2. Regional trade liberalisation

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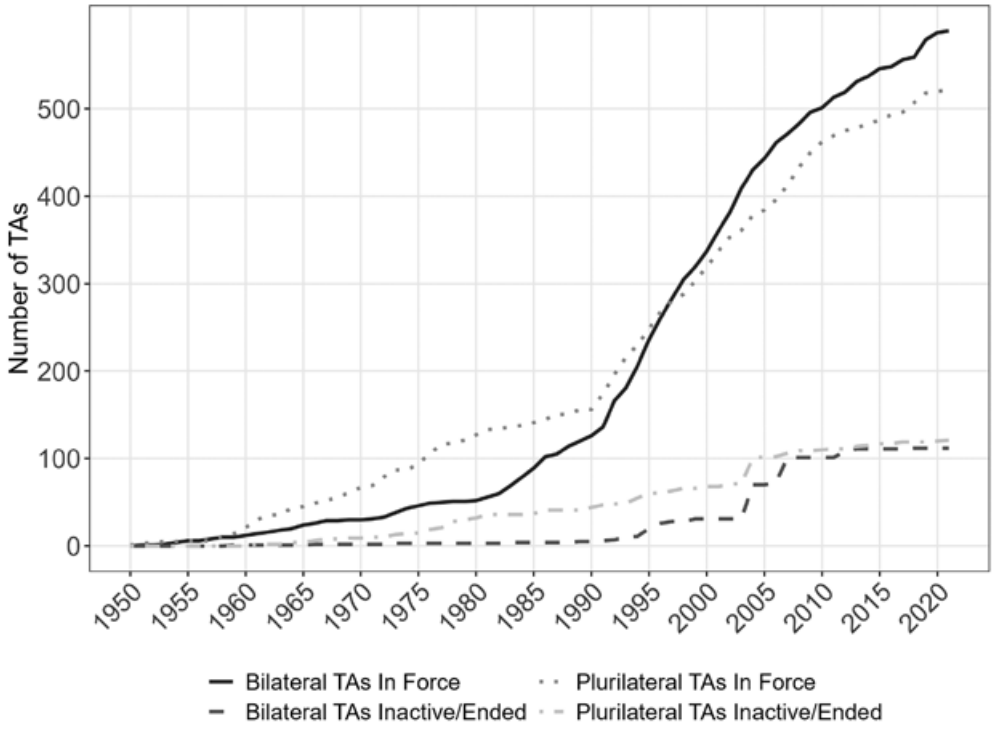
2.1 INTRODUCTION

The past decades have seen substantial and sustained growth in the number of agreements that liberalise the flow of trade. In this chapter, we will focus on those agreements that include but are not necessarily restricted to, reciprocal preferential trade liberalisation. In other words, we discuss those agreements that contain provisions that selectively lower the barriers to trade (in goods) only for their fellow signatories. The World Trade Organization (WTO) labels these agreements as regional trade agreements (WTO, 2022). However, it should be noted that their database also includes intercontinental agreements. As regions tend to be as poorly defined as continents, this need not be a fundamental inconsistency. Nevertheless, to avoid confusion, we follow Mattoo et al.'s (2020) example and use Trade Agreements (TAs) to refer to all (current and historical) agreements that incorporate reciprocal preferential trade liberalisation.[1]

Regardless of what they are called, trade agreements come in a staggering variety. These include *bilateral* TAs between two countries or *plurilateral* TAs that bring together anything from three to dozens of countries. Most agreements are centred on a particular region or continent, although intercontinental TAs are far from rare. The main source of variation lies not in their membership but in their content. Each can cover a distinct collection of economic and non-economic topics, and there is no standard agreement. Focusing more narrowly on the trade liberalisation embedded in these agreements, we find more common ground, particularly in recent agreements. This is because of the now-close-to-universal participation in the World Trade Organization that imposes strict limits on how countries can give preferential market access to only a handful of partner states.[2]

Depending on which other aspects of economic and political cooperation are included in the agreement, TAs will often go by a different name. In addition to free trade areas (FTAs), which only liberalise the trade in goods between members, the WTO distinguishes customs unions (CUs) and economic integration agreements. The former are FTAs that also agree on a common set of tariffs and other duties towards non-members of the agreement. The WTO uses economic integration agreements to refer to agreements that liberalise international trade in services. However, the term is more commonly used as a catch-all term for TAs. In accordance with Balassa's seminal book on the process of integration (Balassa, 1961), a further distinction is made between common markets, where goods, services, labour, and capital can flow freely across the international borders (cf. infra, Chapter 3); monetary or currency unions, where member states have a shared legal tender (cf. infra, Chapter 6); and economic unions which also coordinate social and fiscal policies. However, following increasing criticism for its one-track, Eurocentric view of integration, these terms tend to be used outside their initial strict hierarchical interpretation. Some authors, like Mattoo et al. (2020), avoid the Balassa controversy entirely by referring to agreements that include more than trade liberalisation as deep (as opposed to shallow) trade agreements. Almost all countries worldwide are currently members of at least one, and many are members of multiple TAs. Never did these agreements

grow faster than since the establishment of the WTO in 1995 (Figure 2.1). The continued growth in TAs in the new millennium is likely linked to the failure of the WTO's Doha round to further break down the barriers to trade. That being said, most countries have simultaneously pursued non-discriminatory and preferential liberalisation.



Source: Own computations based on a combined TA database (cf. section 2.2.3).

Figure 2.1 *The number of active and inactive bilateral and plurilateral TAs since the 1950s*

While multilateral trade liberalisation and TAs both entail the removal of trade barriers, their concurrent pursual is not patently obvious. They both achieve the same objective, but the former is much more efficient and thus carries higher welfare gains. Why would countries then continue to establish TAs in the presence of an alternative and (in economic welfare terms) more attractive option?

To answer this question, we will lay out the economic, political, and social arguments that favour TAs. This is followed by an overview of the different forms TAs have taken worldwide over the past 70 years. The final section discusses how successful TAs have been at increasing trade flows between their member states and how they have affected economic growth. Specifically, we look at the differences in their effectiveness across continents. These analyses help us understand why countries enter TAs so eagerly, often overshadowing multilateral trade talks.

2.2 THE NORMATIVE CASE FOR PREFERENTIAL TRADE LIBERALIZATION

In its most elementary form, trade agreements reduce or abolish the tariff barriers between the member states but not for other countries. A TA implies a discriminatory treatment of countries. It distinguishes between the partner countries that benefit from preferential access to the home country market and the rest of the world (ROW), which remain subject to the general trade policy rules.

In general, lowering tariffs leads to more trade between countries and increases economic welfare. Consumers benefit from lower prices and an increase in (imported) goods. Their gain even outweighs the loss of tariff revenue for the government and of the profits of the domestic producers (who now face higher competition).

This *trade creation effect* also happens in the case of multilateral trade liberalisation. The difference is that it is applied selectively. This has two major consequences. Firstly, it lowers the potential for trade creation as the most efficient producers are not necessarily part of the agreement. Second, the preferential access that firms in the partner country receive might give them an advantage over more efficient firms in the ROW. This substitution of exports from the ROW by those from the partner country is called the *trade diversion effect* (Viner, 1950). Unlike the trade creation effect, trade diversion lowers welfare for the domestic country. As more resources are used to produce the same output, the overall welfare is lowered even though consumers pay lower prices. The overall effect of a TA on welfare will thus depend on the balance between trade creation and diversion, i.e., between the reduction of inefficient domestic production through trade creation and the switch of imports from low-cost to high-cost partner sources through trade diversion.

In addition to these static welfare effects, TAs, like multilateral trade liberalisation, are posited to have a long-term effect on welfare. The dynamic gains from trade provide a long-term stimulus to growth by raising the level of investment and innovation and increasing productivity. Theories of endogenous innovation allow for a persistent effect of trade liberalisation on growth. However, as noted by Melitz and Redding (2021, p. 33), there is far less consensus regarding the existence, magnitude, mechanism, and persistence of these effects. Not all partners necessarily share equally in the benefits. As Thirlwall (2000, p. 132) notes, it is not a question of whether a country trades but what is traded and under which terms. Specialisation in low-technology goods might bring static welfare gains for developing countries in the short term but can lead to long-term losses as the potential growth in these sectors is limited (Young, 1991).

Regional trade agreements also come at the cost of an increasingly complex world trading scene. Countries are simultaneously members of multiple agreements, giving rise to trade agreements whose membership often partially overlaps. This creates a network of interwoven agreements with complex and, at times, contradictory rules of origin.[3] In 1992, Bhagwati discussed the implications of regional trade agreements for global free trade and introduced the concepts of 'stepping stones' and 'stumbling blocks'. The idea is that regional trade agreements can act as 'stepping stones' by effectively removing trade barriers via the fragmented integration caused by overlapping PTAs (Bhagwati, 1992). The more countries join PTAs, the greater the incentive for other countries to join or to create new PTAs to avoid suffering trade diversion effects (Baldwin, 2006). However, regional trade agreements can also act as

'stumbling blocks' because they are an easier alternative to multilateral liberalisation, shifting focus away from the WTO (Bhagwati, 1992).

A TA has no trade benefit that a multilateral tariff reduction cannot provide at a lower welfare cost. A non-discriminatory tariff reduction can achieve the same welfare gains through trade creation without the risk of trade diversion and should be the superior policy. This makes the surge in TAs after the conclusion of the WTO treaty all the more remarkable: even though they seem substitutes, they are clearly considered complementary trade policies. To answer this apparent dichotomy, we will first discuss additional economic arguments in favour of TAs, after which we will cover (some of the) political and social benefits.

2.2.1 The Economic Arguments for Preferential Trade Liberalisation

2.2.1.1 Terms-of-trade

A first economic argument for preferring TAs is that a sizeable regional bloc can improve its terms of trade with the ROW by coordinating its international trade policies. The terms-of-trade argument of trade policy applies in the first place to large countries, i.e., countries that consume so much of a good that changes in their demand affect prices on the international market. By imposing an import tariff, a large country will import less, which given a constant supply, will lower international prices. This allows the large country to import cheaper and to improve its terms of trade. A regional trade bloc of sufficient size that coordinates its trade policy can achieve the same results, irrespective of the economic size of its members.

As noted above, a TA in which the members agree on a common trade policy towards the ROW is called a customs union. Annex 2.2 lists all such agreements since 1950.

2.2.1.2 Market access

A second argument supporting TAs is how they impact market access. Unilaterally decreasing a country's barriers to trade does not provide greater access to foreign markets unless it occurs within a larger (WTO-negotiated) simultaneous round of lowered trade barriers. While TAs can give rise to trade diversion and adverse welfare effects, they also open up the prospect of entry into the member countries' markets. This will inevitably increase economic welfare through its positive impact on the (exporting) producer's gains. Hence, coordinated trade liberalisation within a TA comes with positive foreign market access effects that can compensate for potential domestic trade diversion effects.

Any adjustments to the economy's structure can also be more readily facilitated as the contraction of the import-competing sectors coincides with an expansion of the export-oriented sectors. Finally, regionalism might be more acceptable from a social and political point of view as its distributional impact is easier to predict due to the smaller number of countries involved. Nevertheless, the difference with a multilateral agreement is probably more gradual than fundamental here.

2.2.1.3 Infant industry protection

One of the first and oldest arguments in support of a TA is the development of a manufacturing sector by giving it preferential access to a regional market, i.e., the import substitution development strategy through infant-industry protection at the regional instead of the national level. It was used frequently to support regional integration in the Global South. By liberalising trade at the regional level, the economic welfare cost of protectionism could still be lowered while

allowing firms to increase access to a regional market. One of the first to make this argument was Raoul Prebisch, the Executive Secretary of the United Nations Economic Commission for Latin America (Prebisch, 1959). However, in a South-South framework, the increase in market size still remains relatively moderate compared to small developed countries.

2.2.1.4 Higher capital investment

TAs can also increase the incentive to invest due to the increased market access, the higher degree of competition, and the more transparent and predictable economic policy framework. This increased investment, in turn, leads to higher capital intensity and productivity of labour. The increasing incentive to invest applies to domestic and foreign direct investment. First, higher contestability, larger markets and a more stable policy framework will increase the rate of return to capital. In addition, the price of capital goods may fall because of cheaper imports or the greater efficiency to which the domestic capital goods sector is compelled because of fiercer competition. Additionally, greater competition and efficiency in the financial sector can lower borrowing costs. The impact on investment is likely to be higher in the case of North-North or North-South TAs. Overall, TAs indirectly impact investment by altering the market structure and policy governance effects. However, the latter is a possible but not strictly necessary part of a TA. As such, the same effect can also be achieved by more direct means, like domestic policy reform.

Besides domestic investment, a TA can also positively affect foreign direct investment. Selective trade liberalisation in favour of partner countries may incite firms from excluded countries in the treaty to make so-called 'tariff-jumping' investments. This entails setting up a production plant in the regional market to restore a level-playing field with the member country firms. The increase in market size resulting from the TA can convince firms from ROW countries to invest in the region, typically taking the shape of 'platform investments' in which a firm serves the whole region from a plant in one country within the TA. In the case of South-South TAs, this sort of investment is likely to be targeted at the larger member states. It may even draw investment away from the other members.

2.2.1.5 Policy coordination and integration

A TA can be an occasion and a tool to coordinate and cooperate on national policies. Intergovernmental cooperation in designing and applying health and safety regulations and labour and environmental standards can increase market transparency, allowing new entry into the market. It can also help to overcome market failures and prevent trade restrictions from being reimposed through the back door (i.e., through 'non-tariff barriers'). Policy coordination may also be used as a compensation mechanism for trade liberalisation and, as such, be a necessary condition for the conclusion of the agreement. Harmonisation, coordination, or the conditions for mutual recognition of national policies in fields like environmental, health, or labour standards may be required to prevent a race to the bottom of regulatory regimes.

Policy coordination and cooperation are characteristics of the more complex TA forms that aim at establishing a common or unified market or even an economic union (see Chapter 3). Free mobility of goods, services, capital, and labour requires coordination and harmonisation in many social and economic policy fields beyond trade policy. Otherwise, heterogeneity in regulations on and access to product markets, technical and safety standards or social and ecological standards can prevent economic integration from materialising.

The incentive for policy coordination and cooperation will be particularly strong between neighbouring countries, explaining why TAs are frequently concluded between countries that share a border. Non-economic reasons are certainly a part of the explanation (e.g., reducing the conflicts between neighbours or sharing regional resources), yet economic arguments may also matter, such as reducing border formality costs, proper sharing of tariff revenues of goods in transit, avoiding smuggling, or tax competition.

2.2.2 The Non-Economic Arguments for Preferential Trade Liberalisation

2.2.2.1 The management of regional public goods

Political benefits refer, in the first place, to a regional public good, i.e., a shared resource that, without coordination, is inadequately managed at the national level. What immediately comes to the mind here is a river that crosses several countries or pollution abatement. The same applies, however, to issues like regional peace, national security, or the management of cross-border mobility.

One of the oldest arguments in favour of free trade agreements is that mutually-beneficial economic interdependence can strengthen peace. Increased trade and interaction between citizens raise the knowledge of partner countries' political and social institutions, increasing trust. In this way, trade liberalisation can contribute to regional security, i.e., making large-scale violence or war unlikely or unthinkable (see Deutsch et al., 1957). This is particularly clear in Europe, where the pacification of the French-German relations and the peace on the continent was pursued by establishing a common market (cf. Chapter 3). This started with the submission of heavy industry to a common higher authority (the European Coal and Steel Community treaty of 1953) and was quickly followed by the 1957 Treaty of Rome, establishing the European Economic Community. However, these political benefits from TAs may be conditional upon the political regime of the countries involved. It is more likely that they will materialise for TAs between democratic countries than in the presence of autocratic regimes.

2.2.2.2 Regional integration to strengthen the nation-state

Adhering to a TA inevitably implies renouncing some control over policy-making and losing some political autonomy. However, this need not result in the suppression of the nation-state as a political framework or the loss of *effective* sovereignty. On the contrary, by exerting sovereignty collectively, members of a TA may be able to preserve their national identity and integrity and strengthen democracy. Nation-states can be strengthened by the creation of a common front against external pressures or the joining of forces in international negotiations. In this sense, TAs can be a solution for the so-called political trilemma (Rodrik, 2007), i.e., the joint impossibility of democracy, national sovereignty, and global economic integration. Only two of those three components are mutually compatible in a world consisting of nation-states. By imposing checks and conditions in each of the three dimensions of the trilemma, their mutual consistency can be preserved, and the trilemma disappears.

2.2.2.3 Bargaining power towards the Rest of the World

Small countries may face substantial weaknesses in negotiations with the ROW because of the weak bargaining power and high negotiation costs. In a world where an increasing range of issues is discussed and decided in an international diplomatic framework, the impact of small countries risks disappearing altogether. This problem is multiplied when active participation

in the international forum requires considerable financial resources and expert knowledge. This creates a strong incentive for smaller countries to pool their resources and act collectively. In addition, if the TA becomes large enough, it can exert an influence through its trade policy. By integrating their economies and coordinating policies, TAs can form an essential counterbalancing force to the power of the handful of large countries currently dominating the international markets.

2.2.3 Trade Agreements in Practice

Having summarised why countries might prefer TAs over multilateral trade liberalisation, this section provides an overview of how they have been implemented worldwide over the past 70 years.

Providing such an overview requires information on the existence, membership, and characteristics of the agreements. To that end, many studies have relied on the World Trade Organization's (WTO) Regional Trade Agreements database. However, this database is limited to WTO-notified treaties, and, as such, provides only a partial view of – especially historical – TAs. Thankfully, the rapid proliferation of TAs over the past two decades has prompted efforts in the academic world to gather increasingly detailed information on this process. Since the 2010s, several projects have emerged that gather data to study trade agreements and regional organisations. These projects cover different subsets of agreements, collect different information, and are of differing quality. For this reason, we combine the data from five projects to present an exhaustive overview of regional integration since the 1950s. We collect data on regional organisations and trade agreements from the Regional Integration Knowledge System (RIKS),[4] the Comparative Regional Organisations Project (CROP, Jetschke et al., 2021), the Design of Trade Agreements database (DESTA, Dür et al., 2014), the Regional Trade Agreements database (WTO),[5] and the Global Preferential Trade Agreements database (WB).[6] By way of illustration, Annex 2.1 compares the WTO dataset with our combined database.

Combining the different sources is less straightforward than it would seem. In some cases, there was a precise match in the agreement's name and date of creation, but many are not as easily combined. The databases have numerous inconsistencies in the dates of creation due in no small part to the years that can elapse between the signing of treaties and their entering into effect. Similarly, many agreements have multiple and often highly similar acronyms, necessitating thorough vetting. We prioritise certain databases to deal with the remaining inconsistencies between the datasets. Specifically, we first use the information from RIKS. If it is unavailable, we use data from DESTA, followed by the remaining datasets. The final dataset contains 1205 entries.

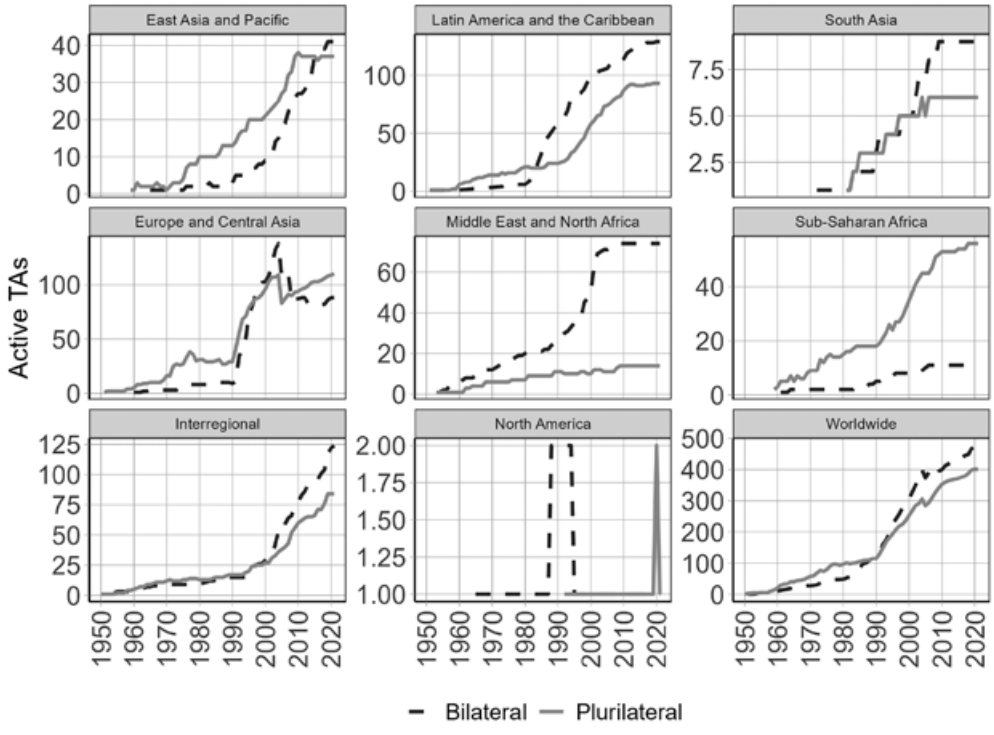
For the following analyses, we exclude international organisations with political or security partnerships as primary goals or global cooperation agreements, leaving us with a database of 1106 agreements from 1950 to 2020.[7] Annex 2.2 lists all treaties that we excluded from our analyses.

Using the merged database, we create two variables using the information on the membership to the TAs. The first distinguished between the agreements with two members (bilateral) and those with more (plurilateral). The only thing to note here is that agreements where at least one member is a regional organisation, like the EU's 1995 treaty with Tunisia, are classified as plurilateral. The second variable identifies the region in which the agreement can be situ-

ated. Following the World Bank's definitions, we identified seven regions: East Asia and the Pacific; Europe and Central Asia; Latin America and the Caribbean; Middle East and North Africa; North America; South Asia; and Sub-Saharan Africa. If not all member states belonged to the same region but were on the same continent (e.g., Africa or the Americas), we assign the TA to the region with the most member countries. In those cases where the member countries are not located on the same continent, we mark the TA as Interregional.

Our database was used to construct Figure 2.1, showing the number of active and inactive agreements. From 1990 onwards, there was an increase in the rate of agreements being formed, regardless of their type. In 2020, the total number of agreements was evenly spread between bilateral and plurilateral TAs. There is a small spike in the number of agreements marked as inactive or ended in 2005, which can be linked to the enlargement of the European Union (EU). By joining this TA, the 10 new member states terminated all individual treaties they had with the EU. Since then, the number of inactive and terminated agreements has remained stable.

Splitting these up by membership and continent, Figure 2.2 shows that the Latin American and Caribbean agreements dominate the regional integration scene, closely followed by Interregional and European and Central Asian agreements. Next, we find the Middle East, North Africa, East Asia, the Pacific, and Sub-Saharan Africa. The two regions with the fewest



Source: Own computations based on a combined TA database.

Figure 2.2 Evolution of active TAs by region and membership

active agreements are South Asia and North America, which is expected given that they are the two regions with the fewest countries. The increase in TAs in Europe, Central Asia, and between the different regions mainly occurred in the 1990s. Latin America and the Caribbean started the trend earlier, around 1985. The Middle East and North Africa only saw a slight increase in the rate of formation of bilateral agreements.

Most of the agreements that are currently active are bilateral agreements, particularly in the Middle East and North Africa. The number of bilateral and plurilateral agreements for most regions is very close. Only three regions currently have more plurilateral agreements: Europe and Central Asia, North America, and Sub-Saharan Africa. However, it is only in this last region that the difference is pronounced.

For a subset of the agreements in our joined database data, we also have information on the depth of the TAs.[8] The depth of a TA refers to the number of topics it covers, and the level of cooperation agreed upon within each topic. Countries can also be linked via multiple TAs of varying depths of integration. As such, their relationship can also be considered deep if it is based on a combination of multiple (shallow) agreements that covers trade, services, investment, taxes, etc. When we refer to deeper integration in this chapter, we mean that it entails a higher level of cooperation between countries.

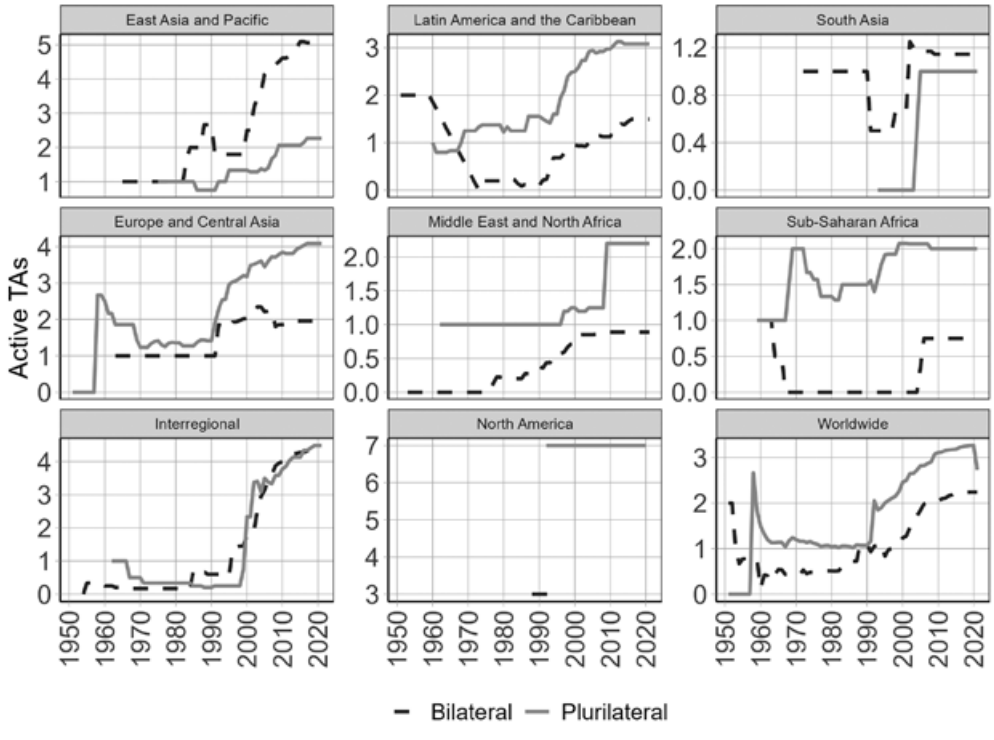
In the DESTA database, depth is measured as an additive index which captures the number of substantive provisions covered by the TA. Specifically, Dür et al. (2014) look at tariff reductions, services trade, investments, standards, public procurement, competition, and intellectual property rights. They define a substantive provision as, for instance, a national treatment clause in the services chapter. Their index ranges from zero to seven, the maximum possible depth of integration. In Figure 2.3, we compute the average depth of TAs by calculating the mean of this depth index across all active TAs in a specific region. For example, in South Asia in 2004, there were two plurilateral TAs in force,[9] with respective depth indices of 0 and 1. Therefore, the average depth index for the active plurilateral TA category in 2004 was 0.5. Generally, we observe a pronounced increase in the average depth of bilateral agreements over time (Figure 2.3). This increase first manifested itself in the 1990s. For TAs, the increasing trend only appears from 1990 onwards, after reaching a temporary spike before 1960.

By combining this partial information on the depth of agreements with the regional divisions, we find that North American agreements have reached the highest level of integration in the last few years (Figure 2.3). Of the limited number of active treaties in the region, the NAFTA/USMCA treaty is one of deep integration.[10] The other regions count more agreements in force, and their averages tend to be brought down by more shallow treaties. East Asian, Pacific, and Interregional agreements tend towards intermediate levels of integration. European and Central Asian agreements hover around an average of 3.5 depth (out of seven). The remaining regions all have average depths below or equal to two.

On average, plurilateral agreements tend to go further than bilateral ones. However, this pattern is inverted in East Asia and the Pacific and, to a lesser extent, in South Asia. Once we account for the lower initial number of agreements, Figure 2.3 clearly shows a steady increase in the depth of regional integration agreements around the world.

2.2.4 Network Analysis

As the discussions on trade creation and diversion indicate, TAs do not operate in a vacuum but are just an element in a vast network of trade relations that span the globe. Using the tools



Source: Own computations based on a combined TA database.

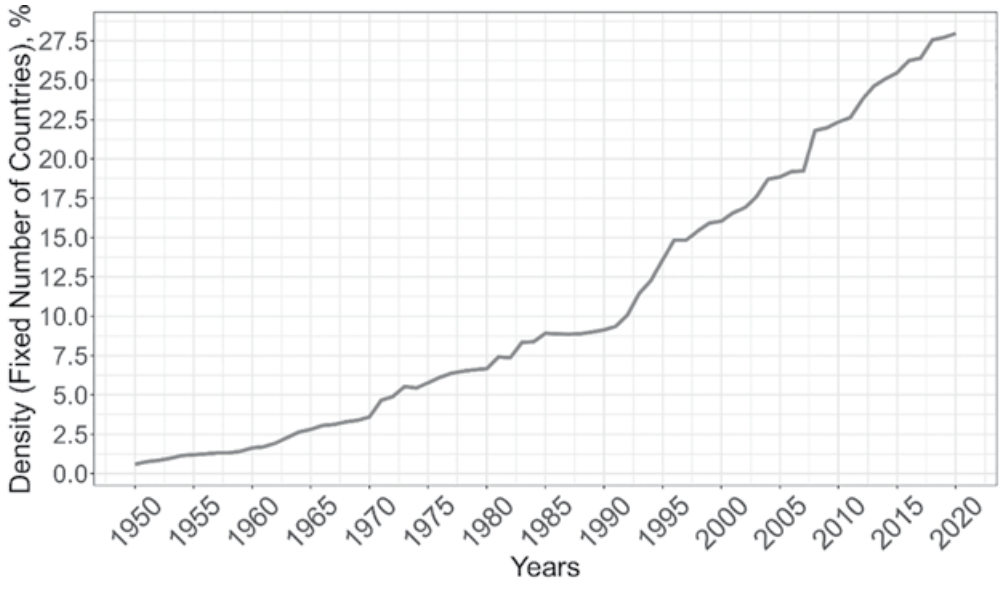
Figure 2.3 Evolution of the average depth of TAs by region and type

from (social) network analysis, we can study the overall structure of the TA network and identify which countries form the central players.[11]

We construct our network from the perspective of the countries that sign the agreements (the nodes) and connect pairs of countries when they are both members of the same agreement in a given year (the edges). Each edge is assigned a weight that counts the number of agreements to which both countries are members.

To start, we measure how the network's density has evolved since the early 1950s. The density of a network is the ratio of the number of connections (edges) in a network over the total possible number.[12] If the density reaches one, all countries in the network are connected, and vice versa for zero. In 1950, the density was rather low and reached less than 1%. However, as shown in Figure 2.4, the network density has consistently increased over the entire 70-year period, including a substantial jump in the 1990s. By 2020, it had reached its highest level at nearly 28%.

To reveal which countries have played a key role in this increasingly connected network, we compute their weighted degree centrality. This measure adds up the number of treaties a country has with all other countries in a given year. As is the case with the density, the minimum value for the weighted degree centrality is zero. As country-pairs can have multiple treaties, the weighted density does not have a fixed maximum value.[13]



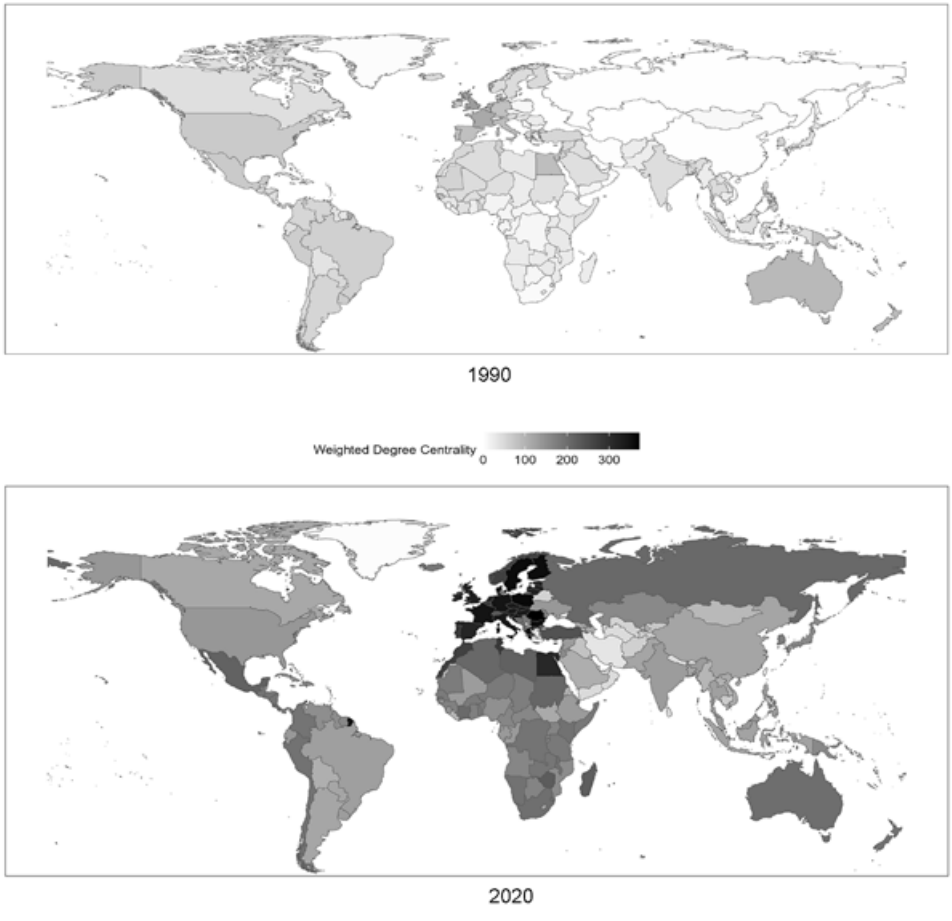
Source: Own computations based on a combined TA database.

Figure 2.4 Network density

The results are visualised in Figure 2.5, which compares the weighted degree centrality in 1990 with that in 2020. In 1990, Europe had the highest centrality, followed by Oceania and the Americas. In just over 30 years, the average degree centrality has increased more than threefold, corroborating the increase in the network's density. Compared to the 1990s, most countries now have a similar, high network centrality. The exception is those in the Middle East, which now include the least connected countries. Belarus, Bosnia and Herzegovina, Serbia, and Kosovo have the lowest centralities of Europe and Central Asia. Egypt had the highest centrality in 2020.

Visualising the overall network of agreements can be difficult as the map quickly becomes unreadable given the substantial number of existing links. To simplify the picture, we aggregate the agreements at the regional level. The result is shown in Figure 2.6, which compares the situation in 1990 with that in 2020. Each region is represented by a shaded circle. The lines depict the interregional agreements, while the loops represent the TAs within the region (self-links). For both, thicker lines indicate a larger number of agreements.

These graphs reveal several intriguing patterns. Firstly, for almost all regions, the within-region links outnumber the interregional links. The only real exception is North America, which is likely the result of the small number of countries in the region. In the 1990s, the intra-regional connection of East Asia and Pacific and Latin America and the Caribbean were the strongest overall. Their connections to other regions were far weaker, and there was only one link between Latin America and the Caribbean to their neighbours to the north. This internal focus decreased during the following decades as their connection to the ROW grew noticeably stronger. The biggest connection that was interregional in the 1990s was the link between South Asia and East Asia and the Pacific. Comparing 1990 with 2020, most connec-



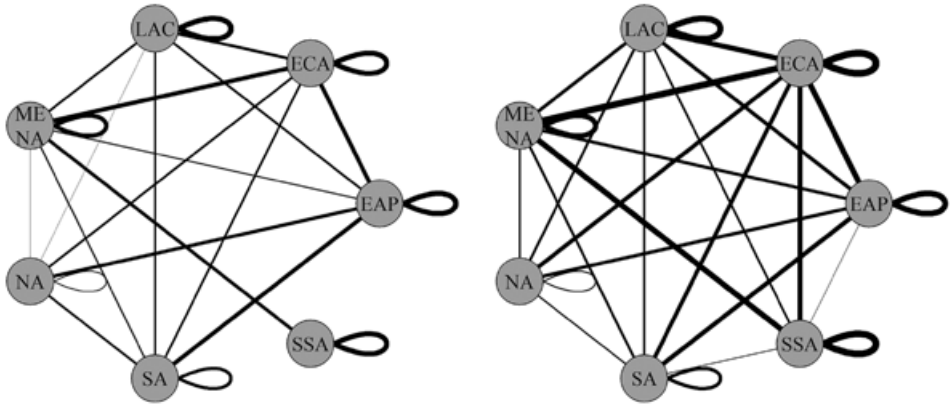
Source: Own computations based on a combined TA database.

Figure 2.5 Weighted degree centrality in the TA network in 1990 and 2020

tions within and between regions have grown, notably those between the Middle East and North Africa and Europe and Central Asia.

2.3 HOW EFFECTIVE ARE TAs AT LIBERALISING TRADE?

In this final section, we take a closer look at whether the TAs have succeeded in stimulating international trade between their member states. After a very brief summary of the literature on this topic, we take a closer look at the differences in the effect of TAs between the seven regions. We end this section by giving a brief overview of the empirical literature examining the effect of TAs on growth.



Notes: EAP: East Asia and the Pacific; ECA: Europe and Central Asia; LAC: Latin America and the Caribbean; MENA: Middle East and North Africa; NA: North America; SA: South Asia; and SSA: Sub-Saharan Africa.
Source: Own computations based on a combined TA database.

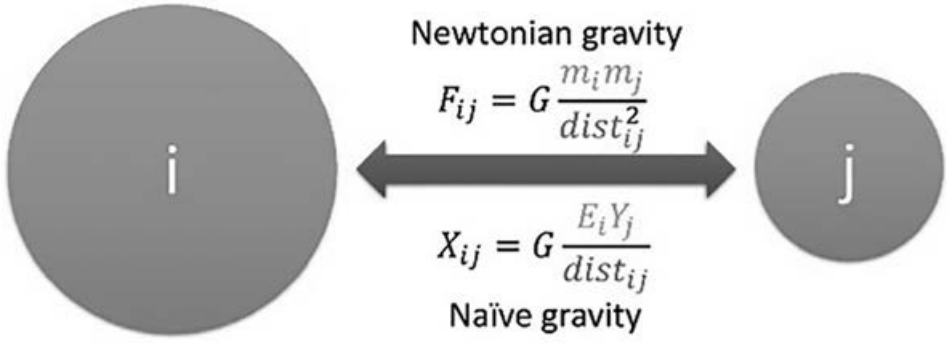
Figure 2.6 TA network at the regional level in 1990 and 2020

2.3.1 The Gravity Model

A crucial branch of economic research on TAs focuses on their capacity to increase trade flows between member countries. For nearly 60 years, empirical analyses of the factors that determine the trade flow between countries have relied on the gravity model. In its initial form, now called the naïve gravity model, the trade flow between two countries was modelled in close approximation to Newton's law of universal gravitation. The latter states that the force of gravity, F, between two bodies is proportional to their respective mass, m, but diminishes rapidly as the distance, $dist_{ij}$, between them increases. The gravity model, in turn, links the flow of international trade, X_{ij}, from origin country j, to destination country i to the mass of goods produced in the origin country, Y_j, and the demand for goods in the destination country, E_i (Anderson, 2011). As shown in Figure 2.7, the expected trade flows decrease the further away the countries are from each other, or more in general, as the cost of trading increases.

The gravity model initially started as an empirical regression model (Tinbergen, 1962; Pöyhönen, 1963; Linnemann, 1966). However, due to its success in describing trade patterns around the world – it is often called the most successful empirical model in economics or even a 'celebrity' (Yotov, 2022) – the gravity model has formed the centre of both theoretical and empirical models in the international trade literature. It is the primary tool economists use to gauge the effects of changing trade policies, most notably those of trade agreements.

In the last decade, a large body of research dedicated to the gravity model has ensured that it now stands on firm theoretical and empirical foundations (see, e.g., Eaton and Kortum, 2002; Anderson and van Wincoop, 2003; Santos Silva and Tenreyro, 2006; Arkolakis et al., 2012). This elaborate version earned it the name of the *structural* gravity model. Its initial focus was the indirect effects of changes to trade policy on the rest of the world (called multilateral resistance). Subsequent improvements also correct a slew of statistical problems plaguing the estimation of the gravity model, including zero trade flows, endogeneity, heteroskedasticity,



Source: Produced by the authors.

Figure 2.7 Newtonian vs. naïve gravity

heavy tails and more. A growing number of survey papers cover these points extensively (see, for instance, Anderson, 2011; Head and Mayer, 2014; Limão, 2016; Yotov et al., 2016; Baier and Standaert, 2020; Yotov, 2022).

Aside from specifying equations for the structural gravity model, there is also the issue of correctly estimating it, which has proven far from trivial. Researchers have developed various tools to estimate the model on most statistical software. In the process, this has also enabled even the most novice users to estimate the gravity model. Nevertheless, the estimated effects of trade agreements can vary widely depending on, among other aspects, the included parameters and the data used. On average, the structural gravity estimates report a 50% increase in trade following a trade agreement. For example, in their meta-analysis of 108 papers estimating a structural gravity model, Head and Mayer (2014, p. 34) found an average estimated coefficient of 0.36, which corresponds to an $(e^{0.36} - 1)100\% = 43\%$ increase in trade. Nevertheless, estimates could range widely, and this average coefficient had a standard deviation of 0.42. Almost 10 years later, this variability in the estimated effect is still not resolved. For example, in Larch et al. (2019), the estimated effect of a regional trade agreement switches from (significantly) decreasing trade by 20% to (significantly) increasing it by more than 44%, depending on whether domestic trade is taken into account.[14]

As outlined at the start of the chapter, TAs are far more than a (discriminatory) reduction in tariff rates. We see this reflected in the empirical results in several ways. As we noted earlier, despite GATT/WTO membership growth and an overall decrease in tariff rates, TAs remain popular trade policy tools. Second, using the results of gravity estimations, Limão (2016) calculated that the estimated impact of TAs far exceeds the predicted effect of a similar decrease in tariff rates. Even the partial effects of a TA on trade are two to three times higher than what a complete removal of tariffs could accomplish. Furthermore, Krishna et al. (2012) estimate that the average TA lowers tariff barriers by as little as 2.1 percentage points, much lower than the average (most favoured nation) tariff rate of 7.4%.

Third, the trade-promoting effect of TAs keeps increasing over time, even if the tariff rates remain unchanged. This was shown first by Baier and Bergstrand (2007), who separate the

contemporaneous effect of a treaty from the middle- and long-run impact. They find that the initial effect of an agreement doubles after five years and triples after 10 years.

The impact of TAs thus clearly exceeds that of simply lowering the tax on cross-border trade. One of the focal points of the current empirical research is on nailing down exactly which aspects of the TAs are so effective. It has become a well-established fact that deeper TAs covering a wide selection of topics have a greater effect on international trade. Baier et al. (2014) illustrated this for the relatively simple Balassa-type categorisation, which distinguishes between preferential trade agreements, free trade agreements, customs unions, common markets, and economic unions (Balassa, 1961). The increasing detail with which the content of treaties is being described makes it possible to delve into this effect with much more precision. After all, there is as much variation in the content of treaties within these Balassa categories as between them (Mattoo et al., 2020). This heterogeneity is also present in the effects of treaties, as different members of the same agreement will also see substantial differences in how the treaty impacts them (Baier et al., 2018).

One particularly interesting finding concerns the effect of TAs on the stability of trade relations and how this encourages international trade. As production processes become increasingly complex, finding a foreign supplier that can deliver the components at the required level of quality is costly and laborious. Ensuring stability in trade policies by enshrining it in an international treaty can help convince companies to bear this initial (sunk) cost and greatly promotes the flow of trade. For example, Handley and Limão (2017) computed that most of the increase in trade following Portugal's accession to the EU resulted from eliminating trade policy uncertainty and securing previously enacted tariff reductions.

2.3.2 The Effect of TAs by Continent

In what follows, we will estimate a standard gravity model to distinguish the effect of the bilateral from the plurilateral agreements and to look at its effect on different continents. Specifically, we estimate the following model:

$$X_{ij,t} = f\left(\sum_k \beta_k TA^k_{ij,t} + \delta_t border_{ij,t} + D^{ot}_{i,t} + D^{dt}_{j,t} + D^{od}_{ij}\right)$$

where $X_{ij,t}$ is the flow of trade from country i to country j at time t. TA^k are dummy variables for the trade agreements: overall, bilateral, and by continent. $border_{ij,t}$ is one if the trade flow crossed an international border (i.e., $i \neq j$) and zero otherwise. When interacted with time, they are sometimes referred to as globalisation dummies. Finally, the model includes fixed effects that control for all factors that vary by origin-year, D^{ot}, destination-year D^{dt} and between all country pairs D^{od}.

The data on the amount of international trade comes from the UN's COMTRADE database. Domestic trade ($X_{ii,t}$) was computed by subtracting the total exports from the output-side GDP from the Penn World Tables (10.0). As the effect of TAs depends on their depth (cf. infra), we excluded the agreements with only minimal trade liberalisation. We did this by limiting the agreement to those included in Jeffrey Bergstrand's database on Economic Integration Agreements and retaining only the reciprocal trade agreements.[15] We grouped these treaties into our TA variable and created a second variable to distinguish between bilateral and multilateral treaties. The agreements were similarly grouped according to their continent. If

Table 2.1 Effects of TAs

	(1)	(2)	(3)	(4)	(5)	(6)
Model	Log-linear	PPML	Log-linear	PPML	Log-linear	PPML
TA	0.321***	0.224***	0.321***	0.224***		
	(0.0226)	(0.0295)	(0.0227)	(0.0296)		
Bilateral			-0.0617	-0.0439		
			(0.237)	(0.0841)		
Sub-Saharan Africa					0.630***	0.129
					(0.0884)	(0.0797)
Middle East & N. Africa					0.789***	0.378***
					(0.0935)	(0.115)
South Asia					-0.191	0.368***
					(0.191)	(0.0787)
East Asia & Pacific					0.0773	0.234***
					(0.0982)	(0.0706)
Europe & Central Asia					0.522***	0.636***
					(0.0329)	(0.0317)
Latin Am. & Caribbean					0.393***	0.209***
					(0.0635)	(0.0398)
North America					0.0827	0.354***
					(0.108)	(0.101)
Interregional					-0.0347	0.00450
					(0.0380)	(0.0368)
Constant	15.34***	27.55***	15.34***	27.55***	15.34***	27.54***
	(0.0827)	(0.00442)	(0.0827)	(0.00442)	(0.0836)	(0.00433)
Observations	167,624	167,624	167,624	167,624	167,624	167,624
Fixed effects	origin-year, destination-year, origin-destination, and border-year					

Notes: *** indicates significance at the 10% level.
Source: Based on authors' computations.

a country pair had multiple active treaties a continent-specific designation was preferred over the interregional label.[16] After merging, our database contains 250 destination countries and 201 origin countries from as early as 1962. However, as we are interested in the long-term effects of the treaties, we only retained the five-year intervals, starting in 1965 and ending in 2015.

To illustrate the sensitivity of the gravity model estimates to small changes in the estimation procedure, we estimated the same model using both a log-linear estimator and a Pseudo Poisson Maximum Likelihood (PPML) estimator. The results are presented in Table 2.1.

Regression of the bilateral import flows on the presence of a TA using a log-linear (columns 1, 3, 5) or Pseudo Poisson Maximum Likelihood estimation model (columns 2, 4, 6). The regression includes importer-year, exporter-year, and bilateral fixed effects and border-year dummy variables $^{(a)}$, $^{(b)}$, or $^{(c)}$ indicate significance at the 1%, 5%, or 10% level. Robust standard errors are in parentheses.

Columns one and two show that the overall effect of TAs on trade is fairly consistent between both models. Both are positive and significant and on the lower side of what is typically found: an $e^{0.321} = 38\%$ increase in trade in the log-linear model and $e^{0.224} - 1 = 25\%$ using PPML. As shown in columns 3 and 4, bilateral treaties affected trade by about five percentage points less than multilateral ones, but this difference is not statistically significant.

The final two columns of Table 2.1 split up the TA variable depending on the continent. The results for some continents are much higher than the average, but remain within the range of those found in other papers. At the same time, the differences in the parameter estimates between the log-linear and PPML models are also considerably higher. Both models seem to disagree on the size, significance, and even the sign of the estimated parameters. Given the literature's preference for the PPML model, we will limit our discussion to these findings. However, given the sensitivity of the results, we would caution the reader to interpret these with the necessary scepticism. These parameter estimates describe an average effect over all treaties in a region over the last 60 years. They should not be mistaken for the effect of any particular treaty, especially given the already established heterogeneity between agreements and their members.

Both models find a large effect of agreements in Europe and Central Asia which seem to have increased trade with $e^{0.636} = 88\%$. The continents with the second highest effect of TAs are the Middle East and North Africa, South Asia and North America, which are only half as effective (42–46%). Somewhat further down but still positive and significant, we find East Asia and the Pacific (26%) and Latin America and the Caribbean (23%). On the other hand, the average TA in Africa and between the regions does not seem to have significantly impacted trade.

2.3.3 Trade Agreements and Growth

From a theoretical point of view, the positive, long-term effects of TAs on growth is well-established. Unlike the studies on trade, however, the empirical research on the effect of TAs on growth has not been particularly encouraging, with most studies finding no or even a negative effect of TAs on growth. Mostly, these studies date back to the 1990s or before, with only a sprinkling of papers after the 2010s. This is largely because the growth regressions – where the dependent variable is the GDP growth rate – have fallen out of favour as they are plagued with numerous methodological problems, including endogeneity and the way trade openness and TA membership are measured. While the overall effect of TAs on growth is negligible, studies that have looked at specific agreements have found positive effects on the specific channels that would lead to an increase in the rate of growth. Overall, the unsatisfying answer to the question of whether TAs lead to higher growth is 'it depends'.

A good example of the earlier growth regressions is Vamvakidis (1999), who compared the effect of multilateral trade liberalisation and TAs on short- and long-term growth. While the openness of countries increased investment and growth, he found that TA membership had a small but (statistically significant) negative effect on both. His sample was restricted to 1952–1991, meaning that it preceded the substantial increase in treaties of the 1990s (see e.g. Figure 2.1). In a more recent study, Hur and Park (2012) examined the impact of WTO-notified TAs for 1972–2003 and adjusted the estimation model to waylay some of the methodological issues.[17] In their regressions, TAs did not affect growth within the first ten years. However, they did find evidence of asymmetries between the partner countries, meaning that some member states did see an increase in growth.

Focusing on those asymmetries, Schiff and Winters (2003) survey a large number of empirical studies on the growth effect of TAs. They conclude that the effect of TAs on growth depends on who concludes the agreement. South-South agreements were found to be particularly detrimental to growth (e.g., de Melo et al., 1992), while North-South RIAs can stimulate

growth and investment (Schiff et al., 2002) if the necessary (institutional) structure is present to benefit from it (Schiff and Wang, 2002; Acemoglu et al., 2001) and the distance between partners is not too great (Keller, 2002). This is corroborated by Di Caprio et al. (2017), who find a positive effect of TAs on growth overall but a negative effect in some areas, like Sub-Saharan Africa. They provide further evidence of heterogeneity in the impact of TAs, as they find that TAs increase within-country inequality.

Finally, in their review paper, Melitz and Redding (2021) look in detail at the various mechanisms through which an increase in openness to trade affects innovation – the main channel that would lead to sustained long-term effect on growth. Their findings highlight the overall lack of a theoretical or empirical consensus in this field, explaining why finding consistent estimates of the impact of TAs on growth has proven such a challenge. For example, depending on the specific market and firm characteristics, an increase in competition following (multilateral or preferential) trade liberalisation has been found to both stimulate and discourage innovation. Their results further suggest that even within the North-South agreements, developing countries should be wary of specialising in sectors where the long-term potential for growth is absent.

2.4 CONCLUSION

TAs have dominated the trading scene for almost 30 years and it looks like they are here to stay. While there are some disparities between regions and the rate of formation of TAs, there does not seem to be any indication of countries suddenly favouring multilateral agreements. TAs also become deeper, which, based on the gravity model literature, should lead to a long-term increase in trade integration. TAs have not only been signed between regions but have also extended to continents. This has also enabled countries worldwide to gain a more prominent position in the TA network in just 30 years. However, not all regions seem to benefit from TAs in the same manner, as demonstrated by the gravity estimations and our review of the trade and growth literature. Further developments in the specification of gravity models and databases should ensure a promising future for the study of TAs.

NOTES

1. There seems to be little consensus as to what the catch-all term should be. The WTO uses Regional Trade Agreements (RTAs) as the collective noun. However, it is not uncommon to see Regional Integration Agreements (RIAs), Economic Integration Agreements (EIAs), Preferential Trade Agreements (PTAs), or even FTA+ used instead.
2. One of the main restrictions is that the agreement eliminates 'duties and other restrictive regulations of commerce […] with respect to substantially all trade'. See Article XXIV:8 of the 1994 GATT treaty. The only exception is developing countries which are allowed to sign agreements of 'Partial Scope' according to the 1979 Enabling Clause.
3. Rules of origin are a classification describing where products are made and manufactured. They are used as thresholds to determine the tariffs companies must pay when trading with international partners.
4. Available at https://riks.cris.unu.edu
5. Regional Trade Agreements Database. WTO (2022). Retrieved October 11, 2022, from https://rtais.wto.org/UI/PublicMaintainRTAHome.aspx

6. Global Preferential Trade Agreements Database. (2022). Retrieved October 24, 2022, from https://wits.worldbank.org/gptad/library.aspx
7. These remaining entries include free trade agreements, customs unions, regional organisations, economic integration agreements, partial scope agreements, and amendments to the original treaties.
8. This partial information comes from DESTA.
9. The two TAs are the South Asian Association for Regional Cooperation, Preferential Trading Arrangement (SAPTA), and the South Asian Free Trade Area (SAFTA).
10. The 1994 North American Free Trade Agreement was replaced by the United States-Mexico-Canada Agreement in 2019.
11. Network analysis consists of techniques that study interactions between nodes, which can be anything or anyone, including individuals and countries. The interactions between nodes are called links or edges. They can, for instance, be friendship ties between individuals or trade flows between countries. For a thorough introduction to social network analysis, we refer the interested reader to Newman et al. (2006) or Barabási (2016).
12. It is worth noting that the density calculations are based on a fixed number of countries. This approach is slightly imprecise since the number of countries has varied over time. However, the effect on the density should be minimal.
13. Given the large presence of TAs between countries, the weighted degree centrality can quickly reach large values. To avoid an exaggeration of the links, we remove within-organisation links for agreements signed between organisations and third countries. For instance, the entry European Union – Algeria only has 27 links (one for each EU member and Algeria) rather than 378 (one between each EU member and one for each EU member and Algeria).
14. Domestic trade refers to the trade of goods (and services) that do not cross an international border.
15. Available at https://sites.nd.edu/jeffrey-bergstrand/database-on-economic-integration-agreements/ The dataset is thus limited to the free trade areas, customs unions, common markets, and economic unions. This excluded the one-way and two-way partial trade agreements.
16. In other words, if a country-pair had both a bilateral and multilateral treaty, we identified it as a multilateral TA. If it had an active interregional and Eurasian treaty, we labelled it as Eurasian.
17. That is, they used a non-parametric matching technique.

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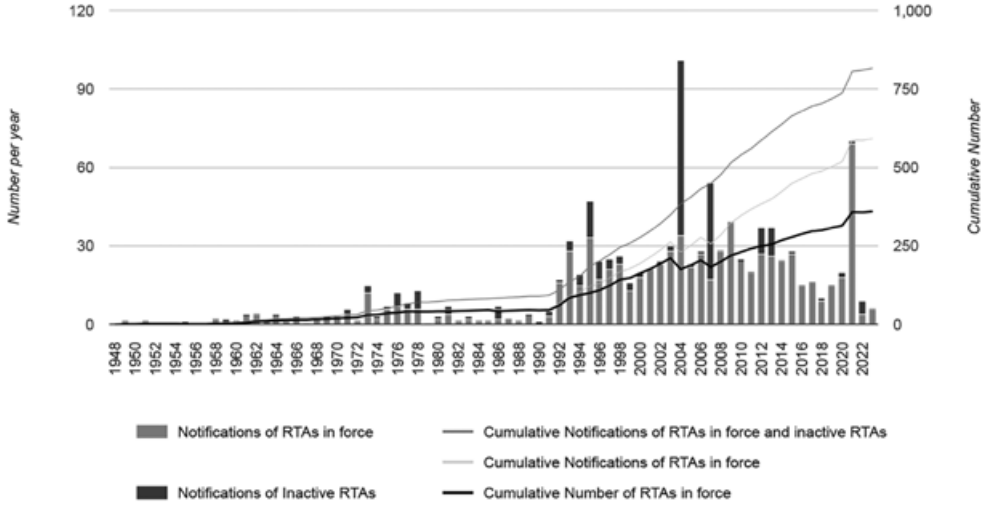
ANNEX 2.1: THE LIMITS OF THE WTO'S REGIONAL TRADE AGREEMENTS DATABASE

As pointed out earlier, one of the main downsides of the WTO's Regional Trade Agreements database is that it is limited to only those treaties that were notified to the WTO. In practice, it is limited to treaties where at least one of the members was also a signatory of GATT/WTO. While the latter's current membership extends to almost all countries, this was not always the case. As such, the list of notified treaties misses out on many of the earlier agreements. By way of illustration, Figure 2A.1 shows the number of 'RTAs in force and inactive, 1948–2020' from the WTO website, which, when compared with Figure 2.1, clearly shows the discrepancies between both databases. It should be noted that the figures broken down by region will also not match those of the WTO since we follow the continent-categorisation of the World Bank. The WTO also assigns treaties to multiple continents if member countries are based in different regions. In contrast, we assign it either to a continent or label it interregional.



Source: This graph was obtained on the WTO website for the Regional Trade Agreements Database and was accessed on October 11, 2022.

Figure 2A.1 RTAs in force and inactive 1948–2022

To further illustrate the differences between our database and the WTO's, we compare the Customs Unions entries since 1950 between both databases. Table 2A.1 contains both active and inactive customs unions signed since 1950, alphabetically ordered. The last two columns indicate whether the treaty appears on the WTO website as a Customs Union and what its name is. The remaining columns capture details on the treaty entry in our constructed database. The dates of the year of entry into force and signature may differ from the ones recorded in the WTO database as the date information was obtained from DESTA or RIKS. Other discrepancies with the WTO arise from the fact that subsequent accession or withdrawals are not counted as separate entries. In this case, our data contains six CUs that do not appear on the WTO database.

Table 2A.1 Customs unions since 1950

Name in our database	*Date of signature*	*Date of entry into force*	*Inactive Date*	*WTO Website*	*WTO Name*
African Common Market	1962	1963	1998	1	African Common Market
Andean Group Quito Protocol (Parent: Andean Community)	1987	1988		1	Andean Community (CAN)
Andorra EC	1989	1991		1	EU – Andorra
Arab Common Market	1962	1964	1998	1	Arab Common Market
Belarus Russia	1995	1997		1	Russian Federation – Belarus – Kazakhstan
Caribbean Community (CARICOM)	1973	1973		1	Caribbean Community and Common Market (CARICOM)
Central American Common Market (CACM)	1960	1961	1990	1	Central American Common Market (CACM)
Common Market for Eastern and Southern Africa (COMESA)	1993	1994		1	Common Market for Eastern and Southern Africa (COMESA)
Customs and Economic Union of West African States (UDEAO)	1966	1966	1973	0	
Cyprus EC	1972	1973	2004	1	EC – Cyprus Association Agreement
Czech Republic Slovakia	1992	1993	2004	1	Czech Republic – Slovak Republic Customs Union
East African Community (EAC)	1999	2000		1	East African Community (EAC)
EC	1957	1958		1	EU Treaty
EC – Overseas Countries and Territories 1 (OCT)	1964	1964	1971	1	EC – Overseas Countries and Territories 1 (OCT)
EC Greece Association Agreement	1961	1962	1981	1	EEC – Greece Association Agreement
EC Malta	1970	1971	2004	1	EC – Malta Association Agreement
EC San Marino	1991	2002		1	EU – San Marino
EC Turkey	1995	1996		1	EU – Turkey
EC Turkey Supplementary Protocol	1973	1974	1996	1	EC – Turkey Association Agreement of 1973

Name in our database	*Date of signature*	*Date of entry into force*	*Inactive Date*	*WTO Website*	*WTO Name*
Economic Community of West African States (ECOWAS)	1993	1993		1	Economic Community of West African States (ECOWAS)
Economic and Monetary Community of Central Africa (CEMAC)	1994	1999		1	Economic and Monetary Community of Central Africa (CEMAC)
Economic Community of Central African States (ECCAS-CEEAC) PTA/ FTA/CU	2004			0	
EFTA Southern African Customs Union (SACU)	2006	2008		1	EFTA – SACU
Equatorial Customs Union	1959	1960	1964	1	Equatorial Customs Union – Cameroon Association
Eurasian Economic Community (EAEC)	2000	2001	2014	1	Eurasian Economic Community (EAEC)
Eurasian Economic Union (EAEU)	2014	2015		1	Eurasian Economic Union (EAEU)
France Tunisia Customs Union Convention	1955	1956		0	
Gulf Cooperation Council (GCC)	1981	1982	2003	1	Gulf Cooperation Council (GCC)
MERCOSUR	1991	1991		1	Southern Common Market (MERCOSUR)
MERCOSUR – Southern African Customs Union (SACU)	2004	2010		0	
MERCOSUR – Southern African Customs Union (SACU)	2008	2016		0	Southern Common Market (MERCOSUR) – Southern African Customs Union (SACU)
Southern African Customs Union (SACU)	2002	2004		1	Southern African Customs Union (SACU)
Southern African Customs Union Mozambique (SACUM) UK	2019	2021		1	United Kingdom – SACU and Mozambique
West African Customs Union (UDAO)	1959	NA	1966	0	
West African Economic and Monetary Union	1994	1994		1	West African Economic and Monetary Union (WAEMU)

Note: The WTO data was obtained from the WTO website for the Regional Trade Agreements Database and was accessed on October 11, 2022. The search criteria were: 'Status of Agreement: In force for at least one Party; In Force; Inactive'.
Source: Own computations based on a combined TA database.

ANNEX 2.2 LIST OF EXCLUDED AGREEMENTS AND ORGANISATIONS

Agreement/Organisation Name
African Union
African, Caribbean and Pacific Group of States
Arab League
Belarus Russia (Union State)
Casablanca Group
Cotonou Agreement
Council of the Entente
European Atomic Energy Community
General Agreement on Tariffs and Trade
Global System of Trade Preferences (GSTP)
Group of 77
GUAM/GUUAM Organization for Democracy and Economic Development
Indian Ocean Rim Association
Intergovernmental Group of Twenty-Four on International Monetary Affairs and Development
International Labour Organization
International Monetary Fund
League of Nations
Lome I
Lome II
Lome III
Lome IV
Monrovia Group
Non-Aligned Movement
North Atlantic Treaty Organization
OPEC Fund for International Development
Organisation for Economic Co-operation and Development
Organisation for European Economic Co-operation
Organization for Security and Cooperation in Europe
Organization of African Unity
Organization of American States
Organisation of Islamic Cooperation
Protocol to the Treaty on the establishment of the Central American Parliament
Union State of Russia and Belarus
United Nations
United Nations Conference on Trade and Development
United Nations Department of Economic and Social Affairs
United Nations Development Programme
United Nations Economic and Social Commission for Asia and the Pacific

Agreement/Organisation Name
United Nations Economic Commission for Latin America and the Caribbean
Western European Union
World Bank Group
World Trade Organization

Source: Own selection of agreements and organisations with a non-economic focus or multilateral aims.