS^*(\hat{P}^*(\iota(I, I^*) + \tau + \tau^*)) \\
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- Efficient tariffs: $\tau^e + \tau^{*e} = 0$. Nash tariffs: $\tau^N = \frac{\hat{P}^{w*N}}{\eta^{E*N}}$ and $\tau^{*N} = \frac{\hat{P}^{wN}}{\eta^{MN}}$

- Eliminate terms-of-trade manipulation from tariffs and expand market access to efficient levels

- With additional non-tariff policies, the purpose of a trade agreement is unchanged

  - Nash non-tariff policies efficient, conditional on Nash trade volume
  - Eliminate terms-of-trade manipulation from tariffs and expand market access to efficient levels
  - Supports the logic of shallow integration (Bagwell and Staiger, 2001, 2002)

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- A trade agreement could focus on lowering tariffs as a means of expanding market access ("conditions of competition") and trade volumes to efficient levels

  - And put in place various "market access preservation rules" that apply to non-tariff policies and prevent governments from back-sliding on their market access commitments

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- Under GATT's approach, countries negotiate tariff bindings to make market access commitments, and GATT Articles provide the accompanying market access preservation rules

  - For example, Petersmann's (1997, p. 136) observes that "...the function of most GATT rules (such as Articles I-III and XI) is to establish conditions of competition and to protect trading opportunities...".

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- Findings extend to a variety of economic settings and diverse government policy preferences

  - Do they hold in a world of digital trade in goods?

No cross-border non-pecuniary externality: $\theta \equiv 0$ (Assumption 1)

- Home welfare

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\begin{aligned}
W &= CS(\hat{P}(\iota(I, I^*) + \tau + \tau^*)) \\
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&\equiv W^*(I^*, \hat{P}^*(\iota(I, I^*) + \tau + \tau^*), \hat{P}^{w*}(\iota(I, I^*) + \tau, \tau^*))
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The Purpose of GATT in a Digital World: Local Spillovers

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&\quad - c(I) - c^*(I^*) \\
&\equiv W^w(I, I^*, \hat{P}(\iota(I, I^*) + \tau + \tau^*), \hat{P}^*(\iota(I, I^*) + \tau + \tau^*))
\end{aligned}
$$

- Efficient policies
  - Tariffs $\tau^e + \tau^{*e} = 0$
  - Digital policies

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  $\Rightarrow$ Nash digital policies efficient, conditional on Nash trade volumes

- Shallow integration
  - Tariffs: negotiate to $\tilde{\tau}$ and $\tilde{\tau}^*$ such that $M(\hat{P}(\iota(I^N, I^{*N}) + \tilde{\tau} + \tilde{\tau}^*)) = M^e$
  - Market access preservation rule, Home: I and τ subject to $\frac{d\tau}{dI}|_{dM=0} = [-\frac{\partial \hat{P}}{\partial \iota}\frac{\partial \iota}{\partial I}]/\frac{\partial \hat{P}}{\partial \tau} > 0$
  - Digital policies, Home unilateral choice: $\frac{\partial W}{\partial I} + \frac{\partial W}{\partial \tau}\frac{d\tau}{dI}|_{dM=0} = 0$
  - Outcome
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- Relax Assumption 1: $\Rightarrow \theta > 0$

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- Shallow integration could deliver M^e but implies $M^e \times [-\frac{\partial \iota}{\partial I}] = c'(I)$, $M^e \times [-\frac{\partial \iota}{\partial I^*}] = c^{*\prime}(I^*)$
  - A middle ground might focus on just those aspects of digital policies that generate cross-border non-pecuniary externalities, then pursue shallow integration to handle market access problem

- Focus on mode 3 services trade

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Digital Trade in Services

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- Cost of compliance $\kappa(s)$ for home service providers and $\kappa^*(s, L) \equiv \kappa(s) + \lambda(L)$ for foreign service providers

  - $\kappa(s)$ increasing and convex in s

  - $\lambda(L)$ decreasing and convex in L, the home-country investment in design and implementation of standard s, at cost $c_0 \times L$

  - Standard s can be discriminatory, r for home service providers and ρ for foreign service providers with $r < \rho$

- The home country imports a competitively produced mode 3 service from the foreign country

- For now, allow tariffs τ and τ^* to be placed on mode 3 service imports
  - A discriminatory sales tax collected at the point of sale
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- "Raw" world prices and terms-of-trade effects

$$\hat{P}_0^w \equiv \hat{P}^w - \kappa^*(\rho, L) = \hat{P}_0^w(\overbrace{\iota(I, I^*) + \tau^*}^{(+)}, \overset{(-)}{\tau}, \overset{(-)}{t}, \overset{(+)}{r}, \overset{(-)}{\rho}, \overset{(+)}{L})$$

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- Eliminate terms-of-trade manipulation from tariffs and expand market access to efficient levels

  - Why isn't GATS structured like GATT as shallow integration?

- A "missing tariff instrument" explanation of the structure of GATS (Staiger and Sykes, 2021)

$$\text{No tariffs on mode 3 services trade: } \tau = \tau^* \equiv 0 \qquad \text{(Assumption 2)}$$

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t^N - \phi(r^N) &= \left[\frac{\Theta^N}{S_h' + S_f'}\right] > 0 \\
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- $\Rightarrow$ Deep-integration approach of GATS seems natural

- The possibility of a "two-step" path forward for liberalizing trade in services that has much in common with the shallow-integration approach of GATT (Staiger and Sykes, 2021)

A GATS Re-Design for the Pre-Digital World

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- Step 1: governments agree to a set of blanket rules that apply to services along the lines of the GATT rules that apply to goods
  - the national treatment (NT) rule, which prohibits domestic regulatory (and tax) policies that discriminate against foreign trade
  - the agreement on technical barriers to trade (TBT), which prohibits unnecessarily trade restrictive regulatory choices
  - the non-violation (NV) clause, which protects the value of market access concessions from erosion due to subsequent and unanticipated changes in non-contracted policies

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  - and divert protection into a narrow set of fiscal – but not regulatory – measures

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- The key to showing GATT-like shallow integration for services possible in the pre-digital world
  - When Assumption 2 is not imposed, the purpose of GATS is to eliminate terms-of-trade manipulation from tariffs and expand market access to efficient levels

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    - The first can be handled under the renegotiation clauses of the WTO ("liability rules")
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Digital Trade and the Design of the WTO

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- The blurring of the distinction between goods and services that digitalization is causing carries two implications
    - This makes redesigning GATS to look more like GATT all the more attractive
    - A new classification of goods and services might be attractive: digital or otherwise, traded goods (services) would refer to transactions on which a tariff can (cannot) feasibly be applied, and these transactions would be covered under GATT (GATS)

Digital Trade and the Design of the WTO

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- Users of a digital platform value privacy and impose negative externalities on each other when they share their personal data with the platform, provided that their data is correlated
  - Individual-level data is underpriced and the market economy generates too much data
  - Data de-correlation represents one possible solution to address this problem

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- Users of a digital platform value privacy and impose negative externalities on each other when they share their personal data with the platform, provided that their data is correlated
  - Individual-level data is underpriced and the market economy generates too much data
  - Data de-correlation represents one possible solution to address this problem

- De-correlation mediates (via a trusted third party) data transactions in a way that reduces the correlation between the data of a user who is not sharing her data with the data of others who have shared their data – and thereby mitigates these externality-induced privacy concerns

Digital Trade and the Design of the WTO

Cross-border non-pecuniary externalities

- Now two problems for a trade agreement to solve
  - The cross-border non-pecuniary externality must be addressed
  - The insufficient market access problem familiar from the pre-digital world must also be addressed
  - A middle ground might focus on just those aspects of digital policies that generate cross-border non-pecuniary externalities, then pursue shallow integration to handle market access problem

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- We could think of WTO member governments agreeing to a limited form of this proposal, tailored to address just the correlation with the data of other *international* users
  - Negotiate over just the cross-border non-pecuniary externality associated with digital privacy issues
  - Leave correlation of users' data *within* national borders to the discretion of each national government

Conclusion

- The WTO is better designed to deal with digital trade than is commonly believed

- Where the non-pecuniary externalities associated with digital openness (related to issues such as privacy, national security and law enforcement) are purely local

  - The purpose of a trade agreement for both trade in goods and trade in services is unchanged by the advent of the digital world

  - This implies that the existing shallow-integration features of GATT can in principle be applied to digital policies impacting goods trade in such a world

  - And while GATS is a deep-integration agreement, a GATT-like shallow-integration approach to trade in services is possible along the lines suggested by Staiger and Sykes (2021), and could be applied to digital policies impacting services trade as well

  - With digital trade blurring the distinction between goods and services, the redesign of GATS to bring it closer to the design of GATT could be all the more attractive

- Where the non-pecuniary externalities associated with digital openness cross international borders

  - The purpose of a trade agreement is more complex

  - But even in this case there may be an approach to integration for goods and services trade in a digital world that lies somewhere between the WTO's shallow integration approach and a fully deep approach

"[T]he restoration of greater freedom for international trade and factor movements can be made meaningful only by means of international agreements which cut rather deeply into domestic economic arrangements. One cannot hope to see the abandonment of protective devices except in the framework of all-round international agreement, since unilateral action is quite likely to cause the free-trade country to lose more from a deterioration in its terms of trade than it gains from the expansion of trade. But as soon as any attempt is made to limit protective devices, a whole host of domestic economic arrangements must be brought under examination. Tariffs and quantitative import restrictions are not the only means for protecting domestic industries. Subsidies, domestic taxes, domestic price and quantity controls, nationalization schemes – all can be used for similar purposes. Yet all of these instruments may be perfectly legitimate instruments of policy for the attainment of certain other perfectly legitimate objectives. ... If a more liberal international economy is to be established by international agreement, one must search for a working compromise between the need effectively to curb protective devices and the need to give national governments freedom to adopt effective domestic economic policies for the attainment of legitimate domestic objectives."

– The Theory of International Economic Policy, Volume Two: Trade and Welfare, by J. E. Meade. Oxford University Press, London: 1955, p 570.

Broader Context of this Paper

- Appears as Chapter 9 of **A World Trading System for the Twenty-First Century**

- In that book I consider what economics has to say about the purpose of a trade agreement in the twentieth century, and I argue that the GATT/WTO is well-designed to serve this purpose

- I then consider 5 key twenty-first century developments that pose challenges for the world trading system

  - the rise of the large emerging economies, including China
  - efforts to address climate change
  - the implications of digital trade
  - the rise of offshoring
  - the push toward regulatory convergence as an end in itself

- I argue that the first three developments do not change the purpose of a trade agreement, while the last two may

- I conclude that the best advice for designing a world trading system for the twenty-first century is not "Move fast and break things" but rather **Keep Calm and Carry On**