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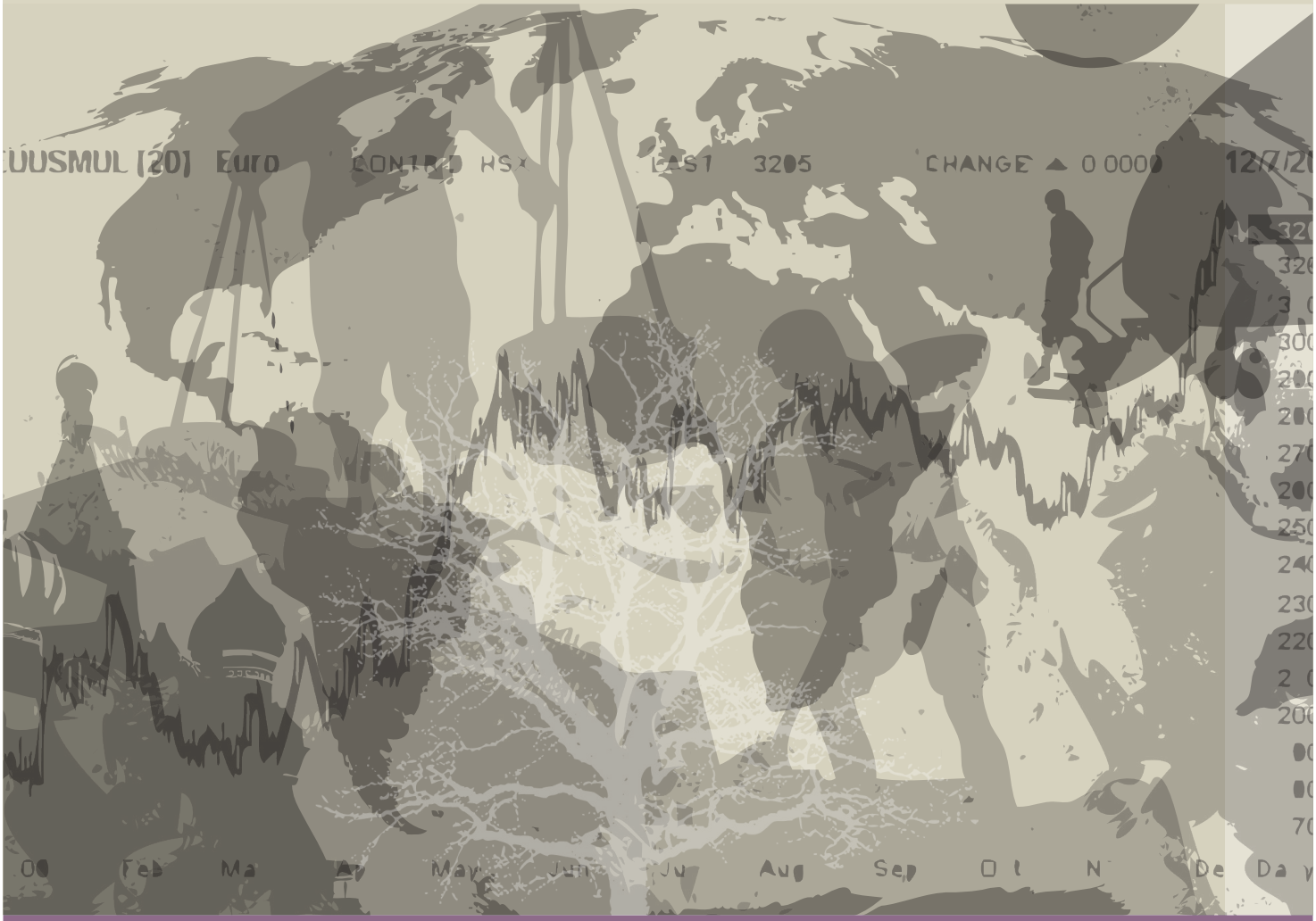
Hildegunn Kyvik Nordås



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Abstract

International trade and investment in telecommunications are governed by the World Trade Organization's (WTO) General Agreement on Trade in Services (GATS) and its Annex and Reference Paper (RP) on telecommunications. This paper discusses whether the 25-year old WTO framework is still fit for purpose. It makes two contributions to the literature. First, it offers a systematic comparison between the provisions in the RP, the EU-Canada Comprehensive Economic and Trade Agreement (CETA) and EU common regulatory framework. GATS builds on an outdated classification of telecommunications which is repeated in the CETA. The RP obliges countries to regulate interconnection, which is also largely repeated in CETA, although regulatory forbearance is permitted. CETA does not offer new market access in telecommunications to either party. Second, the paper investigates empirically whether binding regulation in trade agreements strengthen market openness, measured by imports of telecommunications services, and finds that it does not. The paper concludes that trade agreements may not be suitable for international cooperation on telecommunications regulation. Trade agreements run the risk of making regulation hostage to unrelated trade policy issues while adopting the RP runs a risk of legal obligations to over-regulate telecommunications.

Keywords: Telecommunications, International trade, WTO reference paper, EU, CETA
JEL: F13, F14, L86

1 Introduction

The General Agreement on Trade in Services (GATS) pioneered the introduction of legally binding competition policy provisions in international trade agreements. It includes a Reference Paper, hereafter RP, which spells out principles of pro-competitive regulation as well as the specifics of regulated interconnection. WTO members may include the RP in their GATS commitments and when they do, the RP has status as international treaty. Currently 98 countries have scheduled telecommunications in the GATS of which 80 have included the RP.

The GATS includes two sector-specific annexes, one on financial services and one on telecommunications. Both came into force in 1998, three years after the GATS. The provisions in the Annex on Telecommunications reflect the role of telecommunications as the underlying transport means for other economic activities and includes obligations for all WTO member governments to ensure that foreign services providers have access to and can use local telecommunications.

Beyond general principles of non-discrimination and most favoured nation (MFN) treatment, it is up to each country to decide in which sectors they give foreign services providers market access

and national treatment. The WTO uses a positive list for making such commitments, meaning that only the sectors and activities listed, or scheduled in GATS terminology, are subject to market access and national treatment obligations. Furthermore, the schedule may include reservations and exemptions such that activities on the list may be only partly open to trade.[1] With this architecture, a common understanding of which activities fall under the scheduled sectors is important. To help clarify the scope of commitments, the WTO Secretariat developed a sector classification list, the W120.

Telecommunications have undergone a tremendous transformation since the GATS entered into force. It has developed from a largely state-owned passive network to become the dynamic core of the ICT revolution. Since the turn of the 21st century, mobile subscription rates have increased from 12 to 103 per 100 inhabitants globally, the share of the global population using the internet has increased from 7% to almost half, while the fixed line subscription rate has declined from 16 to 13 per 100 inhabitants.[2] Furthermore, new services have emerged that do not easily fit into the W120 classification.

In spite of the ICT revolution that has unfolded largely after the GATS came into force, the telecommunications chapters in 21st century trade agreements largely adopts the RP. This paper studies the telecommunications chapter in one of them; the EU-Canada Comprehensive Economic and Trade Agreement (CETA) and compares it, first to the RP provisions and second to applied regulations in the two parties. CETA is interesting for several reasons. First, it is closely aligned with the GATS. Second, both parties are staunch supporters of the WTO and have taken several initiatives in recent years to revive the multilateral trading system. Third, EU is among the most and Canada among the least open telecommunications markets in the OECD area. Fourth, EU constitutes a deeply integrated market with a long history of common regulations. Its regulatory framework is dynamic and in contrast to the RP, takes the view that regulation can also be a burden. It is therefore interesting to see how EU has reconciled its approach to regulation on the one hand and its support for the GATS on the other when negotiating the CETA. This paper's first contribution to the literature is a systematic comparison between the provisions in the RP, the CETA and applied regulation in EU and Canada.

The development of the EU framework over time amply shows that effective regulation is context-specific and evolves with technology and market conditions. The very nature of trade agreements, taking a long time to negotiate and investing substantial political capital to reach hard-won compromises, makes a dynamic approach to specific regulation extremely difficult. Arguably, the litmus test of whether it is worth the effort is a robust positive relationship between binding regulation in a trade agreement and market access on the ground. This paper contributes to the literature by investigating empirically if such a relationship exists.

I find no significant relationship between committing the RP and imports of telecommunications. Furthermore, I find no discernible impact of current applied regulation on imports of telecommunications services. I do, however, find a positive correlation between current applied best practice regulation and the number of fixed broadband subscriptions per 100 inhabitants, suggesting that regulatory reforms first and foremost benefit a country's own consumers. Given the political and technical difficulties related to negotiating the specifics of regulation in trade agreements, I conclude that trade agreements should focus on market access and national treatment and possibly regula-

[1] A positive list, where sectors are closed unless they are on the list, differs from a negative list where all sectors and activities which fall under the agreement are open to trade unless included on a list of reservations. Most recent FTAs, including CETA, apply a negative list.

[2] The numbers are from the World Development Indicators and compare 2000 to 2017.

tory principles, while leaving the specifics of international collaboration on regulation to specialized agencies.

The rest of the paper is organized as follows: Section 2 discusses the definition of telecommunications in the GATS and shows a growing discrepancy between the W120, updated statistical definitions of telecommunications and developments on the ground, creating uncertainties about the scope of GATS commitments as well as difficulties in measuring their impact on trade. Section 3 compares the RP provisions to CETA and applied regulation. Section 4 presents trends in international trade in telecommunications, raises some measurement issues and relates trade policy, including the RP, to trade flows using the gravity model. Section 5 summarizes and concludes.

2 Definitions and statistical classification of telecommunications

International statistics distinguish between sectors and products. Sectors are economic activities while products are the outcome of such activities. For goods this distinction is straight forward. For instance, the apparel sector makes products such as dresses, suits, t-shirts etc. and it is the products, not the sector, that are traded. For services, in contrast, it is often impossible to distinguish the activity from the product. Thus, many service suppliers create the product in interaction with the customer. For this reason, the GATS is anchored in a sector classification, the W120. For consistency with goods trade statistics, the WTO Secretariat provided a correspondence between the W120 and the UN Central Product Classification (CPC) 1991 version.

The W120 distinguishes between basic and value added telecommunications services. Table 1 reproduces the W120 entry and the corresponding CPC codes for telecommunications. W120 codes a to g belong to basic telecommunications and h to n represent value added services. Many countries put mobile telephony in sub-sector o and classify it under basic telecommunications. It proved difficult to find a concordance with the CPC as reflected by the * attached to all but two items on the list. For example, CPC category 843 falls fully under computer services in W120, but is nevertheless also recorded under value added telecommunications. This may lead to uncertainty about commitments for countries that have taken different obligations in computer services and value added telecommunications.[3]

Statistical product and sector classification are updated from time to time to capture new products and drop products no longer available. Starting with sector classification, one of the most commonly used is the International Standard Industrial Classification (ISIC). ISIC underwent its fourth major revision in 2008, motivated mainly by the rise of the digital economy. Earlier versions emphasized the transport function of telecommunications and lumped it together with postal services as a subheading under transport and communication services (heading I). ISIC rev 4, however, focused on the digital aspect and introduced a new heading (J) entitled information and communication services. In addition to telecommunications it includes media, audiovisual services and computer services. The new classification makes a clear distinction between creation, processing and storing on the one hand, and transmission of digital content on the other. Telecommunications are confined to transmission. Value added telecommunications in W120, however, contain some processing and storing activities, which are no longer considered telecommunications in modern classification. Turning to product classification, the CPC was last updated in 2015. Consistent

[3]See for instance the Communication from the EC on classification of the Telecom Sector under the WTO-GATS Framework, (The European Communities 2005), Delimatsis (2016) and Peng (2016)

Table 1: W120 2C Telecommunications services

W120 code	sub-sector	CPC code
a	Voice telephone services	7521
b	Packet-switched data transmission services	7523*
c	Circuit-switched data transmission services	7523*
d	Telex services	7523*
e	Telegraph services	7522
f	Facsimile services	7521*+7529*
g	Private leased circuit services	7522*+7523*
h	Electronic mail	7523*
i	Voice mail	7523*
j	On-line information and data base retrieval	7523*
k	Electronic data interchange (EDI)	7523*
l	Enhanced/value-added facsimile services, incl.store and forward, store and retrieve	7523*
m	Code and protocol conversion	n.a
n	On-line information and/or data processing (incl.transaction processing)	843*
o	Other	n.a.

The (*) indicates that the service specified is a component of a more aggregated CPC item.
Source: WTO

with ISIC rev 4, it defines telecommunications (categories 841 and 842) narrowly as transmission of signals. As sector and product classifications are updated while the W120 remains unchanged, a widening discrepancy creates problems both for solving disputes in the WTO and for empirical research on the impact of GATS commitments on production and trade.

Finally, the W120 may strike even the casual observer as outdated relative to current business practices and markets. Telex, telegraph and facsimile are largely found in museums nowadays. Technological advances have led to changes in network design, most importantly the virtualization of networks and software-based networking. This brings new business models and relationships between telecommunications operators, internet services providers (ISP), software providers and other communication services suppliers. New business models are also evident in the retail market where consumers nowadays buy a service bundle consisting of e.g. fixed line and mobile telephony, internet access and TV from the same supplier at a flat monthly rate. Such quadruple play services are not only provided by telecommunications operators, but also ISPs and cable television operators. The bundle consists of products from different CPC categories such that revenue by sector and product cannot be distinguished in the data. Furthermore, the bundles may be one side of two-sided or multi-sided markets where the other side (e.g. advertisers) subsidize the price of the bundle. Conversely, the services bundle may subsidize the price of hardware such as mobile telephones. As a consequence, current WTO law renders different parts of the same, indistinguishable services bundle subject to different market access and national treatment obligations as well as different sets of regulatory obligations.

How does a 21st century agreement between advanced countries like CETA deal with the classification issue? CETA distinguishes between telecommunications transport services and telecom-

munications services. Telecommunications services are defined as "...signals by any electromagnetic means but does not include the economic activity consisting of the provision of content by means of telecommunication". This definition is consistent with the latest statistical classifications. The definition of telecommunications transport services on the other hand, stays close to the GATS, but without anchoring it to any specific nomenclature.[4] The negative list of reservations stays even closer to the GATS, using the CPC 1991 to define which products are exempted from the CETA provisions.[5] Future disputes will show how clearly this architecture sets out commitments and exemptions.

EU regulation does not link telecommunications to any sector classification. The sector features under a broader heading entitled electronic communications services, defined as "a service normally provided for remuneration which consists wholly or mainly in the conveyance of signals on electronic communications networks, including telecommunications services and transmission services in networks used for broadcasting, but exclude services providing, or exercising editorial control over, content transmitted using electronic communications networks and services;..." This definition is functional and evolves with technology and market structure.

Classification matters. For instance, the US Federal Communications Commission (FCC) decided to reclassify broadband internet access services from information service to ISP in 2015 and then reversed the decision in 2018. The reclassification to ISP implied that internet access services became subject to regulatory obligations under Title II of the Communications Act, including ex ante access regulation. The reason given for reclassification back to information services was precisely to bring the services outside the scope of regulation, coining the decision the "Restoring Internet Freedom Order" (FCC 2017). Another example is a recent decision from the European Court of Justice (ECJ). Skype was brought to court in Belgium in 2011 and from there to the ECJ for not complying with a communication services obligation to notify the regulator. In a preliminary ruling from 5 June 2019, ECJ found that SkypeOut, a VoIP service, is a communications service because the user can call a fixed or mobile number covered by a national numbering plan from a terminal via the public switched telephone network. The court ruled that it is therefore a communication service and subject to an obligation to notify the regulator about its activities.[6]

The decision by the ECJ, if it stands and takes precedence in FTAs around the world, may have significant implications for trade and investment. For instance, six EU members (the Czech Republic, Estonia, Luxembourg, Portugal, Slovakia and Slovenia) allow cross-border sales of telecommunications services only if the provider has established a local commercial presence inside EEA.[7]

[4]The definition reads:"..public telecommunications transport service means a telecommunications transport service that a Party requires, explicitly or in effect, to be offered to the public generally that involves the real-time transmission of customer-supplied information between two or more points without any end-to-end change in the form or content of the customer's information. This service may include, among other things, voice telephone services, packet-switched data transmission services, circuit-switched data transmission services, telex services, telegraph services, facsimile services, private leased circuit services and mobile and personal communications services and systems".

[5]Section A of the CETA states: "CPC means the provisional Central Product Classification as set out in Statistical Office of the United Nations, Statistical Papers, Series M, No 77, CPC prov, 1991"

[6]Also the French government has required that Skype register as a telecommunications operator since 2007.

[7]Other countries that require commercial presences are all the BRICS, Chile, Korea, Indonesia, Malaysia, Mexico and Turkey. Source: OECD STRI.

3 Telecommunications regulations: GATS, CETA, EU and applied regimes

The GATS Annex on Basic Telecommunications and the RP were among the first enforceable competition rules in trade agreements. A number of FTAs have subsequently introduced telecommunications chapters that build on, extend and adapt the provisions in the Annex and the RP to current market structures and technology. In the following I compare the RP to the telecommunications chapter (15) in CETA and to the regulatory framework for telecommunications in the EU.

3.1 The GATS Annex and Reference Paper versus CETA

The WTO Annex on Basic Telecommunications obliges WTO members, whether or not they have scheduled telecommunications, to ensure that all service suppliers are accorded access to and use of public basic telecommunications on reasonable and non-discriminatory terms. This right applies to all services suppliers that wish to use telecommunications networks for transmitting services to their customers (Drake and Noam 1997). The RP in contrast, has legal force only in countries that have included it in their schedule of commitments. CETA's architecture relies on general as well as sector-specific principles and obligations that apply to all participants, combined with a list of reservations.

The literature on regulation in telecommunications distinguishes between access and interconnection, although the terms are sometimes used interchangeably. When a distinction is made, interconnection means that two networks that operate at the same level of network hierarchy are linked, while access means that networks operating at different hierarchical levels connect and one network uses the other to originate or terminate signals (Vogelsang 2003).

In the GATS, the Annex uses the term access while the RP uses the term interconnection, but neither offer a definition. If the aforementioned distinction applies, it appears that all WTO members must ensure access, but only the countries that have scheduled the RP are legally required to impose interconnection obligations on SMPs. The RP does not say whether or not interconnection obligations should be imposed in the form of asymmetric regulation. However, given that the provision squarely relates to SMPs, it appears that negotiators had asymmetric, ex ante regulation in mind. Below we compare the telecommunications chapter in CETA to the GATS.

1. *Scope*

   - The GATS Annex obliges all WTO members to ensure access to and use of basic telecommunications; GATS schedules cover market access and national treatment obligations for WTO members that have chosen to schedule telecommunications, while the RP covers competition safeguards and SMP regulation for WTO members that have scheduled the RP. CETA covers market access, national treatment and regulation for both parties.
   - Both agreements specifically exclude transmission and distribution of radio or television programming.
   - CETA covers number portability, while GATS is silent on this issue.

2. *Definitions and concepts*

- Both the GATS Annex and CETA distinguishes between telecommunications transport networks and telecommunications network services.
- CETA stays close to the GATS definition of public telecommunications transport service. It refers to the items under W120 basic telecommunications as examples, while the W120 is an exhaustive list.
- The GATS and CETA define users, essential facilities, and major suppliers in a similar manner.
- The term access is used in both agreements, but neither defines it. The GATS uses the term only in the Annex under access and use of public telecommunications. CETA applies the term under access and use obligations, but also in relation to SMP regulation.

3. *Provisions*

- Both agreements include competitive safeguards that oblige the regulator to introduce measures that prevent SMPs from engaging in anti-competitive practices. Cross-subsidization, using information obtained from competitors strategically and withholding technical information are specifically mentioned. The language is similar (Article 15.4 in CETA and section 1 in the RP).
- In both agreements the regulator must require that SMPs, upon request, offer interconnection at any technically feasible point in the network at cost-oriented rates and otherwise non-discriminatory conditions. Interconnection negotiation procedures must be transparent and publicly available, and so must the interconnection agreements or, alternatively, a reference agreement.
- Both agreements require that an independent dispute settlement body must be in place.
- The RP requires that licensing criteria must be publicly available and the reason for denial of a license must be made known to the applicant upon request. CETA requires that simple notification, not licensing, be used to authorize the supply of telecommunications services.
- Both agreements require an independent regulator to be established and be adequately resourced.
- In both agreements allocation of scarce resources such as spectrum, numbers and rights of way must be non-discriminatory, objective, timely and transparent.
- CETA has provisions for regulatory forbearance when effective competition has been established, but does not mandate deregulation when markets are competitive. The GATS has no provisions for regulatory forbearance or deregulation, although interconnection regulation explicitly applies to SMPs.[8]

The obligation to establish an independent regulator in the RP was path-breaking. At the time incumbent state-owned operators had regulatory powers in many countries. In the RP, independence meant independence from any telecommunications operators. CETA defines independence in a

[8]The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) takes a similar approach to regulatory forbearance as CETA. The former has more details about regulation and also includes a best endeavour clause on mobile roaming. The telecommunications chapter in EU's trade agreement with Japan has similar provisions as the CPTPP.

similar manner, and reflects closely the Canadian approach. The International Telecommunication Union (ITU), however, takes independence one step further and recommends that the regulator should also be independent from the government in its day to day operations within its mandate (Intven and Tetrault 2000). EU's position is close to the ITU.

3.2 The EU regulatory framework

The EU common regulatory framework for electronic communication services was introduced by the Framework Directive of 2002.[9] The objective of regulation is to foster competition, which means lowering the barriers to entry and preventing SMPs from abusing their market power. The ultimate objective is to establish end-to-end facilities based competition. The fundamental principle of EU regulation rests on ex ante asymmetric regulation, which is rolled back and replaced by ex post competition policy remedies when no longer needed.

Asymmetric regulation distinguishes between general provisions that apply to all firms operating in the market and specific obligations imposed on SMPs. These are identified through a prescribed process that involves both the Commission and national regulators. The first step is the Commission's market analysis. If the analysis reveals competition issues at the retail level that cannot be remedied by enforcement of general competition policy measures, the market may be susceptible to SMPs. The next step is to identify the related wholesale markets and determine whether an incumbent controls an essential facility. If so, regulation should target the least replicable network elements. If this is not sufficient to prevent abuse of market power, the second to least replicable network element should also be regulated, and so on. The outcome of the analysis is a set of recommendations, the so-called SMP Guidelines.

The 2003 SMP Guidelines included 18 markets susceptible to significant market power. Recognizing the dynamics of the telecommunications sector, the Commission completed a new market analysis in 2007. It concluded that ex ante regulation was no longer needed at the retail level and reduced the number of markets susceptible to SMPs to seven. The third and most recent analysis followed in the early 2010s, prompted by technology leaps. Examples are the roll-out of Long Term Evolution (LTE), which refers to high-speed wireless communications; the upgrading of cable infrastructure and deployment of fibre; new over the top (OTT) services; and the transition from public switched telephone networks to IP-based systems, including VoIP, and new access products such as virtual unbundled local access (VULA).[10] The outcome was a further reduction of the number of markets susceptible to SMPs, bringing the number down to four.

Regulation is implemented and enforced at the national level. National regulators prepare periodical analyses of the markets recommended in the SMP Guidelines using a three-criteria test for whether or not there is a need for ex ante regulation. These are: i) the presence of high and non-transitory barriers to entry, ii) the market structure does not tend towards effective competition within the relevant time horizon, and iii) competition law alone is not sufficient to adequately address the identified market failure. To correct for market imperfections, the national regulator imposes specific obligations on the SMPs identified through the analysis, if any. Finally, the Body

[9] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive). It applies to the European Economic Area, EEA, which comprises the European Union, Iceland, Lichtenstein and Norway. See Cave, Genakos, and Valletti (2019) and Rajabiun and Middleton (2015) for a comprehensive discussion.

[10] The Commission does not consider OTT services as alternatives to telecommunications services for the moment, but recognizes that this may change in the not so distant future. This, and the proliferation of 5G mobile networks will probably require an update of the SMP Guidelines.

of European Regulators for Electronic Communications (BEREC) reviews the decisions by the national regulator.

The regulatory measures recommended for SMPs feature a package of access and interconnection obligations at non-discriminatory, cost-oriented terms and conditions as well as transparency obligations. A publicly available reference offer should spell out these conditions so that entrants and competitors can observe market conditions.[11] In addition, cost accounting and accounting separation are typically required so that the regulator can monitor the market and enforce regulation.

3.3 Applied regulation

Countries rarely offer new market access in trade agreements, particularly in services. Rather, they commit not to raise trade barriers in the future (Miroudot and Pertel 2015). Countries also liberalize and reform unilaterally. Therefore,trade agreements usually do not reflect applied trade policy. To study applied regulation, one needs to consult the laws and regulations in force at the national level. The OECD Services Trade Restrictiveness Indices (STRI) and database contain comparable qualitative information on regulation, which is scored and weighted to create indices of services trade restrictiveness.[12] The STRI indices take values between zero and one, where a higher score indicates more restrictions and one represents a completely closed sector. The measures are organized under five policy areas as indicated in Figure 1. Barriers to entry cover market access restrictions such as foreign equity caps, investment screening or data localization requirements. Restrictions on movement of people usually apply to business travel and temporary entry of e.g. intra-corporate transferees irrespective of which sector the visitor calls on. Other discriminatory measures relate closely to national treatment for instance as far as regulated termination rates are concerned. The policy area entitled barriers to competition captures access and interconnection obligations in addition to information on state ownership. Finally, regulatory transparency captures administrative procedures related to obtaining a license, permission or visa, and public consultations during the legislation and regulatory process. Figure 1 reports the scores for the 45 countries in 2018.[13]

The figure shows significant variation across countries. EU members score at the low end while Canada has a much more restrictive trade policy and ranks close to the top. The figure also reveals that trade policy restrictions are concentrated under barriers to entry and barriers to competition, where the latter accounts for about 40% of the overall restrictiveness.

Most countries consider telecommunications a strategic sector and some restrict foreign entry to ensure national control. Among the 45 countries included, six still have foreign equity limitations. Among these is Canada with a 20% direct foreign equity cap.[14] In addition, Canada screens foreign investment and requires that investors show that they generate net economic benefits. No EU member has foreign equity limitations. Investment screening in different shapes and forms is, however, in place in 14 EU countries, and from April 2019 there is an EU-wide screening policy. It is less onerous than the Canadian regime and does not involve an economic needs test. Canada also requires that the majority of the board of directors in telecommunications operators are Canadian

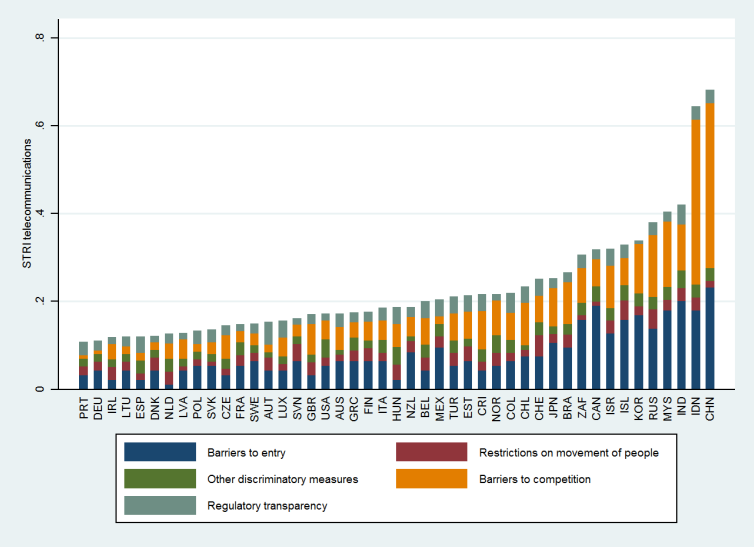
[11] Price regulation typically means a cap on wholesale access prices equal to the long-run incremental cost (LRIC).

[12] The STRI database contains annual information on telecommunications trade policy and regulation for 45 countries from 2014 onward. It records applied policies from domestic laws and regulations currently in force, including SMP decisions by national regulators.

[13] The country codes reported on the horizontal axis are the ISO3 codes.

[14] In addition 33% indirect ownership e.g. through local investment funds is permitted. The other five countries with foreign equity limits are China, Indonesia, Israel, Korea and Malaysia

Figure 1: STRI score on telecommunications, 2018



Source: OECD

nationals, a requirement that it shares with only three other countries (India, Israel and Japan).[15]

Telecommunications used to be government-owned monopolies in most countries. Today, the government controls one or more of the largest telecommunications operators in 20 of the 45 countries included in the STRI database, of which seven EU countries (Belgium, Italy, Latvia, Lithuania, Luxembourg, Slovenia and Sweden). Control is exercised either through majority ownership, a blocking minority ownership, or special voting rights, i.e. a so-called golden share. Since government ownership per see is not considered a market access issue in the WTO, it is recorded under barriers to competition in the STRI.

As noted, mandating independent regulators was one of the most important contributions to fostering telecommunications reforms in the RP. Fifteen countries in the STRI database do not have an independent regulator, among them Canada and two EU countries (Belgium and Ireland). Note that the definition of independence in the STRI is close to the ITU and requires that the regulator is independent from any operator, has a mandate to enforce regulation on SMPs, and cannot be instructed or overruled by the ministry in its day to day operations within its mandate.

Modern FTAs includes best endeavour clauses on non-discriminatory roaming rates. However, roaming is not mentioned in the CETA and no countries in the STRI database has imposed caps on roaming rates on an MFN basis, although the EU has eliminated roaming rates for the internal market.[16]

SMP regulation corresponding to the provisions in the GATS Annex and RP as well as the

[15]The STRI has threshold of at least one, and a majority of board members must be nationals. Canada requires that 80% must be Canadian nationals.

[16]For comparison, the CPTPP as well as the trade agreement between EU and Japan have a best endeavour clause on roaming.

telecommunications chapters in FTAs are recorded under barriers to competition in the STRI.[17] Regulation in this area is mostly non-discriminatory and applies equally to local and foreign operators. An important exception is regulated termination rates of voice and data traffic. As many as 10 countries included in the STRI database, among them four EU countries (the Czech Republic, Germany, Hungary and the Netherlands), allow operators to discriminate between local and foreign operators when it comes to termination charges. A few countries even have higher regulated wholesale prices for foreign suppliers, i.e. for terminating international calls. Others limit the scope of regulation to access and interconnection between domestic operators. In such cases local SMPs are free to charge higher rates for international calls and cross-border data traffic.

According to a ruling by the WTO dispute settlement body, discriminatory termination rates is in breach of the RP. The US brought a case against Mexico in which one of the complaints was that Mexico failed to ensure that its major telecommunications operator provided interconnection of US cross-border suppliers on non-discriminatory terms and conditions at cost-oriented rates. The dispute settlement body ruled in favor of the US on this point.[18] CETA has similar language as the RP on interconnection, so it seems likely that the four EU countries must offer Canadian operators non-discriminatory termination rates.

Comparing EU and Canada's applied regulations to their GATS and CETA commitments shows to what extent CETA offers real market access and national treatment beyond what is already committed in the GATS or has been unilaterally liberalized after the GATS came into force. Both EU and Canada have included the RP in their GATS commitments. EU has fully committed telecommunications in the GATS, while Canada has fully committed only value added services.[19] Even for these, horizontal restrictions such as economic needs tests for foreign investment apply. For basic telecommunications, reservations in the GATS as well as CETA corresponds to Canada's laws and regulation currently in force. Canada has, however, scheduled a requirement to promote the use of Canadian facilities for transmission of signals in its GATS schedule. This is not repeated in CETA or applied regulation. Thus, CETA does not offer significant new market access for telecommunications for either party. Canada's market is pretty much closed also to EU operators, while EU it is pretty much open on an MFN basis.

3.4 Regulation and performance

At home, regulation aims at competitively priced state-of the art telecommunications services, while the reason for including regulation in trade agreements is to prevent SMPs from undermining market access and national treatment commitments. A key question for policy makers is whether regulation actually works as intended. Does regulation improve access to services at home, and does trading partners' legal obligations to regulate SMPs improve access to their market? And is

[17]The STRI scoring system captures the logic of modern asymmetric regulation. First, a set of complementary obligations is needed to prevent SMPs from abusing their market power. These are access or interconnection obligations, regulated wholesale access price and conditions, as well as transparency obligations. The STRI scoring methodology captures this by giving countries a clean score only if the whole package of regulation is in place in the event of SMP. Second, intrusive regulation is scored as a trade restriction in the absence of SMPs. The STRI scoring methodology uses the presence of an SMP as a switch that makes lack of regulation a barrier to competition in the presence of an SMP, but not in its absence(Grosso et al. 2015).

[18]See Panel Report, Mexico – Measures Affecting Telecommunications Services, WT/DS204/R, adopted 1 June 2004. See also Fox (2006). Note that discriminatory regulated termination rates are captured in the other discriminatory measures category in the STRI.

[19]In the EU GATS schedule Malta and Cyprus have reservations on cross-border supply, while Finland, France, Poland and Slovenia have limitation on foreign ownership from non-EU entities.

there a long-term effect on own competitiveness from open the market and committing to regulate SMPs? A large literature documents the benefit of regulation on prices and access to services, but also disincentives to invest and innovate in cases of too much regulation, suggesting a trade-off between static and dynamic efficiency.[20] A simple test of the first and last question is whether best practice regulation is associated with higher fixed broadband density. This is a readily available indicator from the World Development Indicators that cover most countries in the world. I regress this indicator on the GATS commitments in telecommunications as well as the applied measures recorded in the STRI. Since broadband demand is also strongly affected by the level of income, I control for GDP per capita. The results are reported in Table 2.

Table 2: Correlation between regulation and broadband density

Variables	(1)	(2)	(3)	(4)
ln GDP per capita	1.419***	1.411***	0.255***	0.231***
	(53.80)	(8.99)	(7.32)	(51.34)
RP	0.825***			
	(9.91)			
GATS		0.935***		
		(8.95)		
STRI MA			0.312	
			(0.80)	
STRI BC				-0.871*
				(-2.15)
R square	0.691	0.688	0.406	0.423
N	1916	1916	127	127

Robust regressions where ***, ** and * signify statistical significance at a 1, 5 and 10 percent level respectively. STRIs are available for 45 countries for the period 2014 to 2018, while information on GATS commitments is available for all countries, but does not change over time once commitments have been made. Variation over time on the commitments to RP stems from new members of the WTO. Regressions (1)-(3) are run on data covering the period 2000-2017.

Best practice regulation as captured by the STRI is indeed associated with higher broadband density (column (4)). Having committed the sector in the GATS also appears to have a long-term effect on broadband density, while adding the RP does not seem to further improve performance. The sample for which the STRI is available includes 45 mostly rich OECD counties during the period 2104-2017, which explains the much smaller number of observations, smaller coefficient on GDP per capita as well as the lower level of significance on the policy variable.

To summarize this section, the EU regulatory framework amply illustrates how complex and context specific effective regulation is. Given its scope, size and resources, the WTO is unlikely to develop the capacity to design, monitor and adjust modern pro-competitive telecommunications regulatory framework. Pro-competitive regulation is associated with higher broadband density, which is a development priority in most countries. However, it does not appear to make a difference whether such regulation is committed in the GATS or not. To justify the herculean task of adopting the specifics of regulation in a trade agreement, one needs to show that it actually improves market

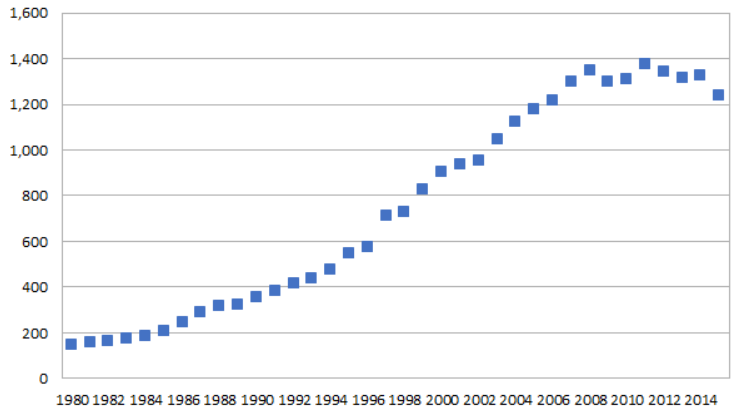
[20]See for instance Vogelsang (2017) or Cambini and Jiang (2009) for recent contributions.

access. We turn to this question in the next section, where we use imports as a measure of market access.

4 Trade and regulation

As noted in section 2, telecommunications are defined as the transmission of signals over electronic networks. An indication of real growth in the sector would therefore be the evolution of the volume of electronic transmissions over time. Statistical agencies do not systematically collect data on electronic signals, but a number of consultancy reports suggest that the volume of data flows increases at an accelerating pace. McKinsey for instance, reports that the volume of international data flows increased by a factor of 45 between 2005 and 2016Lund et al. (2019). Furthermore, Cisco systems predicts that IP traffic will grow by 26% annually during the period 2017-2022 (Cisco 2019). Growth in the volume of signals transmitted is not reflected in the revenues of telecommunications companies, however. To the contrary, as indicated in Figure 2, telecommunications revenue peaked around 2010 in the OECD area.

Figure 2: Total revenue, telecommunications in OECD countries, USD bill

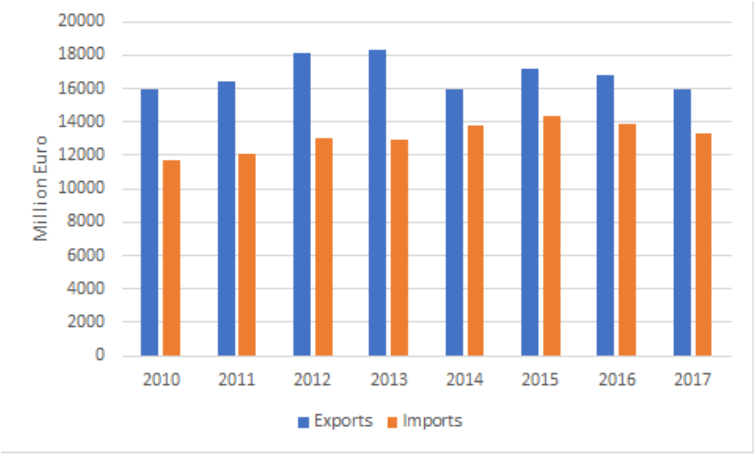


Source: OECD

Declining revenues reflect both a change in the allocation of income between telecommunications operators and other firms in the communications value chain and plummeting prices. For instance, the US Bureau of Labour Statistics (BLS) reports that the price of wireless telecommunications has more than halved between 1997 and 2019 in the US, while the price of internet services has declined by more than a quarter during the same period. The price of fixed landline telephone services in contrast, increased by 20% during the same period.

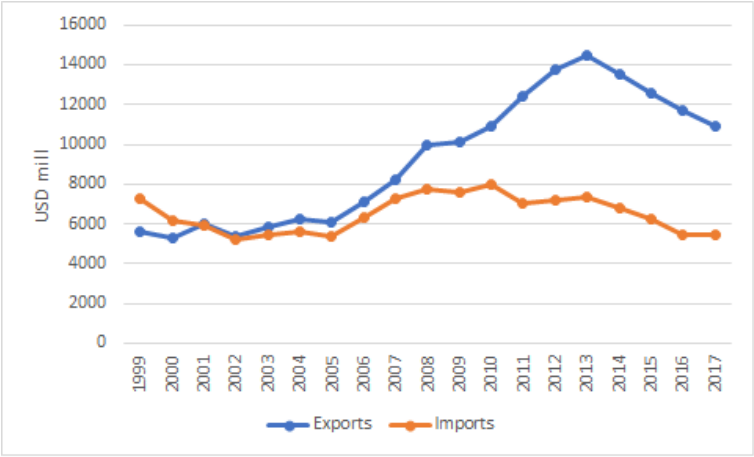
In he past, international transactions in telecommunications were governed by bilateral agreements between countries, often by state-owned telecommunications monopolies. In addition, the ITU managed international transactions through a clearing system based on international accounting rates that involved a subsidy to developing countries with a significant imbalance between incoming and outgoing calls (Frieden 1990; Thuswaldner 2000).

Figure 3: EU trade in telecommunications services, Euro mill



Source: Eurostat

Figure 4: US trade in telecommunications services, USD mill



Source: BEA

Nowadays, telecommunications operators and ISPs in developed countries often engage in peering, or so-called bill and keep contracts, which are settlement-free. In such cases, there are no financial transactions related to the wholesale flow of data and voice over telecommunications networks (Clark, Lehr, and Bauer 2016). International trade is defined as a transaction between a resident and a non-resident. Although it is not explicitly stated that the transaction has to be in financial terms, in practice trade statistics follow the money. Making consistent estimates of trade flows in the face of a plethora of contract types where transmission of signals and financial transactions are related in different ways is a challenge. We cannot take for granted that this is

done consistently across countries and thus that trade statistics is comparable over time and across countries. Among the major markets, the US and EU publish detailed data on trade in telecommunications services. We can see from Figures 3 and 4 that both recorded a peak in trade values around 2012-14. We also observe that both the EU and the US run a trade surplus in telecommunications, which has narrowed over time in the EU, but widened in the US.

Ideally, to analyze the impact of trade restrictions and regulation on trade one should have information on trade in the same products as those subject to regulation. Section 2 demonstrated that matching regulation to products is not possible and in this section we have seen that we can not even be sure that trade statistics is consistent over time and across countries. Econometric analysis of the relationship between trade barriers, regulation and trade should therefore be seen as indicative.

4.1 Empirical strategy

This section investigates empirically first, whether scheduling the RP has contributed to higher import penetration over and above those generated from market access and national treatment obligations. Second, it investigates to what extent openness and best practice regulation as captured in the STRI stimulates trade in telecommunications services. For this, I use the gravity model, which is the workhorse tool for analysing the relationship between trade costs and trade flows (Head and Mayer 2014). The structural gravity equation system is given by three equations in three unknowns:

$$X_{ij} = \frac{Y_i E_j}{Y} \left(\frac{t_{ij}}{\Pi_i P_j} \right)^{(1-\sigma)} \tag{1}$$

$$\Pi_i^{1-\sigma} = \sum_j \left(\frac{t_{ij}}{P_j} \right)^{1-\sigma} \frac{E_j}{Y} \tag{2}$$

$$P_j^{1-\sigma} = \sum_i \left(\frac{t_{ij}}{\Pi_i} \right)^{1-\sigma} \frac{Y_i}{Y} \tag{3}$$

The first equation expresses the relation between a product X shipped from origin i to destination j as a function of the total shipments from i, (Y_i), total expenditure in destination j, (X_j) and bilateral trade costs between origin and destination relative to price indices that reflect the average trade resistance facing all exporters and importers respectively. The price indices are defined in equations (2) and (3) and represent the expenditure-weighted and shipment-weighted, respectively, average of bilateral trade costs relative to the aggregate price indices. Intuitively the equation system captures the fact that bilateral trade depends not only on the characteristics of the two trading partners, but also third countries with which they trade, or could have traded. We derive the regression equation from equation (1) as follows:[21]

$$X_{ij,t} = exp[A_t + \alpha_1 lnY_{i,t} + \alpha_2 lnE_{j,t} + \alpha_3 lnt_{ij,t} + \alpha_4(l-\sigma)lnP_{j,t} + \alpha_5(l-\sigma)ln\Pi_{j,t} + \varepsilon_{ij,t}] \tag{4}$$

The parameter of interest in this study is α_3. The trade costs captured by t_{ij} consist of costs

[21] The gravity regression is specified this way, first taking logs of both sides and then anti-log to allow the inclusion of zero trade flows in the regression using Poisson Pseudo Maximum Likelihood estimator.

related to bilateral geographical, institutional and cultural distance as well as policy induced trade costs such as trade restrictions and regulation. The geographic, institutional and cultural distances are routinely captured by geographic distance between countries i and j, and dummies for common language and common land border to mention the most important. Policy-induced trade costs are partly bilateral and partly MFN-based.

Identifying the impact of the policy-induced trade costs such as those scheduled in the GATS and behind the border domestic regulation is technically difficult since they are often non-discriminatory across trading partners and sometimes also apply to domestic firms. Therefore, there may be unobserved confounding variables correlated with the regulation of interest that influence the results. The literature offers several ways of solving this identification problem. One common method is to use a set of fixed effects that captures confounding unobserved variables. For instance, time varying country-specific regulation can be isolated by introducing country fixed effects that capture all time-invariant unobserved confounding variables.[22]

As discussed in previous sections, there are a number of limitations related to empirical estimates of the impact of policy measures on trade flows in telecommunications. These include measurement errors as telecommunications trade data suffer from inconsistencies across countries.[23] In addition, regulated services activities do not perfectly match sector and product classification in trade and output data. The objective of the empirical analysis in this case is not so much to quantify a causal relationship between trade agreements and trade flows, but rather to establish whether or not there is such a relationship. In the following, I present a set of regressions that together offer solid evidence on a weak, or non-existing relationship between committing regulation in trade agreements and imports of telecommunications services. But first, a few words on the data.

4.2 Data

Data on bilateral trade in telecommunications services are from the OECD. The database covering the period 1995 to 2012 applies the EBOPS 2002 classification which lumps telecommunications together with postal and courier services into communications services (S245).[24] Data from 2014 reporting trade in telecommunications and courier services separately for some countries, suggest that telecommunications account for about three quarters of the aggregate. Another problem is that OECD trade data in EBOPS 2002 is partly created by filling gaps using various statistical techniques including predictions from the gravity model (Fortanier et al. 2017). This may bias the regression results.

Trade data using EBOPS 2010 covers telecommunications separately. However, only 23 countries report trade in telecommunications by trading partner, and even for these there are a lot of gaps. In fact, only Russia provides a full set of trade data by partner country in this sector. An option to extend the sample is to use total communications services. However, while telecommunications services account for a large share of communications services in EBOPS 2002, it accounts for a much smaller share of communications services in EBOPS 2010. This classification aggregates telecommunications, computer and information services. On average telecommunications account for 38% of trade in communication services in the EBOPS 2010 for the countries that report both

[22] When the regression analysis aims at establishing causal effects, identification is of critical importance. Instrument variables are one solution to this, but good instruments can be hard to find.

[23] Country fixed effects pick up systematic differences across countries in the way trade statistics is compiled, which is an issue for telecommunications as discussed in section 2.

[24] The Extended Balance of Payment Statistics, EBOPS, is a product classification system which can be perfectly matched to the CPC.

levels of aggregation. Furthermore, only four additional countries have information on trade in communications services, so the gains in coverage are small compared to the loss of precision from using aggregate communication services.

Information on geographic, cultural and institutional distance as well as FTAs is taken from CEPII's gravity database. Information on GDP and GDP per capita is from the World Development Indicators from the World Bank, and information on GATS commitments are from Roy (2019).[25] I follow Hoekman (1995) in creating indices from the GATS commitments by country, sub-sector and mode of supply. A full commitment is scored unity, a commitment with reservations 0.5, and no commitments or "unbound" is scored zero. A country's total score is the simple average of the sub-sector scores.[26] The GATS variable is zero for the years before a country's GATS schedule entered into force, and positive and constant for subsequent years. Finally, information on applied regulation is from the OECD STRI database. Note that that STRI indices increase with the level of trade restrictiveness while the GATS scores increase with the level of commitments. We should therefore expect opposite signs on the coefficient of the GATS and the STRI in the regressions.

4.3 Results

4.3.1 Communications services, 1998-2012

We first run the regressions for trade in communications services (EBOPS 245) for the period 1998-2012 for all countries for which trade data are available in the OECD database. A challenge is to distinguish between the impact of market access and national treatment and the RP. All countries that have committed the RP also have market access and national treatment commitments, while the opposite is not true. Furthermore, some countries with very limited commitments on market access and national treatment have included the RP in their schedule. A first attempt to identify the effect of adding the RP is to run the regressions separately for market access and national treatment and the RP. One would expect that if the RP eases access for foreign suppliers, the coefficient on the RP would be larger than the coefficient for market access and national treatment. As the results reported in Table 3 show, this is not the case.[27]

Bearing in mind the caveats about data, some interesting patterns emerge. The first regression focuses on the trade creating effect of EU membership. It captures all aspects of EU membership that may affect trade in communications services, not only the common regulatory framework for telecommunications. The coefficient suggest that EU countries trade about 20% more with each other than non-EU country pairs, all else equal. The second column focuses on the impact of scheduling basic telecommunications in the GATS. As expected, it is positively associated with imports of communications services. The coefficient suggest that countries that have fully committed basic telecommunications import about 50% more communications services than countries with no commitments.

[25] The author is grateful to Martin Roy from the WTO Secretariat for sharing the underlying data on commitments in the GATS telecommunications sector by sub-sector, mode and country.

[26] Movement of people, or mode 4, is not included in the index used here, since trade in telecommunications is defined as the transmission of electronic signals, and movement of people are presumably not essential for such trade. Furthermore, almost all countries have reservations on mode 4 that apply equally to all sectors.

[27] A second approach is to introduce an interaction term between market access/national treatment and the RP, which would capture the possibility that market access is more effective when the RP is also committed. However, the correlation between the RP and market access/national treatment indices is so high that the interaction term drops off due to collinearity when added to the individual GATS and RP indicators.

Table 3: Gravity regressions, imports of communications services

Variables	(1)	(2)	(3)	(4)	(5)
ln distance	-0.641***	-0.647***	-0.645***	-0.645***	0.646***
	(-22.05)	(-22.11)	(-22.12)	(-22.15)	(-0.204)
Contiguous	0.196*	0.194*	0.195*	0.194*	0.194*
	(2.23)	(2.21)	(2.22)	(2.21)	2.21
Common language	0.408***	0.404***	0.405***	0.405***	0.404***
	(5.33)	(5.27)	(5.28)	(5.28)	(5.27)
Both EU	0.212*	0.175*	0.183*	0.176*	0.176*
	(2.56)	(2.03)	(2.14)	(2.02)	(2.01)
Importer GATS		0.414***			-0.109
		(6.70)			(-0.38)
Exporter GATS		0.138			0.516*
		(1.91)			(2.53)
Importer RP			0.369***	0.290***	0.461
			(6.70)	(4.03)	(-0.38)
Exporter RP			0.076	-0.007	-0.324*
			(1.34)	(-0.09)	(-2.13)
Both RP				0.104	
				(1.47)	
Pseudo R square	0.886	0.887	0.887	0.887	0.887
N	460990	460990	460990	460990	460990

PPML regressions with country and year fixed effects. Standard errors clustered on country pairs are reported in parentheses. ***, ** and * signify statistical significance at a 1, 5 and 10 percent level respectively. All variables except distance are indicator variables or indices and are not logged.

Columns (3) and (4) introduce the RP. Since they are highly correlated with market access and national treatment in the GATS, I drop importer and exporter GATS in these regressions. The coefficients on the RP would be larger than the coefficients on the GATS variables if there was an additional market opening effect of the RP. We observe that this is not the case. Column (4) adds a dummy variable that is unity if both countries in a trading pair have committed the RP and zero otherwise. It captures to what extent coordinated commitments to regulation amongst trading partners have an impact. If so, there would be an additional case for including pro-competitive regulation in trade agreements. The coefficient is, however not significant. Finally, column (5) reports the result when both the RP and GATS commitments in basic telecommunications are included. This confirms that the indicators are too closely related to assess their separate impact in the same regression.

The policy variables of interest reported in Table 3 are country-specific and do not vary a lot over time. There is therefore a danger that part of the impact is picked up by the country fixed effects as defined by the price indices in equations (2) and (3). As a robustness check, I run an alternative specification of the gravity model corresponding to the regression equation (4), where GDP and GDP per capita represent $Y_{i,t}$ and $E_{j,t}$ for the exporter and importer respectively, while a time trend represents the price indices. With this specification, I control for all unobserved time-

invariant country-pair variables that may have an impact on bilateral trade in communications services.[28] The results are reported in Table 4.

Table 4: Gravity regressions, imports of communications services, pair fixed effects

Variables	(1)	(2)	(3)
Ln importer GDP	0.956***	0.956***	0.956***
	(6.82)	(6.82)	(6.82)
Ln exporter GDP	0.438*	0.428*	0.427*
	(2.18)	(2.15)	(2.14)
Ln importer GDP per capita	-0.453**	-0.457**	-0.457**
	(-3.15)	(-3.18)	(-3.18)
Ln exporter GDP per capita	-0.171	-0.151	-0.51
	(2.18)	(2.15)	(2.14)
Both EU	0.344***	0.364***	0.369***
	(5.34)	(5.73)	(5.76)
Importer GATS	0.121*		
	(2.22)		
Exporter GATS	-0.078		
	(-1.24)		
Importer RP		0.100*	0.134*
		(2.06)	(1.98)
Exporter RP		-0.117*	-0.081
		(-2.25)	(-1.29)
Both RP			-0.045
			(-0.64)
Time trend	0.043***	0.043***	0.043***
	(7.25)	(7.25)	(7.24)
Chi square	3244	3161	3320
N	431404	431404	431404

PPML panel regressions with country pair fixed effects. Robust standard errors clustered on country pairs are reported in parentheses. ***, ** and * signify statistical significance at a 1, 5 and 10 percent level respectively.

They are qualitatively the same as those reported in Table 3. Scheduling the RP in the GATS does not seem to affect imports of communications services over and above the impact of committing market access and national treatment.

4.3.2 Telecommunications services 2013-2017

This section presents the results for telecommunications as defined in EBOPS 2010, and the impact of applied regulation on trade flows as captured by the STRI indices. The regressions are first run with the composite STRI for telecommunications.

[28] Ideally, one could identify the impact of country-specific trade related policy variables by including domestic trade. However, few countries have information on domestic sales in communication services.

Table 5: Gravity regressions, exports of telecoms services, STRI and RP

Variables	(1)	(2)	(3)	(4)
Ln distance	-0.703***	-0.656***	-0.706***	-0.659***
	(-5.34)	(-5.87)	(-5.46)	(-6.00)
Common language	0.481**	0.461**	0.484**	0.464**
	(2.62)	(2.84)	(2.66)	(2.89)
Contiguous	0.080	0.071	0.079	0.073
	(0.39)	(0.36)	(0.38)	(0.36)
Both EU	0.481	0.498	0.470	0.525*
	(1.70)	(1.95)	(1.68)	(1.98)
Importer STRI	-1.229*	-0.893	-1.339*	-1.038
	(-2.01)	(-1.85)	(-2.34)	(-1.93)
Exporter STRI	-1.272	0.183	0.597	2.011
	(-0.83)	(0.12)	(0.39)	(1.27)
Heterogeneous STRI		-5.688***		-5.559***
		(-4.27)		(-4.32)
Importer RP			-0.038	0.093
			(-0.41)	(0.88)
Exporter RP			0.352***	0.421**
			(3.60)	(2.64)
Both RP				-0.193
				(-1.22)
Pseudo R square	0.822	0.830	0.823	0.831
N	2715	2715	2715	2715

PPML regressions with country and year fixed effects. Robust standard errors clustered on country pairs are reported in parentheses. ***, ** and * signify statistical significance at a 1, 5 and 10 percent level respectively. All variables except distance are indicator variables or indices and are not logged.

We first note that the trade creating impact of EU membership is not precisely estimated in this sample, possibly because 19 out of the 23 reporting countries are EU members. Second, we observe that a high score on the STRI has a relatively large negative impact on both exports and imports of telecommunications. I also added regulatory heterogeneity which is an index that records the share of measures in the STRI for which a country pair has the same regulation. It has a large and statistically highly significant impact on trade, suggesting that harmonization of regulation could boost trade in telecommunications. Finally, we observe that having committed the RP have a significant and positive impact on *exports* of telecommunications services. A possible explanation is that early adoption of pro-competitive regulation improves competitiveness of the telecommunications sector in the long run. As noted in section 3, the channel through which this works could be more investment in the network and thus a higher network density.

Table 6 presents the results of splitting the STRI into policy areas. The fist two columns introduce market access (MA) and barriers to competition (BC) separately while column three reports the result of including both policy areas in the same regression. Restrictions on market access have a large negative impact on imports as well as exports. Importantly, the results show

Table 6: Gravity regressions, exports of telecoms services, STRI by policy area and RP

Variables	(1)	(2)	(3)	(4)	(5)
Ln distance	-0.703***	-0.703***	-0.703***	-0.707***	-0.706***
	(-5.33)	(-5.33)	(-5.33)	(-5.45)	(-5.45)
Common language	0.480**	0.480**	0.480**	0.483**	0.483**
	(2.61)	(2.61)	(2.61)	(2.65)	(2.65)
Contiguous	0.080	0.080	0.080	0.079	0.079
	(0.39)	(0.39)	(0.39)	(0.38)	(0.38)
Both EU	0.481	0.482	0.481	0.470	0.472
	(1.69)	(1.70)	(1.69)	(1.68)	(1.68)
Importer MA	-3.483*		-4.075	-3.946**	
	(-2.30)		(-1.33)	(-2.71)	
Exporter MA	-5.165*		-4.577*	-3.270	
	(-2.45)		(-1.99)	(-1.44)	
Importer BC		-0.734	0.461		-0.910
		(-1.09)	(0.32)		(-1.24)
Exporter BC		2.268	1.079		1.349
		(1.23)	(0.58)		(0.80)
Importer GATS				-0.063	
				(-0.52)	
Exporter GATS				0.428***	
				(3.36)	
Importer RP					-0.030
					(-0.33)
Exporter RP					0.343***
					(3.51)
Pseudo R square	0.822	0.822	0.822	0.823	0.823
N	2715	2715	2715	2715	2715

PPML country and year fixed effects. Robust standard errors clustered on country pairs are reported in parentheses. ***, ** and * signify statistical significance at a 1, 5 and 10 percent level respectively. All variables except distance are indicator variables or indices and are not logged.

no relationship between regulation as captured by barriers to competition and imports of telecommunications services. Furthermore, having committed the RP does not impact future imports. It is, however, associated with more exports, but the impact is no different from having committed telecommunications in GATS.

A word of caution is in order before we conclude. As discussed in section 2, regulation cannot be perfectly matched to the regulated activities and as documented in section 3, trade statistics leave a lot to be desired. Therefore, one can not quantify a causal relationship between regulation and trade from the regressions. Nevertheless, false negative results are arguably less likely than false positive when using the most well-proven model specification in empirical trade research. Thus, the absence of a relationship between regulatory obligations in the GATS and import penetration is probably real.

5 Conclusions

This paper has analyzed the provisions in the Reference Paper in the GATS and compared it to the telecommunications chapter in CETA as well as the common regulatory framework in the European Union. It first noted that the Reference Paper is unique in bringing legally binding provisions on competition policy into an international trade agreement. Taking such an unprecedented step reflects the nature of the sector as a network with high barriers to entry and strong network effects that may render market access and national treatment obligations futile.

The paper has revealed two main weaknesses of the GATS for telecommunications. First, the outdated definition of the sector, which creates uncertainty regarding what is covered by the agreement. Second, the Reference Paper's specifics combined with the lack of dynamism, which run the danger of introducing a legal obligation to over-regulate telecommunications.

Starting with definitions, both the EU regulatory framework and CETA have functional definitions that remain useful as international classification systems are updated. Nevertheless, the negative list of CETA exemptions and reservations are based on the 1991 version of the CPC. Furthermore, new services are exempted from provisions on domestic regulation in CETA. This ensures consistency with the GATS, but does not offer much needed modernization.

Turning to regulation and the Reference Paper, Chapter 15 in CETA mandates that SMPs "shall" be subject to regulation and obligations, but opens for regulatory forbearance when markets are competitive. Thus, the CETA approach is consistent with deregulation, but it is not mandated. The EU regulatory framework considers access and interconnection regulation a burden in the absence of SMPs. In the event of facilities-based competition, ex ante asymmetric regulation must be rolled back and telecommunications should be subject to the provisions in the general competition law as any other sector. While burdensome regulation can be and is challenged within the EU, there seems to be no provisions for challenging excessive regulation in CETA.

Both the EU and Canada are strong supporters of the WTO and both participate in the so-called Ottawa group that aims at reforming the WTO so that it can maintain its role of governing a rules-based multilateral trading system. CETA could have been an opportunity for the two parties to modernize the telecommunications chapter and thus help future WTO reforms. My analysis in this paper suggest that EU and Canada have let this opportunity pass.

Following the EU example on developing a common dynamic regulatory framework may be a tall order even for FTAs among like-minded countries. Whether it is still worth the effort depends on to what extent committing to regulation in trade agreements actually strengthens market access, which in turn should contribute to more imports. This paper shows that it does not. That does not mean that regulation is not important for trade in telecommunications. Rather it shows that best-practice regulation has evolved without the need to commit the specifics of regulation in trade agreements. The trade restricting impact of regulatory heterogeneity suggest that there could be large gains from regulatory collaboration.

Tentative conclusions are: i) trade agreements should focus on market access and national treatment. National treatment should include non-discriminatory access conditions, including for regulated termination rates. A telecommunications chapter could include best endeavour regulatory principles addressing access and interconnection. ii) The technical details and standards are better dealt with in international fora for collaboration among regulatory bodies such as the ITU with the necessary expertise and focus. iii) Regulatory reforms should not be seen as a concession to trading partners or a bargaining chip in trade negotiations. This could render regulatory reforms hostage to lack of progress on unrelated trade issues. It is noted that regulatory reforms both in the

EU and other countries covered by the STRI were undertaken unilaterally, and greatly improved performance in the telecommunications sector.

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