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**JEL Codes: F1, F5**

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# Trade and diplomacy

Economic determinants of international cooperation agreements and its effect on international trade in the post World War II era: 1945-2022

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November 13, 2024

## Abstract

We study the determinants of international cooperation and its effect on trade. We rely on a unique database of 31,982 International Cooperation Agreements (ICAs) signed between 1945-2022 by 193 countries. Estimating bilateral gravity equations, we find that trade follows the flag: ICAs increase bilateral exports by around 1-3%, with stronger effects for South-South relations. We address potential endogeneity through panel approach and an instrumental variable that exploits the network structure of international relations. Further, using LPM we find that gravity forces explain country pairs entering an ICA. Importantly, we find that ICAs serve as stepping stones towards Regional Trade Agreements, confirming a previous step in Balassa (1961) theory of economic integration. Our results shed new light on the international relations-trade nexus and contribute to the current debate on friendshoring.

*Keywords:* International cooperation agreements, International trade flows, Regional trade agreements, Gravity equation

*JEL classification:* F1, F5

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# 1 Introduction

Ever since the end of WWII, the world has experienced almost eighty years of -imperfect- cooperation. This cooperation seems to be crumbling in the light of recent conflicts such as the Israel-Palestine war or the Russian invasion of Ukraine. To preserve the international rules-based order it is key to pinpoint what permitted its proliferation and how it has impacted economic outcomes, such as trade. These fundamental questions have remained partially unanswered in the international studies<sup>1</sup> and demand closer scrutiny, particularly in light of current global developments. The aftermath of the COVID-19 pandemic and the repercussions of the military conflicts have prompted countries to hastily re-establish alliances, forge new ones, or seek membership in international governmental organizations (IGOs) like the EU or NATO; geopolitical decisions with meaningful economic consequences.

Diplomacy, the practice of managing international relations through negotiation, dialogue, and communication between representatives of different countries or organizations aims to resolve conflicts, promote cooperation, and advance national interests. It can pursue geopolitical goals (conflict resolution, building alliances), public goods provision (safeguarding the environment, reducing global poverty), fostering cooperation per se or economic goals (increasing trade or investment). Nations interact through a variety of actions, which include permanent international representations (such as embassies) and diplomatic bilateral activities (Moons and van Bergeijk, 2017). The subject of this paper is to analyze one important instrument of these bilateral diplomatic activities, the signing of International Cooperation Agreements.

The rules-based international system was built under the umbrella of the United Nations, an improved version of the League of Nations, which facilitated an unprecedented diplomatic exchange worldwide. To keep track of this formal diplomatic relations, the Charter of the United Nations<sup>2</sup> establishes that any formal agreement between two countries should be officially recorded with the organization.

## **Article 102 United Nations Charter:**

1. *Every treaty and every international agreement entered into by any Member of the United Nations after the present Charter comes into force shall as soon as possible be registered with the Secretariat and published by it.*

2. *No party to any such treaty or international agreement which has not been registered in accordance with the provisions of paragraph 1 of this Article may invoke that treaty or agreement before any organ of the United Nations.*

This consistent formal diplomatic cooperation resulted in an extensive network of more than 30,000 ICAs and more than 300 IGOs. To the best of our knowledge, no comprehensive empirical study has undertaken a global analysis of such an extensive time span as the one examined in this article. While economists have diligently scrutinized Regional Trade Agreements (RTAs) in detail, they have often overlooked the critical mechanisms of how political decisions spill over into economic outcomes. By relying on a worldwide database of International Cooperation Agreements categorized according to their objectives, we aim to furnish the evidence required to address vital questions.

The unique dataset we exploit in this article was part of a project on regional cooperation and regional public goods and provides a valuable source for International Studies. We briefly summarize some characteristics of this dataset, more details about its construction can be found in the methodological note (Acharya et al., 2024). Treaties were classified under 6 categories, according to the scope of the cooperation, as shown in Table 1 (a more complete explanation, as well as how we deal with successor states, are included in the Appendix). The database includes historical agreements that signaled a turning point in geopolitics as it is the case of the

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<sup>1</sup>We refer to international studies in a broad sense, including International Relations, International Political Economy, Geoeconomics, and other subfields.

<sup>2</sup>The Charter of the United Nations is the founding document of the organization and was signed in June 1945 at the United Nations Conference on International Organizations.

“Sino-Soviet Treaty of Friendship, Alliance and Mutual Assistance” signed in Mao Zedong’s visit to the Soviet Union between December 1949 and February 1950, the Agreement on the mutual establishment of consular relations and the opening of consulates general signed between the US and China in Deng Xiaoping’s visit to the US in January 1979, the Paris Peace Accords (officially the Agreement on Ending the War and Restoring Peace in Vietnam) negotiated by Henry A. Kissinger and signed by the Democratic Republic of Vietnam (North Vietnam), The Republic of Vietnam (South Vietnam), the United States and the Provisional Revolutionary Government of the Republic of South Vietnam, as well as more day-to-day agreements. For the purposes of this paper, we do not include 1,684 trade related agreements to restrict our analysis to non-trade cooperation, but complement our data with popular Regional Trade Agreements<sup>3</sup> datasets. Whenever we refer to “Economic Cooperation” we are talking about category 2 and when referring to “Non-Economic Cooperation” we aggregate the rest of the categories.

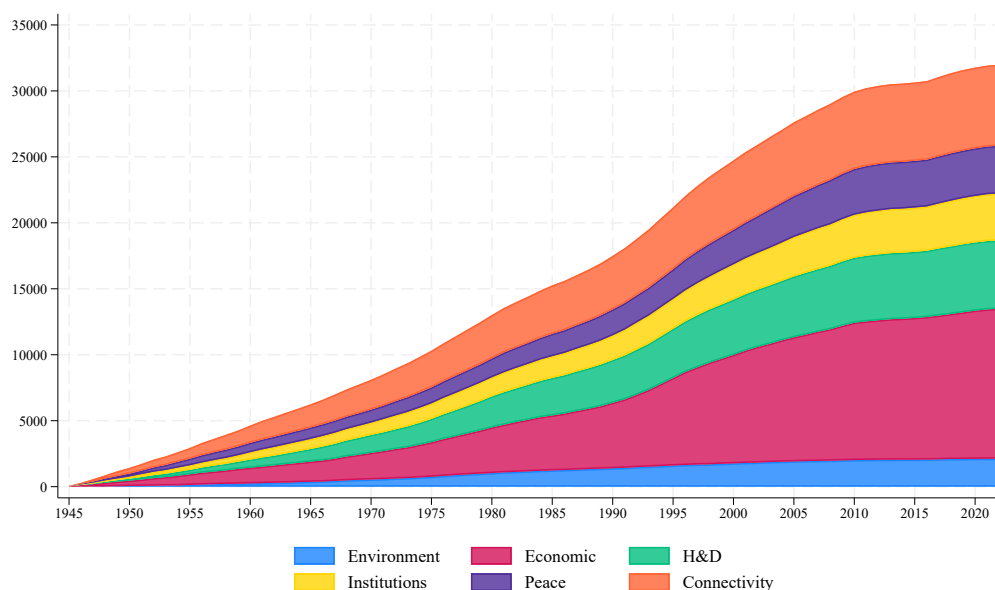
Table 1: Main Functions of International Cooperation

<b>Functions</b>	<b>Examples</b>
1. Natural Resources and Environment	<i>Energy, environmental protection</i>
2. Economic Cooperation and Integration	<i>Trade, taxation, investment</i>
3. Human and Social Development	<i>Education, culture, science, health</i>
4. Governance and Institutions	<i>General cooperation, legal issues</i>
5. Peace and Security	<i>Military alliance, crime control</i>
6. Connectivity	<i>Transportation network, visa, infrastructure</i>

Examples of agreements: 1. Natural Resources and Environment: Agreement on cooperation in the area of environment between the Government of the State of Israel and the Government of the Czech Republic (2018), Agreement between the Government of the Republic of Poland and the Government of the United States of America on cooperation towards the development of a civil nuclear power program and the civil nuclear power sector in the Republic of Poland (2020) 2. Economic Cooperation and Integration: Agreement on the promotion and the reciprocal protection of investments between the Government of the Republic of Cyprus and the Council of Ministers of the Republic of Albania (2010), Agreement between the Federal Republic of Germany and the Republic of Albania for the avoidance of double taxation and of tax evasion with respect to taxes on income and on capital (2010) 3. Human and Social Development: Basic Agreement on cooperation in peaceful applications of space science and technology between the Government of the Federative Republic of Brazil and the Government of the Argentine Republic (1996) Agreement between the Government of the Republic of South Africa and the Government of the Republic of Zimbabwe on health matters (2009) 4. Governance and Institutions: Agreement between Denmark, Finland, Iceland, Norway and Sweden on the implementation of certain provisions concerning nationality (2002) Administrative Agreement between the Delegation of the European Union to the Republic of Peru and the Government of the Republic of Peru concerning the observation of the extraordinary congressional elections of 26 January 2020 (2019) 5. Peace and Security: Treaty on extradition between Australia and the State of the United Arab Emirates (2007) Agreement between the Government of the French Republic and the Government of Australia regarding the provision of mutual logistics support between the Australian defence force and the French armed forces (2018) 6. Connectivity: Agreement between the Government of the United Mexican States and the Government of Australia relating to air services (2010) Agreement between the Government of the Republic of Estonia and the Government of the Republic of Austria concerning the abolition of visa requirements (1999)

<sup>3</sup>We refer to Regional Trade Agreements (RTA), Preferential Trade Agreements (PTA) and Free Trade Agreements (FTA) indistinctly.

Figure 1: International Cooperation Agreements by function



Graph shows the evolution of ICAs by its 6 classifications. Economic agreements have been the majority of signed agreements throughout the period, constituting 32% in 1945, 28% in 1990 and 36% in 2022. Environmental agreements went from being 3,3% of total agreements in 1945, to being 8% in 1990 and 6,6% in 2022. Human and Social Development went from 6,8% in 1945, to 18,5% in 1990 to 16,2% in 2022. Governance and Institutions went from being 15% in 1945, to 11% in 1990 and remained almost constant until 2022. Peace and Security went from being 22% in 1945, 11% in 1990 and remained almost constant until 2022. Connectivity were 20% in 1945, 23% in 1990 and 19% in 2022.

Our main contribution is to exploit this database at the bilateral level to establish a number of new results. We first document that gravity forces play an important role in the formation of ICAs. As theoretically expected, we find that closer countries tend to participate in more agreements, especially if they share a border, as well as countries sharing commonalities such as religion, language or having ever been in a colonial situation. Importantly, countries with bigger population size tend to sign more agreements, as do countries with more similar UNGA voting patterns. We then investigate the sequencing of international cooperation (Estevadeordal and Suominen, 2008; Balassa, 1961) and find evidence for International Cooperation Agreements increasing the likelihood of future Regional Trade Agreements, driven by Economic and Connectivity ICAs. On the other hand, we find that countries that are involved in an RTA are less likely to enter ICAs in the future, which we interpret as consistent with Mattoo et al. (2020) findings that nowadays PTAs have expanded their scope and cover a wide range of areas besides trade.

We second document the commercial spillovers of ICAs through the estimation of gravity equations, where we find that a 1% increase in ICAs implies a 0.07% increase in exports, which is an inelastic but non negligible effect. The average number of ICAs in a country pair in 2020 is 1.84, signing a new agreement in this case would result in a 54% increase in ICAs, which would be translated in an increase of around 3,07% of exports. Considering the average number of ICAs in dyads with a positive number of agreements (6.31), signing a new one would translate into a 0.98% increase in exports. We do not assume ICAs are an exogenous random variable since countries likely select endogenously into them, for reasons we might not observe and that could be trade related. Thus, we apply what are by now common panel techniques in the trade literature to estimate the effects of ICAs on export flows. Aggregate shocks to a country's exports can be large relative to the effects of an international cooperation agreement and it is impossible to establish a counterfactual level of trade for the absence of agreement case. In addition, the impact of an ICA can vary across parties in the agreement. To purge our results from such issues, the estimates provided make use of a set of fixed effects (reporter-year,

partner-year and partner-reporter) to account for historical trade patterns and for aggregate shocks to countries, which allow to measure the within dyad trade effect in a dynamic framework. Despite potential endogeneity, results are robust to a series of techniques, different specifications and the inclusion of an instrument exploiting the network structure of international agreements<sup>4</sup>. Importantly, developing countries experienced more trade-gains from international cooperation than the developed world, which is partly explained by the fact that South countries have more potential reputational gains than the Global North. It is also explained by the importance and diffusion they assign to securing diplomatic allies (see Brazilian official coverage of [Agreements with China and UAE](#)).

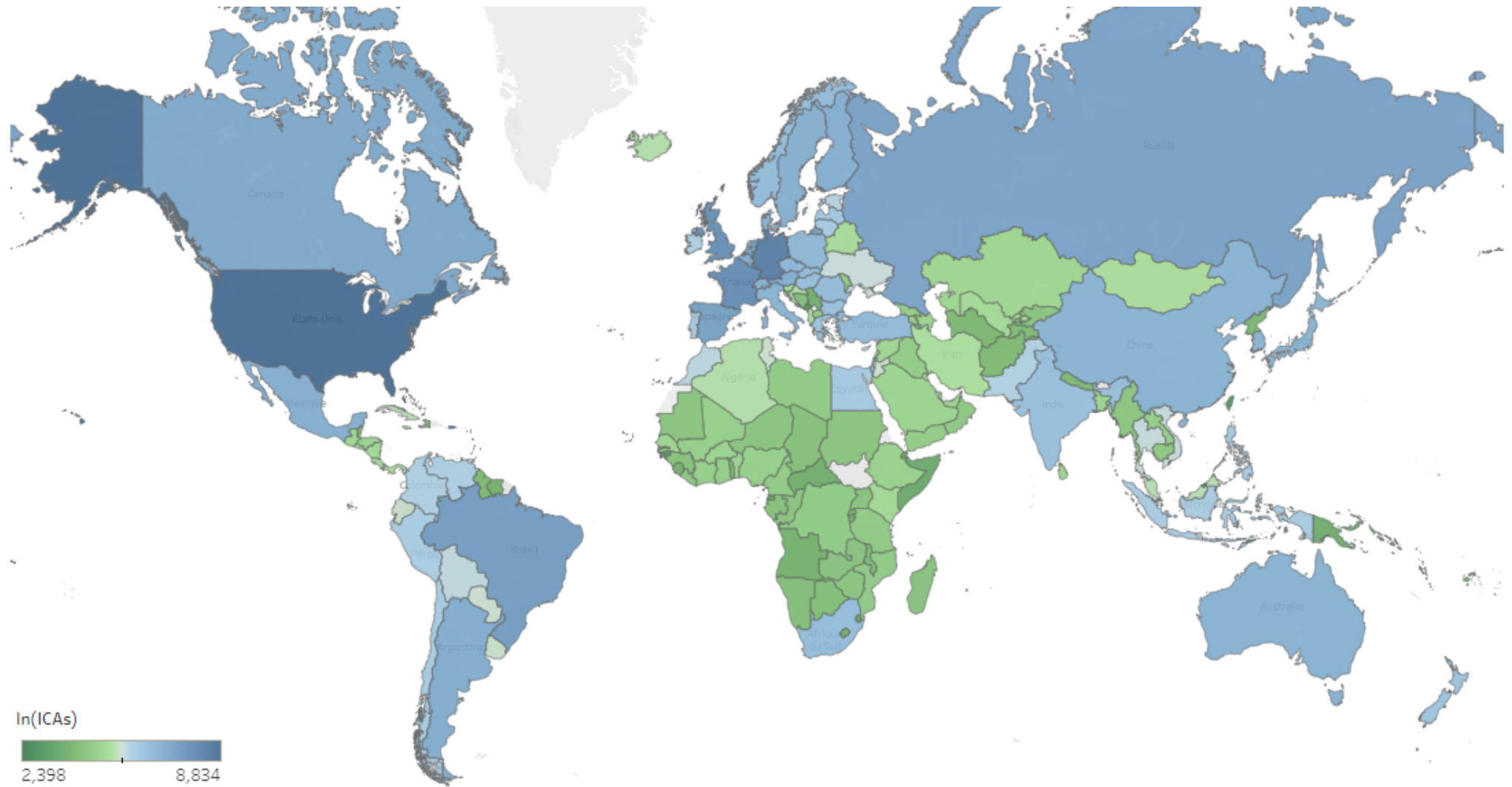
The empirical results of the article suggest two important conclusions. First, trade follows the flag, countries that intensify their cooperation relations experience increases in bilateral trade. The effects are higher when both parties are Global South countries, suggesting bigger reputational gains, and driven by economic and connectivity agreements. Second, we find that on average, having an ICA increases the probability of having an RTA by around 4-8% (extensive margin). Such results are stronger for economic than non economic agreements but, also positive for Connectivity agreements, when completely decomposing the functionalities of the agreements. Finally, when counterparts are North-South, the likelihood of them entering an RTA conditional of being part of an ICA is positive only for Economic ICAs. This suggests that South countries wanting to deepen their trade relations with North countries should start by establishing confident cooperation channels on other economic areas.

The paper is organized as follows. Section 2 summarizes the related literature. Section 3 develops the structural gravity model we estimate and the more general empirical strategy of our subsequent regressions. Section 4 describes the data used, including the construction of the ICAD and the sources on which we rely for international trade and controls, and shows descriptive statistics. In Section 5 we document the economic determinants of ICAs and the sequencing of international cooperation. In Section 6 we discuss the main findings for the effect of ICAs on trade. In Section 7 we explore the heterogeneous effects of the different types of agreements and the effects on Global South vs Global North countries. Section 8 concludes.

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<sup>4</sup>Although we acknowledge and discuss that given the nature of gravity equations, it would be naive to think there is a suitable instrument to precisely estimate a causal effect. All results provided should be seen as giving robust evidence proving that ICAs increase trade rather than perfectly identifying a causal effect and magnitude.

Figure 2: Cumulative number of ICAs in 2022



The geographical distribution of ICAs is concentrated in Western rich democracies. The Top 10 countries with most agreements at the end of the period are the United States (6862), Germany (4202), France (2683), the United Kingdom (2482), the Netherlands (1745), Brazil (1649), Spain (1514), Russia (1397), Canada (1206) and Belgium (1073). China is the 21th country with most agreements (847), being the second in Asia after Israel (918), and quite ahead from India (589). Africa is a relatively disconnected region from the international order, with the lowest regional average (115 agreements). The most active country in the continent is South Africa (628) while the least active is Sao Tome and Principe (16).



## 2 Related literature

Diplomatic activities can take a variety of forms and can aim for a wide range of goals. In this paper, we analyze one particular instrument of these diplomatic activities, the signing of ICAs. We review the relevant literature in international studies highlighting: i) economists have extensively studied how a narrower type of cooperation, Preferential Trade Agreements (PTAs), affects economic outcomes such as trade, foreign direct investment (FDI), growth or welfare, ii) political economists, political scientists or international relations scholars have focused on non-economic outcomes from trade: democratization level, conflict risks, lobbying power, iii) an increasing strand of literature has studied how economic diplomacy impact economic outcomes. Our study aims at contributing to this literature by shedding new light on the economic and political forces at play in diplomatic relations, with the hope of not drawing a perimeter line between different fields of the social sciences. As the absence of a comprehensive database covering the cooperation efforts of non-trade agreements (until now) prevented related research from proliferating, we will mainly refer to studies on RTAs to understand the nature of ICAs.

### 2.1 The formation of RTAs

#### 2.1.1 Economics

One of the foundational studies in the formation of RTAs is [Baldwin \(1993\)](#), which presents the domino theory, stating that countries join a PTA as a result of anti-membership and pro-membership forces reaching a political equilibrium because the cost of not joining -related to trade diversion<sup>5</sup>- is too high. [Baldwin and Jaimovich \(2012\)](#) departs from the domino theory to generate a *contagion index* of FTAs, a measure that links this degree of contagion to the importance of the partners' market, finding empirical support.

Alternatively, [Baier and Bergstrand \(2004\)](#) find that the likelihood of a dyad entering a PTA is tied to the potential welfare gains derived from the agreement. These gains will be higher depending on: their economic size and similarity among economies, the closer the countries are to each other -trade creation-, the farther the dyad is from the rest of the world -trade diversion-, the greater is the difference in capital-labor endowment ratios in the dyad -traditional gains from comparative advantages in a Heckscher-Ohlin model- and the smaller is this endowment ratios difference relative to the rest of the world -what would mean fewer inter-industry trade diversion. On their revision of the study, [Baier et al. \(2014\)](#) introduce the concept of FTAs' *interdependence*, identifying two possible channels: *own-FTA* and *cross-FTA* effect. While the former refers to the case where one of the members has an FTA with a third country, the latter alludes to the situation where a different country-pair has already entered an FTA. In a way, own-FTA is related to the domino theory while cross-FTA it's a competitive liberalization approach. Studies such as [Egger and Larch \(2008\)](#) confirm the cross-FTA effect.

Finally, [Chen and Joshi \(2010\)](#) build a theoretical model where given that *country i* has an existing FTA with *country k*, it has stronger incentives to enter a new FTA with *country j* when comparing with the case of a no pre-existing  $FTA_{ik}$  situation. They argue this is because the potential losses that *country i* could experience in its home market from the new  $FTA_{ij}$  are appeased by the presence of the third country *k*. However, this means that potential gains in the export market for *country j* will also be smaller because of *country k*. As a result, the new FTA will be signed if *country i*'s market size and marginal costs are big enough to allow gains for *country j*. Incentives increase if both countries *i* and *j* hold FTAs with third country *k*. They find empirical evidence to support their hypothesis.

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<sup>5</sup>Trade creation is defined as consumption shifts from a producer with high costs to one with lower, thus expanding trade. Opposite, trade diversion is defined as trade shifts from a lower cost producer from outside the trade union to a high cost producer inside the union.

## 2.1.2 International relations/political economy

The decision to join a PTA could be driven by political, besides economic, forces. [Grossman and Helpman \(1993\)](#) finds that an FTA would be the equilibrium of a game with an incumbent government and industry special interest groups if the welfare gains for the median voter are substantial enough. [Mansfield \(1993\)](#) points out that many PTAs have been formed under countries considered political allies. In a valuable summary, [Ravenhill \(2008\)](#) explains that the reasons for a government signing a trade agreement could go from security issues to creating a negotiation channel that could work better than the ones within the WTO, including strengthening their bargaining power or giving a certain "seriousness" signal to the rest of the world, particularly to investors. According to [Mansfield and Reinhardt \(2003\)](#) the international system's activity -GATT/WTO- results in an increase in the likelihood of members signing a PTA so as to secure more bargaining power within the system.

[Mansfield et al. \(2002\)](#) describe a mechanism where more democratic states are more keen on signing a PTA. Politicians send a sign of competence to the electorate when entering a PTA, which translates into confidence among the voters. This implies within country institutions play a big role in the formation of PTAs. Going from voters to lobby groups, [Mansfield et al. \(2008\)](#) consider veto players will have a final saying on which type of integration countries are binding to. They argue that the higher the number of veto players and the more heterogeneous their preferences, then the less probable will be to reach integration, or, if reached, the more superficial it will be.

[Dür \(2007\)](#) emphasizes the lobbying power of domestic interests in the formation of certain agreements, where exporters pressure in favor of a *protection-for-exporters* strategy, pushing for the creation of PTAs with third pairs so as not to lose foreign market access (exporters forcing the domino or own-FTA effect). Using a Principal-Agent framework, [Elsig and Dupont \(2012\)](#) introduce bureaucratic interests in the process and outcome of a PTA.

## 2.2 Effects of RTAs

### 2.2.1 Economics

Research on the economic effects of free trade agreements (FTAs) spans several decades. Foundational work by [Viner \(1950\)](#) distinguishes FTAs' welfare impacts into trade creation and trade diversion, affecting both member and non-member countries ambiguously. In a monopolistically competitive context, [Krugman et al. \(1991\)](#) argues that FTAs, especially among neighboring countries, likely promote net trade creation due to minimized trade diversion. However, non-members could face disadvantages. Similarly, [Summers et al. \(1991\)](#) views regional liberalization as a "second-best" option, where FTAs typically enhance trade creation over diversion, potentially spurring global liberalization despite regional biases.

Contrarily, [Bhagwati \(1999\)](#) warns of potential trade diversion from some FTAs, especially through third-party protectionism. Supporting this, [Romalis \(2007\)](#) uses detailed data to show that while NAFTA and CUFSTA increased trade volume, their price and welfare impacts were minimal, with non-member imports displaced in highly protected sectors.

Empirical studies affirm FTAs' role in trade promotion. For instance, [Aitken \(1973\)](#) demonstrates gross trade creation (GTC) among EEC and EFTA members. Using panel data, [Baier and Bergstrand \(2007\)](#) confirm FTAs' positive trade effects, later reinforced through a matching estimator approach by [Baier and Bergstrand \(2009\)](#). [Goldstein et al. \(2007\)](#) reveals that countries with *institutional standing* in GATT/WTO see increased trade, a pattern mirrored in other PTAs. Through gravity models, [Magee \(2008\)](#) finds substantial long-run trade benefits from customs unions, while FTAs show moderate impacts and PTAs negligible effects. Trade often surges before formal FTA signings, aligning with the "natural trading partners" hypothesis proposed by [Krugman et al. \(1991\)](#) and [Summers et al. \(1991\)](#). Contrary to expectations, [Rose \(2004\)](#) finds no distinct trade pattern for GATT/WTO members versus non-members, possibly due to a lack of a non-GATT counterfactual. [Baier et al. \(2019\)](#) explore the heterogeneous effects of FTAs.

Regionalism's influence on unilateral trade liberalization is highlighted by [Estevadeordal et al. \(2008\)](#), who finds that Latin American FTAs (but not customs unions) hastened tariff reductions. Similar GTC growth is noted by [Pelzman \(1977\)](#) within the CMEA framework.

The impact of PTAs on foreign direct investment (FDI) has also been explored. Using gravity models, [Büthe and Milner \(2008\)](#) demonstrate that developing nations in GATT/WTO with more PTAs attract significantly higher FDI, as trade agreements enhance credibility for foreign investors beyond domestic policy assurances.

## 2.2.2 Political outcomes

As policymakers and politicians, scholars also believe PTAs have effects going beyond direct economic gains. [Pevehouse \(2005\)](#) argues that PTAs increase the probability of democratization. [Fernandez and Portes \(1998\)](#) believes RTAs help increase credibility in the signatory countries, providing them with insurance against possible future events, stronger bargaining power and sending a signal to the world. [Mansfield and Pevehouse \(2000\)](#) find that countries belonging to the same PTA are less likely to start a military conflict, and that this likelihood has an inverse relation with trade. However, they find trade has little effect if countries don't share a PTA. Similarly, [Martin et al. \(2008\)](#) study the contrasting effects of bilateral and multilateral trade openness on the probability of military conflict. [Hafner-Burton \(2005\)](#) argues that PTAs improve signatory members' human rights. [Ingram et al. \(2005\)](#) find that countries connected to international governmental organization experienced more bilateral trade.

## 2.3 How politics affects trade

[Pollins \(1989a\)](#) and [Pollins \(1989b\)](#) use a public choice approach to predict the level of imports using international conflict, cooperation and income as the explanatory variables of the model. Both studies find that the effects of diplomacy on commerce is significant, thus indicating that trade follows the flag. [Gowa and Mansfield \(1993\)](#) finds political-military alliances having a positive impact on bilateral trade flows. [Long \(2003\)](#) argues that defense pacts are associated with higher trade among allies. [Kono \(2006\)](#) finds that democracy leads to lower trade tariffs and higher quality NTBs. Similarly, [Milner and Kubota \(2005\)](#) argue that democratization leads to trade globalization. [Rose \(2007\)](#) explores the role of foreign embassies in promoting trade, finding that embassies and consulates play a significant role in increasing exports. [Nitsch \(2007\)](#) finds that state and official visits are indeed positively correlated with exports. [Fuchs and Klann \(2013\)](#) investigate the "Dalai Lama effect," where countries that host the Dalai Lama often experience a reduction in exports to China due to diplomatic tensions. [Davis et al. \(2019\)](#) study the case of Canada and argue that trade missions do not cause an increase in trade. [Moons and van Bergeijk \(2017\)](#) provide a thorough meta-analysis of the effects of economic diplomacy. Finally, [Goldberg and Reed \(2023\)](#) argue that the US tends to trade more with countries which their citizens label as "friendly" or "allies".

## 2.4 Trade and Cooperation

### 2.4.1 Economy

Our concern refers to the links and dynamics that exist in international cooperation and trade, in its foundation and its effects. To the best of our knowledge, there is not yet a study that answers directly this question, but some have gotten close to it. [Balassa \(1961\)](#) argues that FTAs start the path toward regional integration, allowing for the future formation of a Customs Union a common market and, finally, a monetary union. Although [Devlin and Estevadeordal \(2004\)](#) pose the theoretical possible mechanisms of this relation, it was never empirically tested.

### 2.4.2 Political science

The political science field has focused on this aspect with more attention. [Axelrod and Hamilton \(1981\)](#), [Keohane \(2005\)](#), [Oye \(1985\)](#) and [Pastor et al. \(2001\)](#) use game theoretical approaches to conclude that a more cooperative equilibrium could be reached by repeated interactions solving the Prisoner's Dilemma. [Fearon \(1997\)](#) and [Morrow \(1992\)](#) introduce strategic factors into their games that explain when cooperating is a better outcome than not doing so. [Frieden \(1996\)](#), as [Balassa \(1961\)](#), believes that it exists a progression from trade integration towards monetary cooperation. Studying the European case, he gets to the conclusion that the more integrated a nation is into EU trade and finance the more it would desire to acquire monetary integration, so as to stabilize exchange rates among the partners. This belief of a path from FTAs to monetary unions is also shared by [Maxfield \(1990\)](#).

## 3 Empirical strategy

This paper presents empirical findings on the impact of cooperation agreements on trade, its determinants, and sequencing. We acknowledge potential endogeneity in our results due to confounding factors and/or reverse causality, which may bias our estimates. Bilateral relations involve complex decisions where politicians use diplomacy to enhance trade and commerce to influence diplomatic negotiations. Identifying exogenous mechanisms is challenging, but we argue that our complementary approaches provide robust evidence. With countries entering and exiting the international system during the study period, we deal with an unbalanced panel of 193 countries.

This section is divided into two parts. First, we describe the linear probabilistic model used to understand the economic determinants of International Cooperation Agreements (ICAs), focusing on gravity forces. We also test the hypothesis of [Estevadeordal and Suominen \(2008\)](#) on the sequencing between trade agreements and cooperation agreements. We analyze the likelihood of a country with a Regional Trade Agreement (RTA) being part of an ICA (extensive margin) and how an RTA strengthens cooperative relations (intensive margin) within a country pair. It is uncommon for a bilateral pair with an RTA to sign a new one, typically occurring only if they modify existing terms or join a multilateral agreement. Thus, we consider RTAs as non-randomly assigned 'treatments', addressing endogeneity with complementary techniques: staggered differences-in-differences regression and an event study of the ICA evolution in bilateral relations.

Second, we employ a gravity equation to estimate the impact of ICAs on trade. Our empirical design aligns with current state-of-the-art gravity regressions, incorporating relevant controls from International Relations. Specifically, we rely on Poisson pseudo-maximum likelihood estimation. To address endogeneity concerns of ICAs and trade, we use two strategies. First, we introduce a lead of our independent variable into our main specification, following [Baier and Bergstrand \(2007\)](#). Second, we exploit the network structure of international relations to design an instrumental variable **that relies on peers' connections**. All of the econometric techniques applied throughout the paper have limitations, so the results should be viewed as complementary, collectively providing robust evidence.

### 3.1 Economic determinants of International Cooperation Agreements

We use a linear probability model to study the economic determinants of International Cooperation Agreements (ICAs). We choose a linear model over a log-linear model because the latter is restricted to prediction analysis, whereas our focus is on the effects of the independent variables ([Hellevik, 2009](#)). Additionally, LPM allows us to control for restrictive fixed effects, which is crucial in a bilateral setting. We estimate the following equation:

$$P(ICA_{ij,t}) = \beta_0 + \beta_1 RTA_{ij,t-1} + \beta_2 \ln GDP_{i,t} \times \ln GDP_{j,t} + \beta_3 Diff Y_{ij,t} + \beta_4 \ln POP_{i,t} \times \ln POP_{j,t} + \delta C_{ij,t} + \zeta_{ij} + \gamma_{i,t} + \psi_{j,t} \quad (1)$$

The left-hand side measures the probability of having an ICA for a particular country pair in a specific year. Subscripts  $i$ ,  $j$ , and  $t$  denote the exporter, importer, and year, respectively.  $RTA_{ij,t-1}$  is a dummy variable equal to one if the pair signed a Regional Trade Agreement, with a 1-period lag to address endogeneity concerns.  $Diff Y_{ij,t}$  is the absolute difference in the pair's natural log of GDP and  $C_{ij,t}$  is a vector of control variables.  $\zeta$ ,  $\gamma$ , and  $\psi$  are the pair, Reporter-Year, and Partner-Year fixed effects, respectively.

We study the intensive margin of RTAs over ICAs with the following specification:

$$\Delta_1 \ln(ICA_{ij,t}) = \beta_0 + \beta_1 RTA_{ij,t-1} + \beta_2 \ln GDP_{i,t} \times \ln GDP_{j,t} + \beta_3 Diff Y_{ij,t} + \beta_4 \ln POP_{i,t} \times \ln POP_{j,t} + \delta C_{ij,t} + \zeta_{ij} + \gamma_{i,t} + \psi_{j,t} + \epsilon_{ij,t} \quad (2)$$

Where  $ICA_{ij,t}$  refers to the cumulative number of ICAs entered by the dyad. We include international relations controls and explore heterogeneous effects in subsequent regressions, distinguishing by type of cooperation agreement and type of country.

Finally, we examine if pairs that are part of an ICA are more likely to be part of an RTA by running the following specification:

$$P(RTA_{ij,t}) = \beta_0 + \beta_1 \ln(ICA_{ij,t-5}) + \beta_2 \ln GDP_{i,t} \times \ln GDP_{j,t} + \beta_3 Diff Y_{ij,t} + \beta_4 \ln POP_{i,t} \times \ln POP_{j,t} + \delta C_{ij,t} + \zeta_{ij} + \gamma_{i,t} + \psi_{j,t} \quad (3)$$

Where  $P(RTA_{ij,t})$  refers to the probability of being part an RTA in year  $t$ .

### 3.2 International agreements effects on trade

We rely on the workhorse tool of trade research, the gravity equation, to evaluate the impact ICAs have on trade. Our econometric methods build upon the structural gravity derived by [Anderson \(1979\)](#), popularized in [Eaton and Kortum \(2002\)](#) and [Anderson and Van Wincoop \(2003\)](#), adapted to panel data in [Baier and Bergstrand \(2007\)](#) and carefully detailed in subsequent works like [Piermartini and Yotov \(2016\)](#) or [Baier et al. \(2019\)](#)<sup>6</sup>. We estimate the gravity equations on bilateral exports using Poisson-pseudo maximum likelihood (PPML).

International Cooperation Agreements' purposes are varied and treaty specific. Their provisions cover a wide range of topics, from changes on visa policies to rules on nuclear weapons. Even though ICAs are not purposely designed to do so, they may lower bilateral trade costs between the signatory parties. The process of country pairs negotiating and signing non-trade agreements results in the creation of a legal infrastructure that "closes the distance" between them, promoting bilateral trade. The mechanism through which ICAs affect trade is microfounded on the basis that international agreements increase trust between citizens (firms) in signatory countries, allowing them to engage in deeper and riskier relations such as trade, increasing bilateral flows. Our interest is in estimating if such a decrease in bilateral trade costs actually happens and impacts trade flows.

Since the main focus of this paper is the effect of  $ICA$  -which represents the number of International Cooperation Agreements in which the dyad take part- on trade costs, we include dyad-time varying controls in our estimations, such as  $RTA$  -which accounts for the presence of regional trade agreements in the country

<sup>6</sup>It is not the goal of this paper to prove how or why gravities are useful to measure trade costs. There is a broad literature that argue in favor of these models, see for instance [Head and Mayer \(2014\)](#), [Baldwin and Taglioni \(2006\)](#), [Baltagi et al. \(2014\)](#), [Piermartini and Yotov \(2016\)](#) among others.

pair- and we capture the bilateral non-time varying trade frictions using pair fixed effects. We explain the rest of controls in subsection below.

We do not estimate the multilateral resistance (MR) terms nor the time-invariant bilateral trade costs as they will be accounted for what is now the golden rule in a dynamic gravity estimation framework with panel data: reporter-year, partner-year and pair fixed effects. Reporter-year and partner-year fixed effects will account for the unobservable MR and any other time-varying characteristics affecting trade, which means they capture historical shocks affecting all dyads as well as country-specific shocks that affect a subset of dyads. These include discrete events of global relevance for cooperation such as the end of the URSS and the fall of the Berlin Wall, the 9/11, the Great Recession, as well as trends such as the development of the global governance, the increases on international trade due to globalization and the Global Value Chains revolution. Moreover, they take into account country-specific shocks such as the massive economic growth in China, changes in political regimes or natural disasters. Pair fixed effects are controlling for time invariant unobserved pair-characteristics that simultaneously influence trade and ICAs, such as distance, sharing common language, contiguity, same religion, if they had -or not- any type of colonial relationship. This strict set of fixed effects is controlling for all of the unobservables impacting bilateral trade except the characteristics varying within a dyad and across time.

Out of a total of 31,982 agreements collected in the database, 835 are multilateral ones (including more than two counterparts). As considering these treaties without any adjustment would result in inflating the diplomatic relations of a given country, we include only a portion of each multilateral agreement in the bilateral relation, corresponding to

$$b_{ij} = \frac{1}{(\text{nr of countries} - 1)}$$

With  $b_{ij}$  = the portion of the multilateral treaty that will be added to the bilateral relation of country  $i$  and country  $j$ , countries = the number of countries that signed the multilateral agreement. This way, multilateral relations don't get over-represented in bilateral ones, and when adding all the bilateral relations of a country one gets its total number of agreements. Note that this means that the number of ICAs in a bilateral relationship is not always an integer due to the presence of both, bilateral and multilateral treaties. Robustness regressions using only the bilateral agreements or counting each multilateral agreement as one in a bilateral relation yield similar results and significance level and are shown in Tables 16 and 17 in Appendix, respectively.

Specifically, we empirically estimate the following benchmark model:

$$X_{ij,t} = \exp\left(\beta_0 + \beta_1 ICA_{ij,t} + \beta_2 RTA_{ij,t} + \beta_3 Y_{ij,t} + \delta C_{ij,t} + \zeta_{ij} + \gamma_{i,t} + \psi_{j,t}\right) + \epsilon_{ij,t} \quad (4)$$

where, in addition to the terms explained above,

$$Y_{ij,t} = \ln\left(\frac{GDP_{i,t}}{\text{population}_{i,t}}\right) \times \ln\left(\frac{GDP_{j,t}}{\text{population}_{j,t}}\right),$$

$\zeta_{ij}$  are the pair fixed effects,  $\gamma_{i,t}$  are the Reporter-Year fixed effects,  $\psi_{j,t}$  are the Partner-Year fixed effects, and  $\epsilon_{ij,t}$  is the error term.

We are not oblivious of the fact that the estimates could be biased due to the presence of reverse causality or confounding factors. In order to address potential endogeneity, in Section 6.1 we implement two strategies that confirm our main results. Namely, we introduce a lead of our independent variable as [Baier and Bergstrand \(2007\)](#) do, and we use an instrumental variable that exploits the network structure of ICAs. The latter consists on the number of agreements signed that do not include either  $i$  nor  $j$ . The instrument exploits spillovers of peers into the bilateral cooperation relation of countries  $ij$  and is not predetermined by the bilateral level of trade between  $ij$ , as it is unlikely that the dependent variable would affect the diplomatic actions of the rest of the world. Additionally, we introduce the same control variables as above to reduce potential bias arising from omitted variable.



### 3.3 Control variables

As the subject of our study is intertwined with many aspects of international relations, we include in  $C_{ij,t}$  control variables at the dyad-year level that allow us to capture other political determinants of bilateral relations, which help to better identify an effect, dealing with potential omitted variable bias arising from the correlation of  $ICA_{ij,t}$  and the error term. These are:

- $UNVoting_{ij,t}$  is the Ideal Point Distance taken from [Bailey et al. \(2017\)](#), because countries with more affinity in the UN General Assembly will tend to sign more treaties and trade more. A higher ideal point distance reflects countries voting further apart in the UNGA. We multiply the original variable by -1 to have a simpler interpretation: countries with higher  $UNVoting_{ij,t}$  have more similar voting patterns in the UNGA.
- $IgoMemb_{ij,t}$  is the number of International Governmental Organizations in which both countries are members, taken from the Correlates of War project. We introduce this variable for historical reasons: post-WW2 era was the time when countries started to develop their international network of treaties. In parallel, they spent resources in the construction of the international governmental sector, with reasonable implications in bilateral relations. We also expect countries being part of more IGOs to trade more and engage in more bilateral agreements.
- $Alliance_{ij,t}$  is a dummy equal 1 if the dyad is part of a military alliance, as reported by the Correlates of War project.
- $Democ_{ij,t}$  is the minimum democracy/autocracy score in the dyad as reported in the Polity V database. As [Ingram et al. \(2005\)](#) do, we include this control since democracies are expected to trade more and sign more agreements.

## 4 Data

The core of our analysis is relying on a novel database, the International Cooperation Agreements Database (ICAD). The ICAD gathers 31,982 international agreements signed between 1945-2022. Data comes from a variety of sources: the United Nations Treaty Collection (UNTC), the Treaty Secretariat of the World Intellectual Property Organization (WIPO), the United Nations Conference on Trade and Development (UNCTAD), and the World Treaty Index (WTI). 97 percent of the agreements in the data are bilateral (have only two parties) while the rest 3 percent are multilateral (have at least three parties).

The primary data comes from the UNTC, more specifically the United Nations Treaty Series (UNTS). UNTS contains both bilateral and multilateral treaties. Under Article 102 of the Charter of the United Nations, every treaty and every international agreement signed by a UN Member after the coming into force of the Charter must be registered with the Secretariat, which then publishes it. No party can invoke an agreement before any organ of the UN until the agreement is registered. The main objective of this requirement is to avoid “secret diplomacy” between states. Due to this requirement, the UNTC is likely the most comprehensive source of international agreements encompassing formal, legally binding international agreements (rather than informal documents), which then makes the ICAD the most comprehensive database of international agreements. However, several caveats within the ICAD are worth mentioning. First, it does not hold the complete universe of agreements as we acknowledge a minor number could be published in other sources -like national institutions of specific countries- and missing from our sources consulted. Second, there is no clear deadline for registration, which means that, at any given date, some active agreements have not been recorded. In some cases, there is a lag of years between an agreement entering into force and being registered with the UN. Third, there is no data on if the registered agreements are no longer in place. We acknowledge these limitations could result in measurement error biasing our results, although we believe such limitations are not worrisome given the extensive coverage of the data we gathered. The ICA Database also includes international

agreements from two additional sources: the Treaty Secretariat of the World Intellectual Property Organization (WIPO) and the United Nations Conference on Trade and Development (UNCTAD). In total, these sources added roughly 3,000 unique international agreements to the ICA database. For the purposes of this study, the ICAD was complemented with data on Regional Trade Agreements (RTAs) coming from the Economic Integration Agreement Dataset <sup>7</sup> (a conjoint work from Jeffrey Bergstrand and Scott Baier).

Within our framework, International Cooperation Agreements (ICAs) and Official Development Assistance (ODA) are distinguished based on level of interdependence and mutuality of benefits. First, ODA is a one-way flow of assistance from donors to beneficiaries, namely developing countries. These recipient countries depend on donors to achieve development outcomes, but not the other way around. In contrast, ICA involves two or more parties acting together to create outcomes. In this process, the parties rely on each other to contribute funds, technical expertise, and human resources to obtain these outcomes. Further, producing mutual and relatively equal benefits is another key characteristic of ICA. ODA generally provides concessional funding (or soft loans) with a grant component of at least 25% to support development projects. The benefits of ODA are mainly channeled to recipients/developing countries. In comparison, the outcomes of ICA should be desirable for all those involved, whether they are developed or developing countries. For example, funding and technical assistance provided by a donor agency to cure animal diseases is clearly ODA, in that it only benefits the recipient country. However, collaboration between countries on controlling animal diseases in the frontier region is ICA. As our intention is to measure cooperation between countries, we do not include ODAs in our database. Accordingly, we only include RTAs coded 2 or higher in the EIA dataset, given that they refer to reciprocal agreements. The treaties in our analysis were sorted into six distinct categories, each reflecting the level and nature of cooperation involved, as outlined in Table 1 (a more detailed version is available in the Appendix). When we make reference to “Economic Cooperation”, we are specifically addressing treaties falling into category 2. On the other hand, when we use the term “Non-Economic Cooperation”, we are encompassing all the remaining treaty categories. For a detailed explanation of how functions were coded please refer to Methodology paper.

Data on trade flows, GDP, and gravity variables comes from the historic trade and the gravity databases of the CEPII. We rely on (Conte et al., 2021) data for the period 1948-2020. For years 1945-1948 we complement with the TRADHIST data set (Fouquin et al., 2016).

On political controls: Data on UN voting and ideal point estimates comes from Voeten et al. (2009). Data on IGO membership is taken from the Correlates of War project (Pevehouse et al., 2015). Data on military alliances comes from Gibler (2008). We take data on democracy/autocracy scores from the Polity5 database (Marshall and Gurr, 2021).

#### 4.1 The emergence of the network of International Cooperation Agreements

The post-WWII recovery was arguably possible thanks to the establishment of multilateral institutions that were purposely designed in 1944 to safeguard global peace (the United Nations), regulate the financial and monetary system (the International Monetary Fund) and assist in the reconstruction and development of the world (the World Bank). Almost simultaneously, the General Agreement on Tariffs and Trade (GATT) was signed, on October 1947, coming into force on January 1, 1948, to promote trade.

These founding stones of the new world order were necessary but not sufficient to achieve the levels of global diplomatic and commercial cooperation of our times. As peaceful cooperation among countries was facilitated, countries realized there were several other issues where they could cooperate at the bilateral or multilateral level. Hence, soon after the end of WWII, they started building a network of International Cooperation Agreements to deal with topics as they arose. The establishment of such a set of diplomatic rules

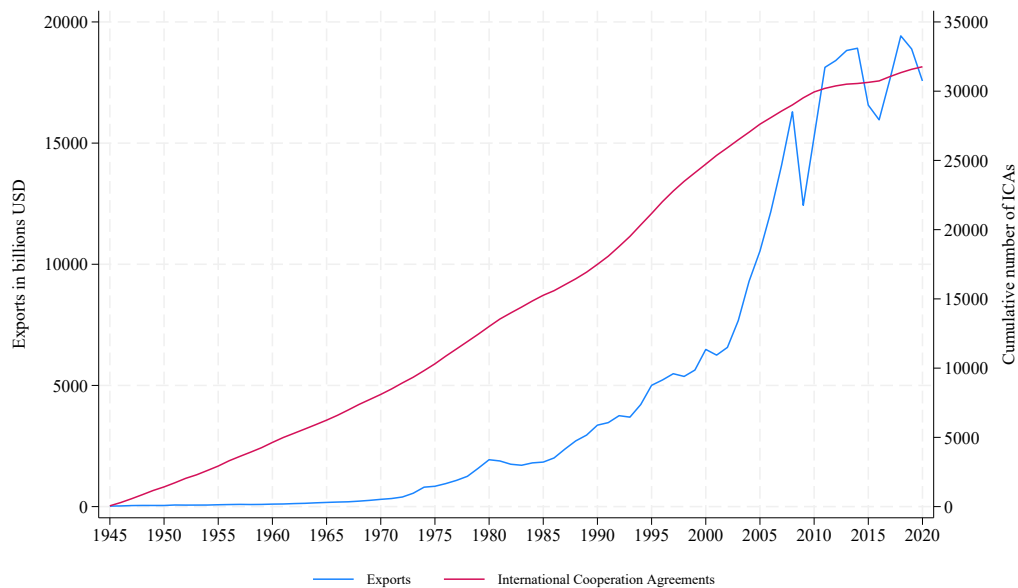
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<sup>7</sup>Given the historical extent of our study and the various transformations the world experienced, the set of countries included in this paper slightly differs with the country pairs reported in the EIA dataset, specially for conflicted situations such as former Soviet countries, former Yugoslavia and so on. In the cases where countries are not present in the EIA we complement with data from the CEPII Gravity database. Robust regressions are run using only one source.



ensured that globalization could take place in a peaceful manner, facilitating countries' reliable interactions with each other.<sup>8</sup> Figure 3 illustrates how rapidly international cooperation rose in the aftermath of WWII, at higher rates than world trade for the initial decades. From 1945 to 1975, the number of International Cooperation Agreements (ICAs) surged by 173 times, rising from 59 to 10,309, while exports grew by 43 times, increasing from 19 to 839 billion USD. Following the Oil crisis, trade experienced a resurgence, with total exports growing 300% (3,362 billion USD) from 1975 to 1990. In contrast, the number of ICAs grew by only 70% (reaching 17,494). The 1990s marked a period of liberalization, reduced trade barriers, and the proliferation of Regional Trade Agreements (RTAs). During this phase, ICAs grew by 58% (27,619) from 1990 to 2005, while total exports increased by 214% (10,543 billion USD). The post-Financial crisis era has been described as the onset of *slowbilization*, and this trend is also reflected in international cooperation patterns. From 2005 to 2020, the number of ICAs grew by a modest 15% (reaching 31,764), whereas exports surged by 66% (17,565 billion USD). During the same period, the cumulative number of Regional Trade Agreements reached 313 (Figure 4), which undoubtedly played a crucial role in the globalization process.

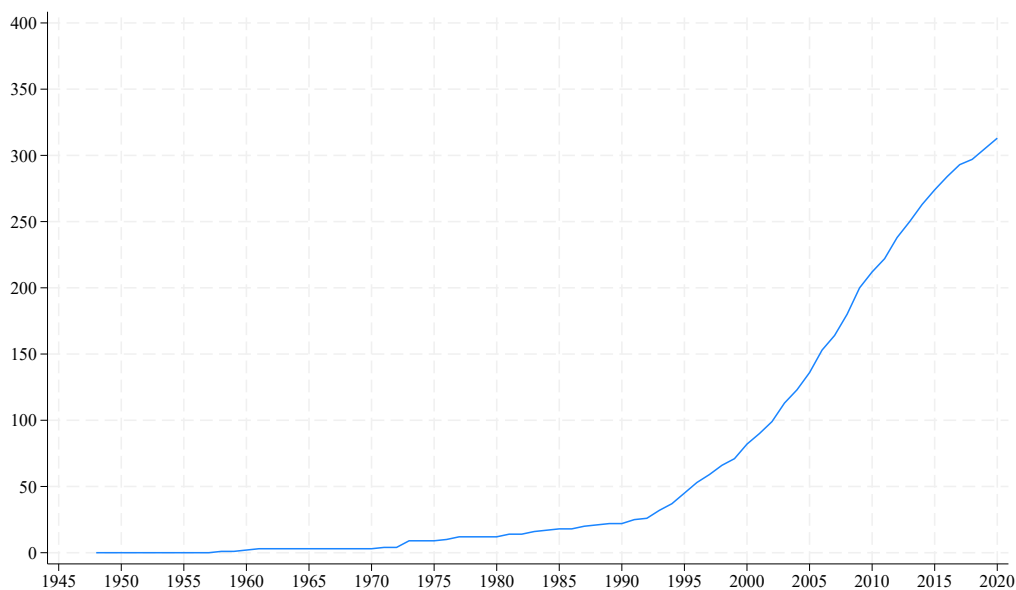
Figure 3: Globalization was possible thanks to the international legal infrastructure



Cumulative number of International Cooperation Agreements (right axis) refers to the entirety of ICAs that have been registered until a certain year. Exports (left axis) is the totality of world's exports by year, in current USD. In the post-WWII era (1945-1975), ICAs increased by 173 times (59 to 10,309), while exports grew by 43 times (19 to 839 billion USD). After the Oil Crisis (1975-1990), ICAs grew 70% (17,494), and exports surged by 300% (3,362 billion USD). In the liberalization era (1990-2005), ICAs rose by 58% (27,619), and exports by 214% (10,543 billion USD). Post-Financial crisis (2005-2020) saw *slowbilization*: ICAs up 15% (31,764), exports up 66% (17,565 billion USD).

<sup>8</sup>We abstract here from any judgement of value with respect to this being a "fair" or "safe" way for less powerful countries, although we anticipate it might have not been always the case. Further research should deal with such question.

Figure 4: Regional Trade Agreements increased sharply during the 90s



Source: [World Trade Organization](#)

Already by the 1960s, 88% of global trade was happening between countries that had signed -at least- one ICA with each other. This meant that ICAs expanded rapidly to cover almost the entire value of international commerce while, at the same time, the share of trade within partners that were involved in an RTA was only 17% (Figure 5). As RTAs became more common and boosted trade, the share of trade within RTAs counterparts steadily increased until reaching 60% of global trade today. Coincident with such proliferation of RTAs, the share of trade that happens between countries that are part of an ICA but not part of an RTA has been steadily declining from 80 to 36% of global trade, while the share of trade that happens between countries that are part of an ICA (regardless of them being or not part of an RTA) has remained steady at 90%. Importantly, the share of trade that occurs between country pairs that are only part of an RTA remains very low, at 5% of global trade. Figure 13 in the Appendix shows the same indicators at the country level. Naturally, drawing clear distinctions on the type of bilateral diplomatic relation (either commercial or cooperational) is not straightforward, as countries that are involved in an RTA are likely involved in an ICA (Figure 6). In 2020, the global average number of ICA counterparts is 55, while the global average for RTA counterparts with an ICA is 26 and the average for RTA counterparts without an ICA is 18. This reflects the fact that international trade, international cooperation and trade agreements are interlinked and likely endogenously determined.

Figure 5: 90% of global trade happens within counterparts that are involved in an ICA

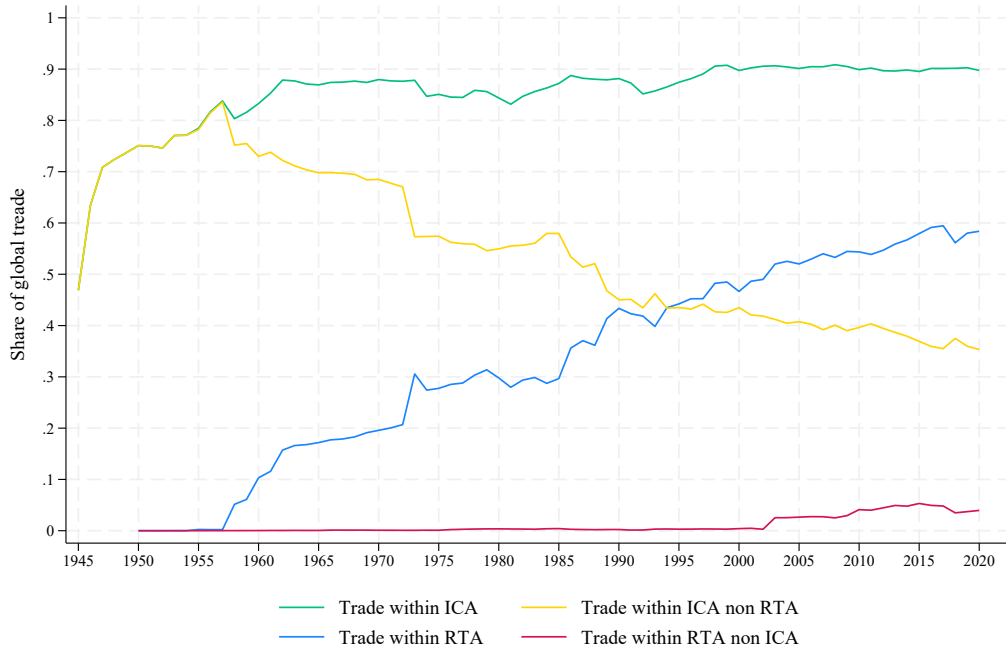
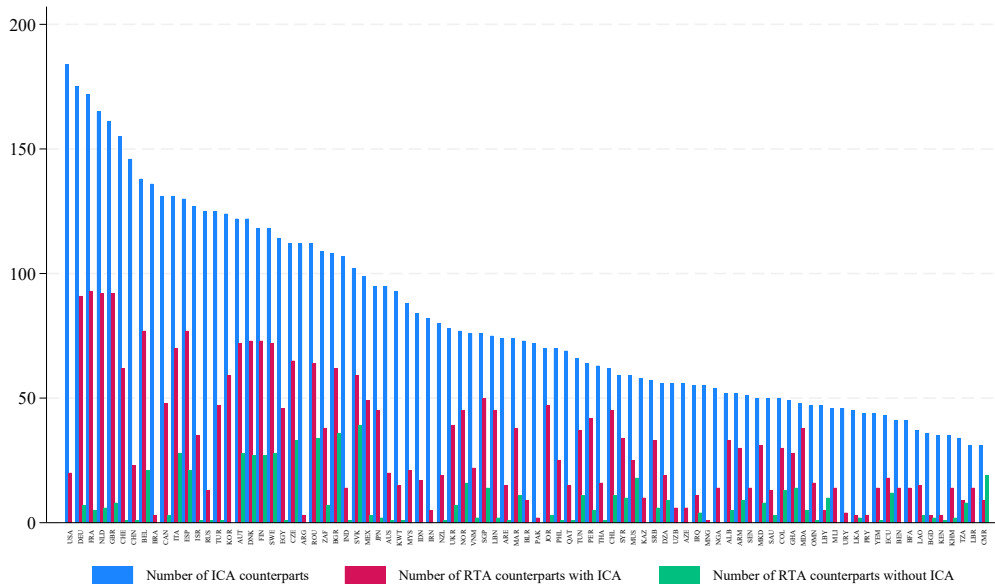


Figure shows the share of global trade that happens between (green) country pairs that are part of an ICA -independently of them being part of an RTA or not-, (yellow) country pairs that are part of an ICA but not part of an RTA, (blue) country pairs that are part of an RTA -independently of them being part of an ICA or not- and (red) country pairs that are part of an RTA but not part of an ICA.

Figure 6: Most of RTA partners are also involved in at least one ICA

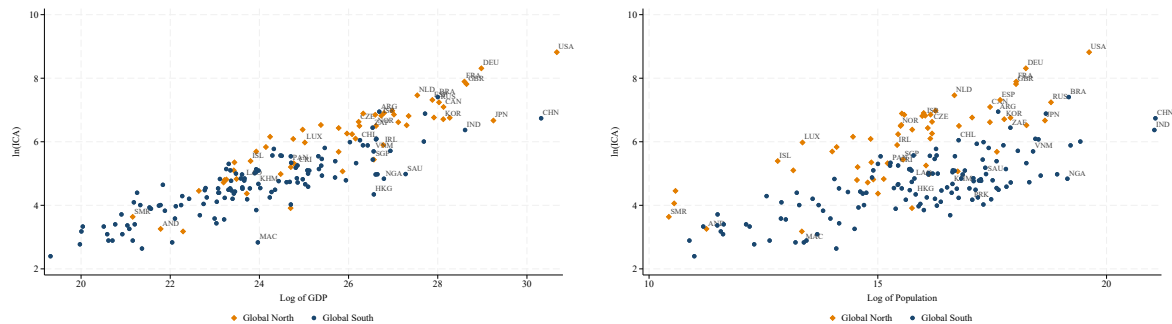


Number of counterparts displayed for year 2020. Countries displayed have at least 100 cumulative ICAs. The global average number of ICA counterparts is 55, while the global average for RTA counterparts with an ICA is 26 and the average for RTA counterparts without an ICA is 18.

The post-WWII, commonly known as the Liberal Hegemonic Order (LHO) in international relations

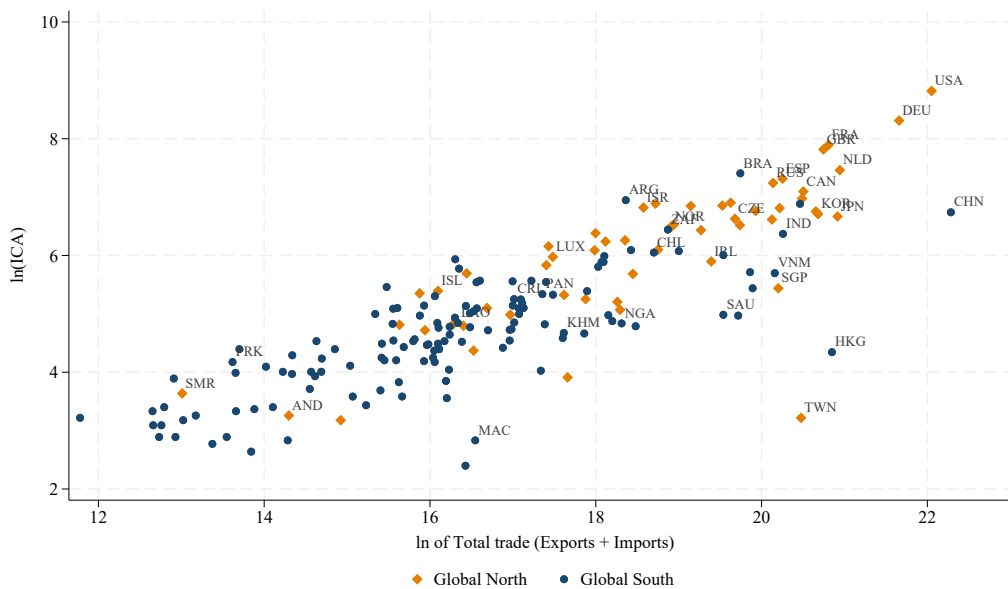
(Ikenberry, 2011), was characterized by a strong Western dominance in multilateral institutions and global trade. This pattern replicates for ICAs, the countries that have accumulated the most amount of agreements belong mostly to the Global North<sup>9</sup>. In Figure 7 we show that countries with bigger GDP and bigger population tend to sign more ICAs and, for a given level of GDP/population, Global North countries tend to have more agreements than Global South ones. As trade theory points GDP and Population as important determinants of gravity forces, we expect countries with higher levels of trade to have also signed more agreements. Figure 8 confirms that there is a positive relation with trade by country and the number of ICAs they are part of, with a clear dominance of the Global North.

Figure 7: Size matters: countries with bigger GDP and bigger Population sign more ICAs



Scatter plot of the inverse hyperbolic sine of GDP and the inverse hyperbolic sine of cumulative ICAs for year 2020 (left panel). Scatter plot of the inverse hyperbolic sine of population and the inverse hyperbolic sine of cumulative ICAs for year 2020 (right panel). Countries are coloured based on Global North and Global South grouping, refer to Table 14.

Figure 8: International cooperation and international trade go hand by hand



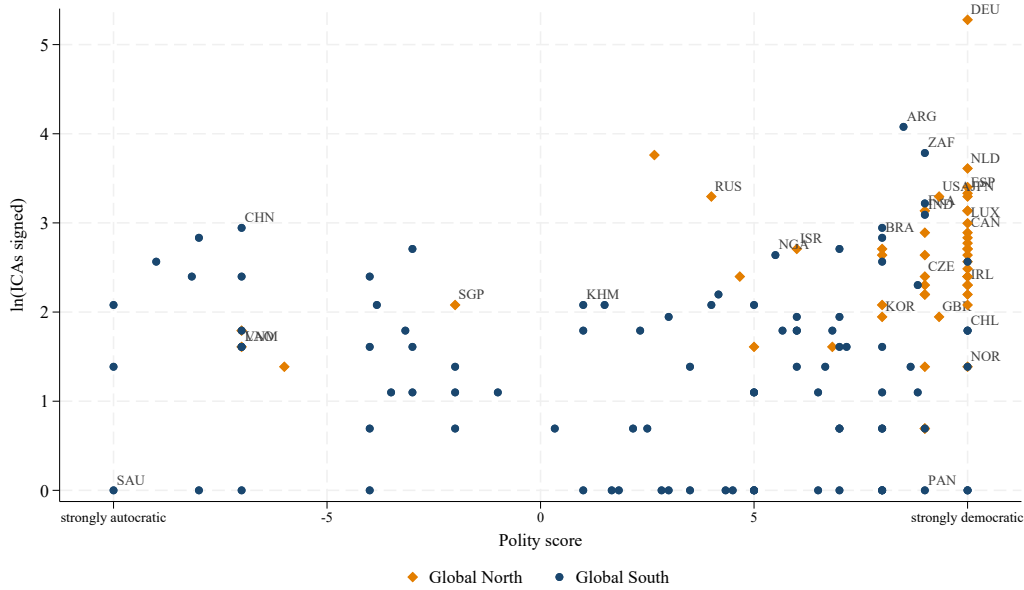
Scatter plot of the inverse hyperbolic sine of total trade (exports + imports) and the inverse hyperbolic sine of cumulative ICAs for year 2020. Countries are coloured based on Global North and Global South grouping, refer to Table 14.

We argue that economic forces are not the only ones behind the creation of ICAs, as they are the result of

<sup>9</sup>We classify countries into two world groups, Global North and Global South, a common classification in the developing and trade literature, and display the full list of countries for each group in Table 14

complex geopolitical processes. Thus, we include in our analysis variables that would be more common in international relations than in economics. One of them is the democratic level of the country, which we draw from the Polity V database. As more democratic countries understand the importance of reaching commonly agreed policy decisions through consensus and concessions, we expect them to rely on similar principles in the international arena. Figure 9 shows that more democratic countries tend to have more agreements, although the slope is not as clear as when it comes to trade, GDP or population. This suggests that non-democracies are not completely marginalized from the international system.

Figure 9: Democracies tend to sign more agreements



Scatter plot of the 5 year average (2012-2017) of polity score and the change in the inverse hyperbolic sine of cumulative ICAs (2012-2017). Countries are coloured based on Global North and Global South grouping, refer to Table 14.

The evolution of ICAs can be pictured as the creation of a network of international cooperation, where players/nodes (countries) are linked through agreements. This allows to study its network structure to understand who are the dominant players, and which country groups cooperate the most.

Dominant players in SNA are identified through centrality measures. We compute the Eigenvector Centrality and find the United States as the most central country in 2020, followed by Germany and, with a significant difference, the United Kingdom. For a given country  $i$ , the eigenvector,  $x_i$ , is  $x_i = \frac{1}{\lambda} \sum_{j \in N} a_{i,j} x_j$  Where:  $a_{i,j} = 1$  if country  $i$  is linked to country  $j$  and zero otherwise,  $x_j$  is the centrality of country  $j$  and  $\lambda$  is a constant. Eigenvector Centrality assumes that countries connected to high-scoring countries have a stronger influence in the network (Newman, 2008). Figure 10 depicts how North dominated is the international cooperation arena, where only 4 of the top20 most central countries come from the Global South (Brazil, Mexico, China and Argentina).

To identify country groups that interact the most with each other, we run an algorithm for community detection in networks, the Louvain Method (Blondel et al., 2008). The Louvain Method is an efficient algorithm that detects communities or clusters within complex networks by optimizing modularity. Modularity is a measure of the quality of a network partition into communities that quantifies the difference between the observed number of edges within communities and the links between communities. A sister paper (Acharya et al., 2023), analyzes how this community formation has evolved through time and what does it entail for the international order from an International Relations theoretical perspective. Here, we restrict ourselves to



Figure 11: Network of International Cooperation Agreements in 2022

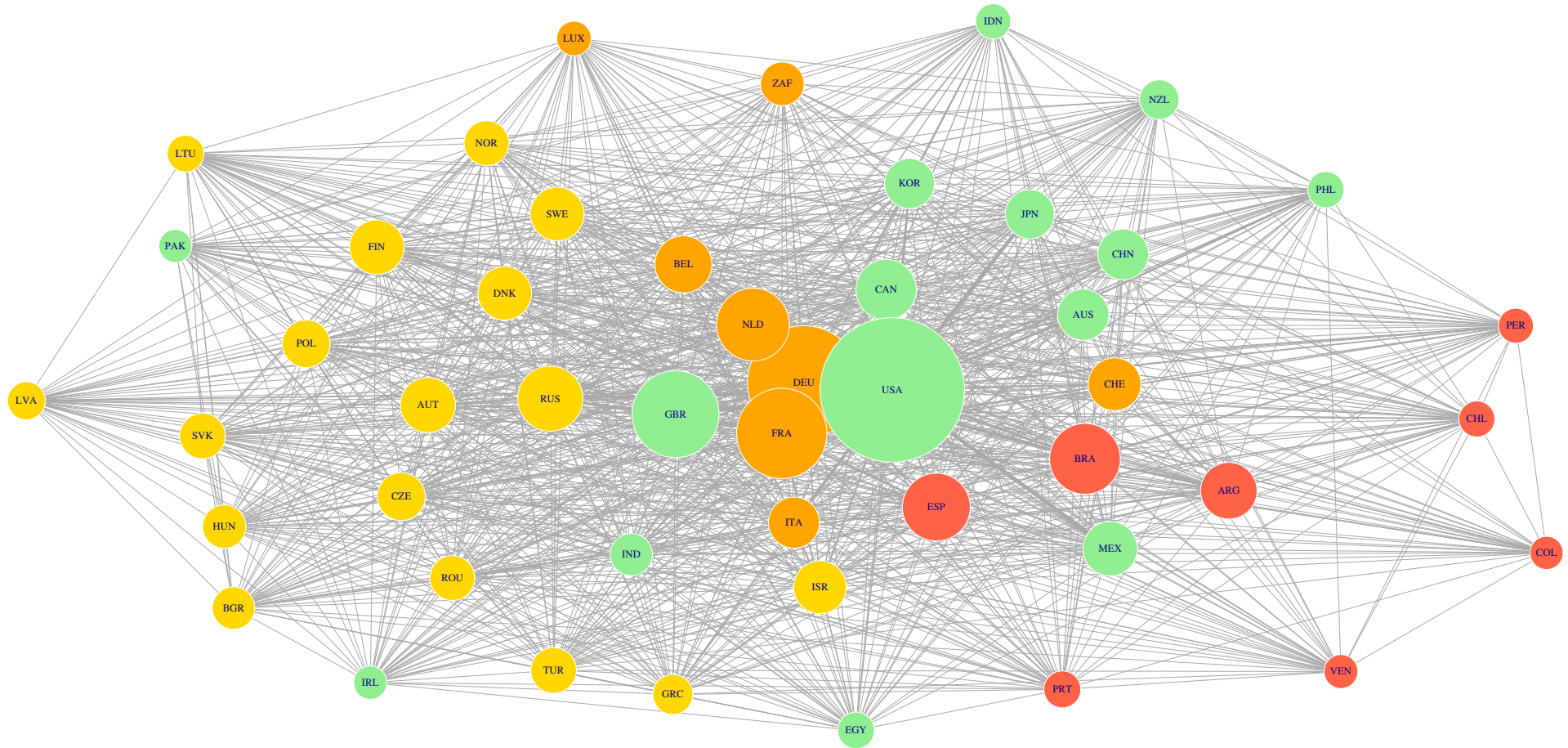


Figure depicts countries with cumulative ICAs above the mean. Size of the bubble represents cumulative number of ICAs. Relative position of the bubble to the center depicts Eigenvector centrality. Thickness of lines show number of bilateral agreements between two countries. Colors depict countries' membership to clusters.



## 5 Economic determinants of International Cooperation Agreements

In this section, we delve into the determinants of signing International Cooperation Agreements (ICAs). Trade agreements and international cooperation agreements have spread worldwide in recent decades. These trends are necessarily endogenous of each other and determined by historical as well as contextual events. However, little is known about the dynamics of the evolution of bilateral relations among different cooperation areas. We first explore if gravity forces are at play in the signing of an ICA, we then study the sequencing of international cooperation. Two main results are displayed in this section, i) we confirm that gravity forces play a role in the creation of ICAs and ii) we provide evidence in favor of ICAs being a previous step towards international trade agreements. Unless otherwise stated, all regressions account for pair, reporter-year, and partner-year fixed effects, addressing the nonindependence of observations. Additionally, we employ two-way clustering of standard errors, by both origin and destination countries.

Table 2 columns 1 and 2 display results for the extensive margin (the probability of having an ICA) and the intensive margin (the change in logs of bilateral ICAs) respectively. These two specifications include the classical gravity controls. These terms are included in our preliminary regressions to consider the classical determinants of gravity equations in understanding their influence on the signing International Cooperation Agreements. In subsequent regressions, multilateral resistance terms are addressed through fixed effects. Our findings align with those of [Baier et al. \(2014\)](#). We find that gravity forces play a significant role in explaining countries' entry into ICAs. Closer countries are more likely to be part of an ICA, especially if they share contiguous borders. Moreover, countries sharing commonalities such as religion, or language as well as countries that were ever in a colonial situation, are more likely to be part of an ICA.

The sequencing of international relations could be trade giving place to cooperation or viceversa,  $T \rightarrow C$  or  $C \rightarrow T$  ([Estevadeordal and Suominen, 2008](#)). In columns 3-8 we analyze how these two types of cooperation affect each other. Specifically, we examine whether trade agreements trigger a cooperative sequence in international relations, assessing the impact of  $RTA_{ij}$  on the evolution of  $ICA_{ij}$ . To mitigate endogeneity concerns arising from simultaneity or reverse causality, we incorporate a 1-period lag of our independent variables. To account for potential bias, we introduce international political variables as controls since they may influence both the probability of a country pair entering an ICA and the likelihood of them being part of a trade agreement.

Economists have focused on the deepening role that trade cooperation has in forming a customs union, a common market and a monetary union ([Balassa, 1961](#)), which has gain acceptance in light of the EU experience, while leaving aside other Pareto-improving outcomes related to environment, security, peace and non trade in general. However, contrary to the prevailing belief that trade sparks a cooperation sequence, our analysis reveals that being part of a Regional Trade Agreement (RTA) decreases the growth rate of ICAs by 1%. Noteworthy, the probability of having an ICA (columns 3-5) is higher when the pair belongs to an RTA. However, once the RTA is signed the pair signs less ICAs in comparison to non-RTA dyads<sup>10</sup>. This is evident from [Figure 12](#), and hints that ICAs are giving way to RTAs and not the other way around.

Notably, *UNVoting* - which measures the similarity in UNGA voting records - exhibits a positive and statistically significant effect on the growth rate of ICAs. Importantly, we observe that more democratic countries are more likely to be part of an agreement. So there are countries that share a military alliance. We find conflicting results for membership in IGOs.

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<sup>10</sup>Columns 6-8 display changes in logs as the explained variable so the relevant subsample are country pairs that have signed at least one ICA.



Table 2: Economic determinants of International Cooperation Agreements

	(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)
	Extensive margin	Intensive margin		Extensive margin : having an ICA			Intensive margin : $\Delta_1 \ln(ICA)$		
$DIST_{ij}$	-0.104*** (0.00727)	-0.00297*** (0.000580)	$RTA_{ij,t-1}$	0.0934*** (0.0152)	0.0508*** (0.0124)	0.0431** (0.0166)	-0.0109*** (0.00124)	-0.0110*** (0.00126)	-0.0136*** (0.00209)
$CONTIG_{ij}$	0.200*** (0.0356)	0.00169 (0.00132)	$\ln GDP_i \times \ln GDP_j$		0.000357 (0.00135)	-0.00278 (0.00172)		-0.00115*** (0.000400)	-0.00136** (0.000531)
$\ln GDP_i \times \ln GDP_j$	0.00697** (0.00278)	-0.00100*** (0.000189)	$DiffY_{ij}$		-0.00554 (0.00426)	-0.0141*** (0.00433)		-0.000383 (0.00107)	-0.00137 (0.00110)
$DiffY_{ij}$	-0.00993 (0.00715)	-0.00147** (0.000612)	$\ln POP_i \times \ln POP_j$		0.0241*** (0.00502)	0.0343*** (0.00749)		-0.000553 (0.00112)	0.00160 (0.00148)
$\ln POP_i \times \ln POP_j$	0.000632 (0.00125)	0.000515*** (0.000163)	$UNVoting_{ij,t-1}$			-0.00154 (0.00578)			0.00316** (0.00134)
$LANG_{ij}$	0.0590*** (0.0103)	0.000591 (0.00109)	$IgoMemb_{ij,t-1}$			0.00132* (0.000775)			-0.000271** (0.000128)
$ComColonizer_{ij}$	-0.0306** (0.0147)	-0.000676 (0.00208)	$Alliance_{ij}$			0.0425*** (0.0151)			-0.00119 (0.00280)
$RELIGION_{ij}$	0.0683*** (0.0126)	0.000364 (0.00162)	$Democ_{ij}$			0.00343*** (0.000813)			-0.000290 (0.000272)
$Legal_{ij}$	-0.00159 (0.00781)	0.000334 (0.000691)							
$CLNY_{ij}$	0.233*** (0.0296)	-0.000327 (0.00179)							
$Siblingever_{ij}$	0.0772*** (0.0132)	0.00589*** (0.000952)							
Observations	1,642,358	357,658		2,277,010	1,745,266	818,877	388,534	375,434	229,180
R-squared	0.528	0.171		0.778	0.822	0.839	0.198	0.191	0.194
Pair FE	NO	NO		YES	YES	YES	YES	YES	YES
Reporter#year FE	YES	YES		YES	YES	YES	YES	YES	YES
Partner#year FE	YES	YES		YES	YES	YES	YES	YES	YES

Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering- in parentheses. Columns 1, 3-5 displays results of a Linear Probability Model where the dependent variable equals 1 if the dyad has at least one ICA in year  $t$ . Columns 2, 6-8 display results of a first differences model where the dependent variable is the log change in the number of ICAs in year  $t$  with respect to year  $t-1$ .  $DIST_{ij}$  is the natural log of the distance between most populated city of each country (km),  $CONTIG_{ij}$  is a dummy equal 1 if countries are contiguous,  $LANG_{ij}$  is a dummy equal 1 if countries share common official or primary language,  $ComColonizer_{ij}$  equals 1 if countries share a common colonizer post 1945,  $RELIGION_{ij}$  is a religious proximity index,  $Legal_{ij}$  equals 1 if countries share common legal origins,  $CLNY_{ij}$  equals 1 if pair ever was in colonial or dependency bilateral (including before 1948),  $Siblingever_{ij}$  equals 1 if pair ever had the same colonizer (including before 1948).  $DiffY_{ij}$  is the absolute difference of the pair's natural log of GDP.  $UNVoting_{ij,t}$  is the absolute value of the Ideal Point Distance taken from Bailey et al. (2017),  $IgoMemb_{ij,t}$  is the number of International Governmental Organizations in which both countries are members, taken from the Correlates of War project,  $Alliance_{ij,t}$  is a dummy equal 1 if the dyad is part of a military alliance, as reported by the Correlates of War project,  $Democ_{ij,t}$  is the minimum democracy/autocracy score in the dyad as reported in the Polity V database. Observation counts might differ among columns based on the limited availability of data for the variables included. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Exploiting the specificities of RTAs we can study the evolution of ICAs with an event study design. It is very rare for country pairs with an RTA to embark in the process of negotiating and signing a new one. It usually takes place only if they are deepening/modifying the trade terms of the first one or if they are joining a multilateral one. Thus, given the nature of RTAs, we can think of them as non-randomly assigned ‘treatments’, where the treated groups are the country pairs that signed an RTA somewhere in the period 1945-2020 and the control group are those that did not at that point in time. One could think of the intensive margin regressions of Table 2 as a staggered differences-in-differences. Then, as it is common practice in applied econometrics when dealing with different treatment timing, we perform an event study of the evolution of ICAs in the bilateral relation and its changes.

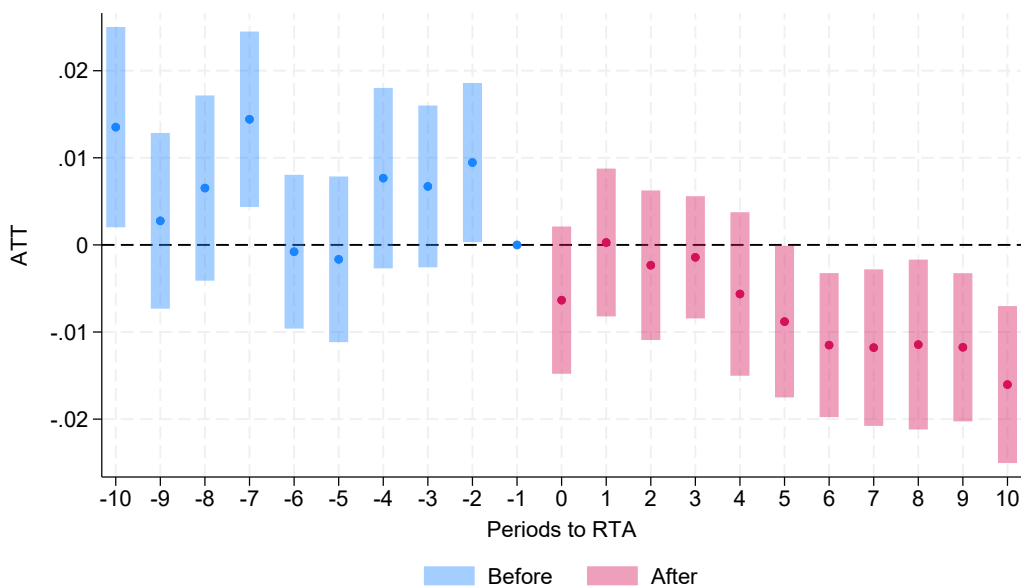
As we are dealing with variation in the timing of treatment, event studies are particularly useful for testing the parallel trends assumption—that the treated and control groups were comparable in terms of outcome dynamics during the pre-treatment period. This assumption holds if pre-treatment estimates are statistically zero, indicating that, in the absence of treatment, both groups would follow similar trends. As in most DiD designs, identification relies on the assumption that the counterfactual trend and the observable trend are parallel, eliminating selection bias. In staggered DiD designs, however, identification only requires variance-weighted common trends to hold, a weaker requirement than in standard DiD settings (Goodman-Bacon, 2021). This implies that, on average, trends in untreated potential outcomes are similar across groups, even if individual group trends vary.

The estimated effect can be considered causal under two primary assumptions: first, that the variance-weighted average of untreated potential outcome changes is zero; and second, that treatment effects are constant over time or at least do not systematically vary in a way that would bias the estimate (Cunningham, 2021). By using the ‘jwddid’ Stata command (Rios-Avila et al., 2024) based on Wooldridge (2021), we can relax the constant treatment effect assumption and account for heterogeneous treatment effects across cohorts and time periods, enhancing the robustness of causal estimates in staggered adoption settings.

Figure 12 plots the coefficients of the leads and lags of the year a dyad entered an RTA, regressed against the log change in ICAs entered by the country pair. This plot includes a confidence interval of 95%, spans a window of 10 years before and after the RTA, and includes effects. We normalize the timeline to the year before the RTA was entered in the EIA database<sup>11</sup>, based on the expectation that country pairs will engage in fewer cooperation agreements during years when they are focused on signing a trade agreement. For parallel trends to hold, we would need to see coefficients close to zero before the RTA’s initiation, which we indeed observe in the pre-treatment period.

We find that the number of agreements signed decreases after 5 years of entering into an RTA. We argue this decline happens because of how highly binding are RTAs, generating strong enough relations between countries, reducing the need for them to sign additional agreements. This finding is also consistent with Mattoo et al. (2020), where they show that PTAs have expanded their scope almost doubling the number of policy areas they address, and some even dealing with topics far beyond traditional trade issues, such as labor, environment, movement of people, competition policy and intellectual property rights. So that RTAs seem to have become supplementary of ICAs.

Figure 12: Countries enter less ICAs once they have signed an RTA



Includes pair, reporter-year and partner-year fixed effects. Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering-. Dependent variable is the log change in the number of ICAs in year  $t$  with respect to year  $t-1$ .

## 5.1 Cooperation leads to trade

Having found that RTAs do not increase the signing of cooperation agreements, we explore in Table 3 the opposite sequencing channel: if ICAs affect the probability of having an RTA in the country pair. We take 5

<sup>11</sup>For a small number of country pairs that had an RTA that was dropped at a certain point and later re-signed, we normalize to their first RTA.

year lags of the main explanatory variables because RTAs take several years to be negotiated. We find that having an ICA 5 periods before year  $t$  increases the probability of having an RTA in year  $t$  by 8% (column 1). We also find evidence of a positive significant relation between the amount of ICAs in the dyad in year  $t - 5$  and the probability of having an RTA in year  $t$ . We find again that more democratic countries, countries more aligned in the UNGA and countries that are part of a military alliance correlate with a higher probability of having an RTA.

Table 3: International cooperation precedes trade

	(1)	(2)	(3)	(4)
	Having an RTA			
<i>dummy</i> (ICA <sub><i>ij,t-5</i></sub> )	0.0832*** (0.0115)	0.0443*** (0.0114)		
<i>ln</i> (ICA <sub><i>ij,t-5</i></sub> )			0.0297*** (0.00647)	0.0288*** (0.00752)
<i>lnGDP</i> <sub><i>i</i></sub> × <i>lnGDP</i> <sub><i>j</i></sub>		0.00565** (0.00224)		0.00287 (0.00328)
<i>DiffY</i> <sub><i>ij</i></sub>		-0.00268 (0.00497)		0.00613 (0.0105)
<i>lnPOP</i> <sub><i>i</i></sub> × <i>lnPOP</i> <sub><i>j</i></sub>		-0.0109 (0.00741)		0.00553 (0.0131)
<i>UNVoting</i> <sub><i>ij,t-5</i></sub>		0.0436*** (0.00895)		0.0909*** (0.0136)
<i>IgoMemb</i> <sub><i>ij,t-5</i></sub>		0.00254*** (0.000905)		0.00177 (0.00121)
<i>Alliance</i> <sub><i>ij</i></sub>		0.226*** (0.0434)		0.140*** (0.0313)
<i>Democ</i> <sub><i>ij</i></sub>		0.00372*** (0.000939)		0.00858*** (0.00239)
Observations	2,129,400	749,442	345,984	200,664
R-squared	0.610	0.718	0.789	0.821

All regressions include pair, reporter-year and partner-year fixed effects. Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering- in parentheses. Dependent variable equals 1 if the dyad is part of an RTA in year  $t$ . Columns 1-2 display results of a Linear Probability Model where the main explanatory variable is a dummy equal 1 if the dyad belongs to an ICA 5 years before  $t$ . Columns 3-4 display results of a Linear Probability Model where the main explanatory variable is the log of ICAs the dyad belong to 5 years before  $t$ . *UNVoting*<sub>*ij,t*</sub> is the absolute value of the Ideal Point Distance taken from Bailey et al. (2017), *IgoMemb*<sub>*ij,t*</sub> is the number of International Governmental Organizations in which both countries are members, taken from the Correlates of War project, *Alliance*<sub>*ij,t*</sub> is a dummy equal 1 if the dyad is part of a military alliance, as reported by the Correlates of War project, *Democ*<sub>*ij,t*</sub> is the minimum democracy/autocracy score in the dyad as reported in the Polity V database. Observation counts might differ among columns based on the limited availability of data for the variables included. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## 6 International cooperation agreements effects on trade

We have shown in the section above that gravity forces explain the formaton of ICAs, and that the latter increases the likelihood of a pair entering an RTA. We study in this section if ICAs do also influence bilateral trade. We find that International Cooperation Agreements increase exports by around 1-3%. All regressions are reported with pair, reporter-year and partner-year fixed effects -unless otherwise stated- which account for the nonindependence of observations. With such fixed effects, the coefficients reported avoid correlations between variables across country pairs or time. Moreover, we use two-way clustering of standard errors, by origin and destination.

The main hypothesis underlying our study is that the diplomatic relation of two countries will positively affect bilateral trade due to a “confident effect”. The mechanism through which ICAs affect trade is micro-founded on the basis that international agreements increase trust between citizens (firms) in signatory countries, allowing them to engage in deeper and riskier relations such as trade, increasing bilateral flows. Economic

agents will rely more on their counterparts if they know they are trustworthy from previous experiences, even if such past experiences go beyond trade. Importing and exporting firms incur in high costs when deciding whether or not to start trading with a new partner (Bernard et al., 2007), the fact that the partner has well established relations with the country where the firm is based decreases this uncertainty cost. The process of country pairs negotiating and signing non-trade agreements results in the creation of a legal infrastructure that “closes the distance” between them, promoting bilateral trade.

We rely on Poisson regressions where our main explanatory variable is the log of cumulated number of ICAs in the bilateral relation. Our dependent variable is the Exports flows from country exporter  $i$  to country importer  $j$ .

We find in Table 4 Column 5 that a 1% increase in ICAs increases bilateral exports around 0.07%. Although this coefficient indicates an inelastic relation, it is non negligible. The average number of ICAs in a bilateral relation with a positive number of agreements in 2020 is 6.31, signing a new cooperation agreement for this average dyad would mean a 15% increase, which would be associated with a 0.98% increase in exports<sup>12</sup>. If we take the average number of ICAs in every country pair for the year 2020 (1.84), signing a new agreement would result in a 54% increase, which would be translated in an almost 3.07% increase in exports. Noteworthy, the significance and magnitude of the effect declines slightly when controlling by the interaction of GDPs per capita. Including the set of geopolitical controls ensures that we take into account all of the plausible confounding factors.

Since regressions in column (1) to (5) include pair fixed effects, the cross-sectional effect of forming cooperative partnerships is absorbed and we only measure the effect of an additional agreement in the dyad (the within effect). Column (6) shows that coefficients increase if we do not include the pair fixed effects in the poisson estimates but include the classical bilateral controls in gravity equations. Results hold if we take the log of the ICAs signed the past 5 years. Results also hold if, instead of Poisson, we run log-log OLS gravity equations, both in levels or in differences. We display all of these robustness in Table 18 in Appendix. Results also hold if we restrict the ICA sample to only bilateral ICAs (Table 16) or if we do not weight multilateral agreements and count them as one in bilateral relations (Table 17). Noteworthy, in this latter case, coefficients are slightly higher and the equivalent of Column 5 in Table 4 is significant at the 1% level.

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<sup>12</sup>Coefficient calculated using:  $100 \times (\exp(\beta \times \log(1 + \frac{\Delta X}{100})) - 1)$

Table 4: International Cooperation Agreements increase bilateral trade flows

	<i>Exports</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
$\ln(ICA_{ij})$	0.0802*** (0.0286)	0.0754*** (0.0290)	0.0773*** (0.0284)	0.0674** (0.0300)	0.0696** (0.0298)	0.236*** (0.0447)
$RTA_{ij}$		0.171*** (0.0259)	0.172*** (0.0262)	0.177*** (0.0251)	0.176*** (0.0252)	0.401*** (0.0623)
$Y_{ij}$				0.00491 (0.0200)	0.00576 (0.0198)	0.0172 (0.0197)
Observations	374,692	374,692	374,692	363,831	363,831	363,910
Pair FE	YES	YES	YES	YES	YES	NO
Reporter#year FE	YES	YES	YES	YES	YES	YES
Partner#year FE	YES	YES	YES	YES	YES	YES
IR controls	NO	NO	YES	NO	YES	YES
Gravity controls	NO	NO	NO	NO	NO	YES

All regressions include pair, reporter-year and partner-year fixed effects. Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering- in parentheses. The dependent variable is export flows from country  $i$  to country  $j$ .  $Y_{ij,t} = \ln\left(\frac{GDP_{i,t}}{population_{i,t}}\right) \times \ln\left(\frac{GDP_{j,t}}{population_{j,t}}\right)$ . International Relations (IR) controls include:  $UNVoting_{ij,t}$  is the absolute value of the Ideal Point Distance taken from [Bailey et al. \(2017\)](#),  $IgoMemb_{ij,t}$  is the number of International Governmental Organizations in which both countries are members, taken from the Correlates of War project,  $Alliance_{ij,t}$  is a dummy equal 1 if the dyad is part of a military alliance, as reported by the Correlates of War project,  $Democ_{ij,t}$  is the minimum democracy/autocracy score in the dyad as reported in the Polity V database. Gravity controls include:  $DIST_{ij}$  is the natural log of the distance between most populated city of each country (km),  $CONTIG_{ij}$  is a dummy equal 1 if countries are countiguous,  $LANG_{ij}$  is a dummy equal 1 if countries share common official or primary language,  $ComColonizer_{ij}$  equals 1 if countries share a common colonizer post 1945,  $RELIGION_{ij}$  is a religious proximity index,  $Legal_{ij}$  equals 1 if countries share common legal origins,  $CLNY_{ij}$  equals 1 if pair ever was in colonial or dependency bilateral (including before 1948),  $Siblingever_{ij}$  equals 1 if pair ever had the same colonizer (including before 1948). Observation counts might differ among columns based on the limited availability of data for the variables included. For IR and gravity controls, whenever missing we replace them by value -99. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## 6.1 Dealing with endogeneity

As in the previous section, we are concerned about endogeneity issues such as reverse causality, simultaneity, and omitted variable bias. Simultaneity is a plausible problem when estimating the effects of ICAs, a dyadic number of agreements signed may be the result of the change in trade flows at the same time that the change in trade flows might be consequence of diplomatic interactions. As we acknowledge the explanatory variable might be endogenous, regressions are subject to bias and the estimates of the causal effect are likely to be inconsistent. Bias could also arise from confounding unobserved factors.

To ensure our results are robust to such problems we employ two approaches. First, in the spirit of [Baier and Bergstrand \(2007\)](#), we include the 5 year lead of ICAs in our regression to ensure there are no “feedback effects”. Using the lead of the potentially endogenous variable to test for exogeneity is common practice in the trade literature (see, for instance, [De Loecker et al. \(2016\)](#)). In a panel context, if ICAs are strictly exogenous to trade flows then the lead of ICAs should not be correlated with the current exports. Such an intuition is confirmed in Table 5. Table 19 in Appendix shows this holds true also for OLS differenced regressions in logs.

Table 5: Future agreements signed do not affect exports

	<i>Exports</i>				
	(1)	(2)	(3)	(4)	(5)
$\ln(ICA_{ij})$	0.0496** (0.0216)	0.0433** (0.0216)	0.0376* (0.0208)	0.0461** (0.0234)	0.0398* (0.0226)
$\ln(ICA_{ij,t+5})$	0.0421 (0.0417)	0.0437 (0.0414)	0.0417 (0.0409)	0.0246 (0.0392)	0.0234 (0.0394)
$RTA_{ij}$		0.171*** (0.0374)	0.167*** (0.0342)	0.181*** (0.0361)	0.175*** (0.0336)
$Y_{ij}$				0.0209 (0.0216)	0.0204 (0.0208)
Observations	322,389	322,389	322,389	312,819	312,819
IR controls	NO	NO	YES	NO	YES

All regressions include pair, reporter-year and partner-year fixed effects. Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering- in parentheses. The dependent variable is export flows from country  $i$  to country  $j$ .  $t + 5$  indicate 5 years future variable, whereas other variables are level value in year  $t$ .  $Y_{ij,t} = \ln\left(\frac{GDP_{i,t}}{population_{i,t}}\right) \times \ln\left(\frac{GDP_{j,t}}{population_{j,t}}\right)$ . International relations controls include  $UNVoting_{ij}$ ,  $IgoMemb_{ij}$ ,  $Alliance_{ij}$  and  $Democ_{ij}$ . Observation counts might differ among columns based on the limited availability of data for the variables included. For IR controls, whenever missing we replace them by value -99. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

To complement, we design an instrumental variable approach exploiting the network structure of ICAs. The instrument consists on the number of agreements signed that do not include parties  $i$  nor  $j$ . We argue that diplomatic relations between third countries have spillover effects on the diplomatic relations of countries  $ij$ , but are not influenced by bilateral trade between  $ij$ . Simply put:

$$Z_{ij,t}^{SNA} = \ln\left(\sum_r \sum_p ICA_{rp,t-5}\right)$$

With  $r \neq i$  and  $p \neq j$ .

In Table 6 we report the results of our main instrumental variable, which confirms the results shown above. Unfortunately, the PPML software packages are not prepared to run IV estimates while including a high set of fixed effects. This forces us to estimate the first stage separately from the second stage. Using a log-log specification in Appendix Table 20 we are able to run the 2SLS altogether.

Importantly, the sign and significance are the same as the main regressions in Table 4, although the IV results show higher estimates. This could be caused by several reasons. For instance, an omitted variable that could be negatively correlated with the change in agreements signed, which would lead to a downward bias of the OLS estimation. We acknowledge we are not including all the confounding factors varying at the dyadic-time level due to data availability; a variable measuring number of diplomatic missions sent from country  $i$  to country  $j$  would, for example, reduce this bias but such database does not exist. Further, measurement error in an explanatory variable could be cause of attenuation bias, driving the OLS estimate toward zero. Since the IV estimate is unaffected by the measurement error, they will be larger. This measurement error could come from diplomatic secrecy or from delayed/failed registration of treaties. Although the UN Charter demands countries to report every international agreement signed, there are still many cases where countries report the agreement years after it took place, or decide to report it in other official non-UN sources -as it is the case with European Union countries reporting treaties to the European Commission-. We acknowledge that measurement error is likely to be one of the reasons for OLS estimates to be biased but that it surely is not the most important one. Finally, the IV estimate could be larger because, while OLS is estimating the Average Treatment Effect across

the entire population, the IV estimates the Local Average Treatment Effect among compliers. This implies that IV estimates will be larger than OLS estimates due to heterogeneity in the studied population.

While several specifications in our analysis yield first-stage F-statistics above the conventional threshold of 10, some specifications fall below this level. This suggests that the instrument may be weak in certain models, potentially leading to bias and inconsistency in the second-stage estimates. Therefore, results should be interpreted with caution, particularly for specifications where the F-statistic does not exceed the threshold for strong instruments.

Table 6: Instrumental approach confirms the results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
$\ln(ICA_{ij})$		0.397*** (0.0740)		0.418*** (0.0746)		0.397*** (0.0715)		0.357*** (0.0647)		0.345*** (0.0636)
$IV_{ij}$	33.67** (16.04)		33.76** (15.95)		34.65** (15.86)		39.59** (18.78)		40.24** (18.74)	
$RTA_{ij}$			0.0778*** (0.0164)	0.145*** (0.0285)	0.0726*** (0.0162)	0.149*** (0.0280)	0.0786*** (0.0162)	0.155*** (0.0267)	0.0731*** (0.0160)	0.157*** (0.0264)
$Y_{ij}$							-0.00205 (0.00643)	0.00724 (0.0198)	-0.000727 (0.00629)	0.00737 (0.0197)
Observations	399,538	374,692	399,538	374,692	399,538	374,692	385,292	363,831	385,292	363,831
F	4.408		11.68		9.892		8.976		7.686	
IR controls	NO	NO	NO	NO	YES	YES	NO	NO	YES	YES

Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering- in parentheses. The dependent variable is export flows from country  $i$  to country  $j$ . Main independent variable is the number of bilateral ICAs. IV is our Social Network instrument and is defined as  $Z_{ij,t}^{SNA} = \ln(\sum_r \sum_p ICA_{rp,t-5})$  where  $r \neq i$  and  $p \neq j$ .  $Y_{ij,t} = \ln(\frac{GDP_{i,t}}{population_{i,t}}) \times \ln(\frac{GDP_{j,t}}{population_{j,t}})$ . Observation counts might differ among columns based on the limited availability of data for the variables included. For IR controls, whenever missing we replace them by value -99. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Interpreting column (10) of Table 6: a 1% increase in bilateral ICAs implies a 0.333% increase in bilateral exports, which translates into an increase of 15% in the average bilateral relation and a 4.8% increase in the average relation of dyads with a positive number of ICAs. Most importantly, although we are confident in the fact that the IV results presented are a powerful indicator of robustness of our main estimates, using 2SLS in structural gravities does not necessarily solve biased estimates. From Equation 4, we are estimating  $\beta_1$  and for such we seek an IV for  $ICA_{ij,t}$ . The problem is that any IV  $z_{ij,t}$  is necessarily correlated with Fixed Effects  $\zeta_i, j, \gamma_{i,t}$  and  $\psi_{j,t}$ , implying the effect is not truly identified even if the provided tests show strong results.

No instrumental variable is bullet-proof and we are still concerned about reverse causality, simultaneity and time-varying correlated omitted factors biasing our estimates. However, these identification strategies are well accepted to reduce important endogeneity concerns, and, even when it is theoretically impossible to completely identify the effect of an endogenous variable in a structural gravity equation, the overall evidence presented in this subsection is strong enough to suggest the impact of ICAs on trade is positive and significantly different from zero.

## 7 Heterogenous effects

### 7.1 Sequencing of ICAs and RTAs

The subsequent results will explore the heterogenous effects of the sequencing between International Cooperation Agreements and Regional Trade Agreements. First, we replicate the previous analysis distinguishing in Economic and Non-Economic ICAs. We then decompose into the 5 subcategories of Non-Economic ICAs. Importantly, we find that having an Economic ICA increases the probability of entering an RTA, which suggests a previous step to the theory posited by Balassa (1961). We later study how the results change while studying Global North and Global South countries, and found that having an ICA increases the probability of having an



RTA only for South-South or North-North relations, the latter being the only type of relation where an increase in ICAs increases the probability of having an RTA.

### 7.1.1 Functionalities of International Cooperation Agreements

We first compare the heterogenous effects between “Economic Cooperation”, which is category 2 in Table 1, with “Non-Economic Cooperation”, which is the aggregate of the other 5 categories. Table 7 shows that having an Economic Agreement increases the likelihood of signing an RTA between the country pair more than any other type of cooperation agreement, which could complement the theory posited by Balassa (1961) adding a previous degree of Economic cooperation, before trade. Importantly, having a Connectivity agreement has also a positive influence on the likelihood of entering an RTA. We cannot include all of the logged variables in the same regressions because we will lose a considerable amount of observations due to zero agreements for some categories in specific bilateral relations. Instead, we include dummy variables to control for the existence of other types of agreements.

Table 8 confirms the fact that an RTA mostly decreases the likelihood of entering an ICA, showing that having an RTA decreases the probability of signing an Economic, a Governance and institutions and a Connectivity agreement. These results confirm the hypothesis that trade integration is a step forward of economic integration, and that once it is achieved the remaining steps to follow are towards deeper relations (customs union, common market, monetary union).

Table 7: Heterogenous effects in the probability of having an RTA

	Having an RTA							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\ln(\text{EconICA}_{ij,t-5})$	0.0377*** (0.00880)							
$\ln(\text{Non-EconICA}_{ij,t-5})$		0.0164** (0.00792)						
$\ln(\text{EnvironmentICA}_{ij,t-5})$			-0.0102 (0.0103)					
$\ln(\text{EconICA}_{ij,t-5})$				0.0393*** (0.00905)				
$\ln(\text{H\&DICA}_{ij,t-5})$					0.000194 (0.0105)			
$\ln(\text{InstitutionsICA}_{ij,t-5})$						0.0174 (0.0106)		
$\ln(\text{PeaceICA}_{ij,t-5})$							-0.00576 (0.0171)	
$\ln(\text{ConnectivityICA}_{ij,t-5})$								0.0483*** (0.00954)
Observations	197,130	244,455	43,741	197,130	126,051	111,425	68,455	163,854
R-squared	0.848	0.818	0.904	0.848	0.862	0.864	0.871	0.837

All regressions include pair, reporter-year and partner-year fixed effects, GDP, difference in GDP, population and international relations controls. Column 1 includes a dummy equal to 1 if the pair has a Non-Economic ICA. Column 2 includes a dummy equal to 1 if the pair has an Economic ICA. Column 3-8 include dummies for the 5 other types of treaties. Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering- in parentheses. Type of agreements are as displayed in Table 1. The dependent variable is a dummy equal 1 if the dyad is part of an RTA. International Relations controls include:  $UNVoting_{ij,t}$  is the absolute value of the Ideal Point Distance taken from Bailey et al. (2017),  $IgoMemb_{ij,t}$  is the number of International Governmental Organizations in which both countries are members, taken from the Correlates of War project,  $Alliance_{ij,t}$  is a dummy equal 1 if the dyad is part of a military alliance, as reported by the Correlates of War project,  $Democr_{ij,t}$  is the minimum democracy/autocracy score in the dyad as reported in the Polity V database. Observation counts might differ among columns based on the missing values generated by taking logs of the explanatory variable. For IR controls, whenever missing we replace them by value -99. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.



Table 8: First differences in logs for the 6 functions

	Economic ICAs	Non-Economic ICAs	Environment	Economic	H&D	Institutions	Peace and Security	Connectivity
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$RTA_{ij,t-1}$	-0.0118*** (0.00231)	-0.00772*** (0.00174)	0.00104 (0.00288)	-0.0118*** (0.00231)	-0.00233 (0.00356)	-0.00526* (0.00289)	0.00509 (0.00390)	-0.00725*** (0.00148)
$\ln GDP_i \times \ln GDP_j$	0.000416 (0.000413)	-0.00116*** (0.000404)	-0.000385 (0.00108)	0.000416 (0.000413)	-0.00168** (0.000747)	-3.85e-05 (0.000498)	-0.00274** (0.00107)	-0.00128*** (0.000289)
$Diff Y_{ij}$	0.000923 (0.00143)	-0.00109 (0.00103)	0.00284 (0.00307)	0.000923 (0.00143)	-0.00326** (0.00160)	0.00275* (0.00157)	-0.00652* (0.00348)	-0.00175* (0.00102)
$\ln POP_i \times \ln POP_j$	-0.00581*** (0.00184)	0.00178 (0.00137)	-0.000735 (0.00106)	-0.00581*** (0.00184)	-0.00107 (0.00200)	-2.35e-05 (0.00117)	-0.00437*** (0.00162)	0.000838 (0.000994)
Observations	197,778	245,325	44,151	197,778	127,075	112,149	68,743	164,416
R-squared	0.192	0.182	0.317	0.192	0.169	0.278	0.226	0.215

All regressions include pair, reporter-year and partner-year fixed effects and international relations controls. Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering- in parentheses. Type of agreements are as displayed in Table 1. The dependent variable is the 1 period log change of agreements in the dyad. International Relations controls include:  $UNVoting_{ij,t}$  is the absolute value of the Ideal Point Distance taken from Bailey et al. (2017),  $IgoMemb_{ij,t}$  is the number of International Governmental Organizations in which both countries are members, taken from the Correlates of War project,  $Alliance_{ij,t}$  is a dummy equal 1 if the dyad is part of a military alliance, as reported by the Correlates of War project,  $Democ_{j,t}$  is the minimum democracy/autocracy score in the dyad as reported in the Polity V database. Observation counts might differ among columns based on the missing values generated by taking logs of the explanatory variable. For IR controls, whenever missing we replace them by value -99. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## 7.2 Global South and Global North

This part of the paper focuses on the heterogeneous effects of the sequencing between International Cooperation Agreements and Regional Trade Agreements by group of countries. We divide the world into two groups, Global North and Global South, a common classification in the developing and trade literature (Table 14). We then create dummy variables for each possible combination of origin country-destination country, resulting in 4 variables: *SouthSouth*, *NorthNorth*, *SouthNorth* and *NorthSouth*, where the first category refers to the exporter country while the second one refers to the importer. Finally, we interact these dummies with our variables of interest, and estimate their effect in a single regression. Importantly, country groups do not vary in time.

We find in Table 9 that an ICA predicts NorthNorth and SouthSouth countries embark in an RTA more than cross regional combinations. Importantly, results are driven by the countries having signed an economic agreement, which again provides evidence for a previous step in Balassa's theory.

Table 9: Global North and Global South in the probability of having an RTA

	Having an RTA				
	(1)	(2)	(3)	(4)	(5)
<i>dummy</i> (ICA <sub>ij,t-5</sub> )	0.138***		<i>ln</i> (ICA <sub>ij,t-5</sub> )	0.00874	
<i>xSouthSouth</i>	(0.0182)		<i>xSouthSouth</i>	(0.0194)	
<i>dummy</i> (ICA <sub>ij,t-5</sub> )	0.0677***		<i>ln</i> (ICA <sub>ij,t-5</sub> )	0.0561***	
<i>xNorthNorth</i>	(0.0230)		<i>xNorthNorth</i>	(0.0116)	
<i>dummy</i> (ICA <sub>ij,t-5</sub> )	-0.00890		<i>ln</i> (ICA <sub>ij,t-5</sub> )	0.0137	
<i>xNorthSouth</i>	(0.0131)		<i>xNorthSouth</i>	(0.0142)	
<i>dummy</i> (ICA <sub>ij,t-5</sub> )	-0.00793		<i>ln</i> (ICA <sub>ij,t-5</sub> )	0.0183	
<i>xSouthNorth</i>	(0.0135)		<i>xSouthNorth</i>	(0.0146)	
<i>dummy</i> (EconICA <sub>ij,t-5</sub> )	0.155***		<i>ln</i> (EconICA <sub>ij,t-5</sub> )	0.00766	
<i>xSouthSouth</i>	(0.0183)		<i>xSouthSouth</i>	(0.0207)	
<i>dummy</i> (EconICA <sub>ij,t-5</sub> )	0.0943***		<i>ln</i> (EconICA <sub>ij,t-5</sub> )	0.0866***	
<i>xNorthNorth</i>	(0.0209)		<i>xNorthNorth</i>	(0.0154)	
<i>dummy</i> (EconICA <sub>ij,t-5</sub> )	0.0429**		<i>ln</i> (EconICA <sub>ij,t-5</sub> )	0.0215	
<i>xNorthSouth</i>	(0.0208)		<i>xNorthSouth</i>	(0.0169)	
<i>dummy</i> (EconICA <sub>ij,t-5</sub> )	0.0425*		<i>ln</i> (EconICA <sub>ij,t-5</sub> )	0.0215	
<i>xSouthNorth</i>	(0.0217)		<i>xSouthNorth</i>	(0.0190)	
<i>dummy</i> (Non – EconICA <sub>ij,t-5</sub> )	0.109***		<i>ln</i> (Non – EconICA <sub>ij,t-5</sub> )		0.0101
<i>xSouthSouth</i>	(0.0217)		<i>xSouthSouth</i>		(0.0256)
<i>dummy</i> (Non – EconICA <sub>ij,t-5</sub> )	0.0166		<i>ln</i> (Non – EconICA <sub>ij,t-5</sub> )		0.0310**
<i>xNorthNorth</i>	(0.0156)		<i>xNorthNorth</i>		(0.0135)
<i>dummy</i> (Non – EconICA <sub>ij,t-5</sub> )	-0.0208*		<i>ln</i> (Non – EconICA <sub>ij,t-5</sub> )		0.00254
<i>xNorthSouth</i>	(0.0107)		<i>xNorthSouth</i>		(0.0157)
<i>dummy</i> (Non – EconICA <sub>ij,t-5</sub> )	-0.0193*		<i>ln</i> (Non – EconICA <sub>ij,t-5</sub> )		0.00676
<i>xSouthNorth</i>	(0.0113)		<i>xSouthNorth</i>		(0.0159)
Observations	1,317,108	1,317,108	298,145	197,130	244,455
R-squared	0.712	0.714	0.812	0.848	0.818

All regressions include pair, reporter-year and partner-year fixed effects, GDP, difference in GDP, population and international relations controls. Column 4 includes a dummy equal to 1 if the pair has a Non-Economic ICA. Column 5 includes a dummy equal to 1 if the pair has an Economic ICA. Robust standard errors clustered by country *i* and country *j* -two way clustering- in parentheses. Type of agreements are as displayed in Table 1. The dependent variable is a dummy equal 1 if the dyad is part of an RTA. International Relations controls include: *UNVoting<sub>ij,t</sub>* is the absolute value of the Ideal Point Distance taken from [Bailey et al. \(2017\)](#), *IgoMemb<sub>ij,t</sub>* is the number of International Governmental Organizations in which both countries are members, taken from the Correlates of War project, *Alliance<sub>ij,t</sub>* is a dummy equal 1 if the dyad is part of a military alliance, as reported by the Correlates of War project, *Democ<sub>ij,t</sub>* is the minimum democracy/autocracy score in the dyad as reported in the Polity V database. Observation counts might differ among columns based on the missing values generated by taking logs of the explanatory variable. For IR controls, whenever missing we replace them by value -99. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

### 7.3 ICAs and trade

The subsequent results will explore the heterogenous effects of International Cooperation Agreements in bilateral trade. First, we will compare the impact of Economic vis a vis Non-Economic ICAs. Further, we will distinguish Non-Economic agreements in 5 subcategories, trying to understand the drivers of such heterogeneity. Finally, we will explore the heterogenous effects related to country groups, listed in Table 14.

#### 7.3.1 Functionalities of International Cooperation Agreements

Table 10 disentangles the heterogenous effects by type of agreement. As mentioned above, Economic ICAs refers to category 2 in Table 1, while Non-Economic ICAs refers to the aggregation of the other 5 categories. Importantly, Economic category does not include trade agreements -which are present in the RTA variable- but other sort of economic legal instruments, such as Bilateral Investment treaties, taxation schemes, monetary cooperation, property issues, payments.

Interestingly, we find coefficients for Economic agreements higher to those for Non Economic agreements, reassuring our previous beliefs. Even when treaties do not pursue as a primary goal to directly increase trade in a dyad, they have a positive impact on it. From column 1, a 1% increase in Economic ICAs growth implies a 0.0645% increase in bilateral Exports, while a 1% increase of Non-Econ ICAs growth implies a 0.057% increase in bilateral Exports.

Zooming in into the different functions within Non-Economic ICAs, in column 8 we find that its impact was driven by Connectivity agreements. Importantly, the estimate of Connectivity ICAs is higher than the one of Economic ICAs, although it is less significant. This result suggests that agreements that are design to decrease communication costs lead to more bilateral trade.

Table 10: Effects on trade by function

	Exports							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\ln(\text{EconICA}_{ij,t})$	0.0645*** (0.0236)							
$\ln(\text{Non-EconICA}_{ij,t})$		0.0570** (0.0277)						
$\ln(\text{EnvironmentICA}_{ij,t})$			0.0590 (0.0378)					
$\ln(\text{EconICA}_{ij,t})$				0.0626*** (0.0237)				
$\ln(\text{H\&DICA}_{ij,t})$					0.00945 (0.0157)			
$\ln(\text{InstitutionsICA}_{ij,t})$						-0.0183 (0.0260)		
$\ln(\text{PeaceICA}_{ij,t})$							0.0443 (0.0296)	
$\ln(\text{ConnectivityICA}_{ij,t})$								0.0815** (0.0416)
Observations	252,611	294,471	56,358	252,611	153,937	137,863	88,773	201,892

All regressions include pair, reporter-year and partner-year fixed effects, GDP per capita, RTA and international relations controls. Column 1 includes a dummy equal to 1 if the pair has a Non-Economic ICA. Column 2 includes a dummy equal to 1 if the pair has an Economic ICA. Column 3-8 include dummies for the 5 other types of treaties. Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering- in parentheses. Type of agreements are as displayed in Table 1. The dependent variable is export flows from country  $i$  to country  $j$ . International Relations controls include:  $UNVoting_{ij,t}$  is the absolute value of the Ideal Point Distance taken from Bailey et al. (2017),  $IgoMemb_{ij,t}$  is the number of International Governmental Organizations in which both countries are members, taken from the Correlates of War project,  $Alliance_{ij,t}$  is a dummy equal 1 if the dyad is part of a military alliance, as reported by the Correlates of War project,  $Democ_{ij,t}$  is the minimum democracy/autocracy score in the dyad as reported in the Polity V database. Observation counts might differ among columns based on the missing values generated by taking logs of the explanatory variable. For IR controls, whenever missing we replace them by value -99. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

### 7.3.2 Global South and Global North

Exactly as in Section 7.2, this part of the paper focuses on the heterogeneous effects of ICAs by group of countries, dividing the world into two groups, Global North and Global South (Table 14).

The first column of Table 11 presents comparable results to Table 4, interacting the main independent variable. We find that, when estimating the classical gravity specification, the effects of ICAs in trade is significantly different from zero and positive for SouthSouth and NorthNorth relations. Its impact is the highest when both countries belong to the South, where an increase in 1% of agreements generates an increase of 0.297% in exports. This has important policy implications for developing countries, diplomatic activity pays off in trade increases if both countries are South. Surprisingly, ICAs decrease exports in the case where the exporter is from the Global South and the importer is from the Global North.

We also investigate the heterogenous effect of type of agreement by country groups in Table 11 and Table 12 and find that the positive South-South and North-North effect holds for Economic and Non-Economic agreements, while the negative SouthNorth result is explained by Non-Economic ones. From Table 12 we see that this negative result it's mainly driven by Governance and Institutions and Human and Social Development agreements.

Table 11: Effects on trade by type of exporter-importer

	Exports		
	(1)	(2)	(3)
$\ln(ICA_{ij,t})$	0.297***		
$xSouthSouth$	(0.0705)		
$\ln(ICA_{ij,t})$	0.188***		
$xNorthNorth$	(0.0479)		
$\ln(ICA_{ij,t})$	-0.0284		
$xNorthSouth$	(0.0675)		
$\ln(ICA_{ij,t})$	-0.136***		
$xSouthNorth$	(0.0431)		
$\ln(EconICA_{ij,t})$		0.313***	
$xSouthSouth$		(0.0565)	
$\ln(EconICA_{ij,t})$		0.113***	
$xNorthNorth$		(0.0284)	
$\ln(EconICA_{ij,t})$		-0.0345	
$xNorthSouth$		(0.0461)	
$\ln(EconICA_{ij,t})$		-0.0683*	
$xSouthNorth$		(0.0382)	
$\ln(Non - EconICA_{ij,t})$			0.237***
$xSouthSouth$			(0.0852)
$\ln(Non - EconICA_{ij,t})$			0.130***
$xNorthNorth$			(0.0476)
$\ln(Non - EconICA_{ij,t})$			-0.0295
$xNorthSouth$			(0.0497)
$\ln(Non - EconICA_{ij,t})$			-0.140**
$xSouthNorth$			(0.0595)
Observations	363,831	252,611	294,471

All regressions include pair, reporter-year and partner-year fixed effects, GDP per capita, RTA and international relations controls. Column 2 includes a dummy equal to 1 if the pair has a Non-Economic ICA. Column 3 includes a dummy equal to 1 if the pair has an Economic ICA. Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering- in parentheses. Type of agreements are as displayed in Table 1. The dependent variable is export flows from country  $i$  to country  $j$ . International Relations controls include:  $UNVoting_{ij,t}$  is the absolute value of the Ideal Point Distance taken from Bailey et al. (2017),  $IgoMemb_{ij,t}$  is the number of International Governmental Organizations in which both countries are members, taken from the Correlates of War project,  $Alliance_{ij,t}$  is a dummy equal 1 if the dyad is part of a military alliance, as reported by the Correlates of War project,  $Democ_{ij,t}$  is the minimum democracy/autocracy score in the dyad as reported in the Polity V database. North and South countries are defined in Table 14. Observation counts might differ among columns based on the missing values generated by taking logs of the explanatory variable. For IR controls, whenever missing we replace them by value -99. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table 12: Effects on trade by type of exporter-importer

	(1)	(2)	Exports			(6)
			(3)	(4)	(5)	
$\ln(\text{EnvironmentICA}_{ij})$	0.163					
$x_{\text{SouthSouth}}$	(0.132)					
$\ln(\text{EnvironmentICA}_{ij})$	0.0686					
$x_{\text{NorthNorth}}$	(0.0518)					
$\ln(\text{EnvironmentICA}_{ij})$	-0.0171					
$x_{\text{NorthSouth}}$	(0.0542)					
$\ln(\text{EnvironmentICA}_{ij})$	-0.0561					
$x_{\text{SouthNorth}}$	(0.0528)					
$\ln(\text{EconICA}_{ij})$		0.309***				
$x_{\text{SouthSouth}}$		(0.0584)				
$\ln(\text{EconICA}_{ij})$		0.112***				
$x_{\text{NorthNorth}}$		(0.0285)				
$\ln(\text{EconICA}_{ij})$		-0.0405				
$x_{\text{NorthSouth}}$		(0.0477)				
$\ln(\text{EconICA}_{ij})$		-0.0730*				
$x_{\text{SouthNorth}}$		(0.0397)				
$\ln(\text{H\&DICA}_{ij})$			0.338***			
$x_{\text{SouthSouth}}$			(0.0880)			
$\ln(\text{H\&DICA}_{ij})$			0.0138			
$x_{\text{NorthNorth}}$			(0.0154)			
$\ln(\text{H\&DICA}_{ij})$			-0.0656			
$x_{\text{NorthSouth}}$			(0.0595)			
$\ln(\text{H\&DICA}_{ij})$			-0.141**			
$x_{\text{SouthNorth}}$			(0.0662)			
$\ln(\text{InstitutionsICA}_{ij})$				0.221**		
$x_{\text{SouthSouth}}$				(0.111)		
$\ln(\text{InstitutionsICA}_{ij})$				0.0186		
$x_{\text{NorthNorth}}$				(0.0410)		
$\ln(\text{InstitutionsICA}_{ij})$				-0.0629**		
$x_{\text{NorthSouth}}$				(0.0269)		
$\ln(\text{InstitutionsICA}_{ij})$				-0.174***		
$x_{\text{SouthNorth}}$				(0.0496)		
$\ln(\text{PeaceICA}_{ij})$					0.128	
$x_{\text{SouthSouth}}$					(0.104)	
$\ln(\text{PeaceICA}_{ij})$					0.0789**	
$x_{\text{NorthNorth}}$					(0.0343)	
$\ln(\text{PeaceICA}_{ij})$					-0.0221	
$x_{\text{NorthSouth}}$					(0.0449)	
$\ln(\text{PeaceICA}_{ij})$					-0.104	
$x_{\text{SouthNorth}}$					(0.0715)	
$\ln(\text{ConnectivityICA}_{ij})$						0.465***
$x_{\text{SouthSouth}}$						(0.0778)
$\ln(\text{ConnectivityICA}_{ij})$						0.116**
$x_{\text{NorthNorth}}$						(0.0493)
$\ln(\text{ConnectivityICA}_{ij})$						0.00334
$x_{\text{NorthSouth}}$						(0.0578)
$\ln(\text{ConnectivityICA}_{ij})$						-0.122*
$x_{\text{SouthNorth}}$						(0.0675)
Observations	56,358	252,611	153,937	137,863	88,773	201,892

All regressions include pair, reporter-year and partner-year fixed effects, GDP per capita, RTA and international relations controls. Column 2 includes a dummy equal to 1 if the pair has a Non-Economic ICA. Column 3 includes a dummy equal to 1 if the pair has an Economic ICA. Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering- in parentheses. Type of agreements are as displayed in Table 1. The dependent variable is export flows from country  $i$  to country  $j$ . International Relations controls include:  $UNVoting_{j,t}$  is the absolute value of the Ideal Point Distance taken from Bailey et al. (2017),  $IgoMemb_{j,t}$  is the number of International Governmental Organizations in which both countries are members, taken from the Correlates of War project,  $Alliance_{ij,t}$  is a dummy equal 1 if the dyad is part of a military alliance, as reported by the Correlates of War project,  $Democ_{j,t}$  is the minimum democracy/autocracy score in the dyad as reported in the Polity V database. North and South countries are defined in Table 14. Observation counts might differ among columns based on the missing values generated by taking logs of the explanatory variable. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## 8 Discussion

This paper sheds light on the dynamics of international cooperation agreements (ICAs) and their impact on international trade. We answer a long posed question: does trade follow the flag? Yes! We find evidence that ICAs increase trade by around 1-3%. We confirm this evidence relying on panel data and an instrumental variables approach. Importantly, developing countries experience more trade gains from international cooperation, suggesting that they benefit more from reputational gains. These results are of increasing importance given the current policy debates about friendshoring.

We also investigate the dynamics behind the formation of ICAs, finding that gravity forces play a significant role: countries that are closer, contiguous, more democratic, sharing religious have a higher probability of having an ICA. Further, we delve into the sequencing of international cooperation, revealing evidence that ICAs increase the likelihood of future Regional Trade Agreements, particularly those related to economic cooperation.

Some caveats are necessary to discuss. First, we do not have data on whether ICAs are still in place or not

at the end of the period. Sources consulted only report when the agreement was signed/entered into force but not if it was withdrawn. Thus, we encourage countries on regularly reporting to the UN the international agreements to which they abide to at a certain point in time, which would also contribute to international transparency. Second, we do not assess at any time welfare or distributional effects of trade. There is a large related discussion in the literature from which we take distance, the goal of this study was to measure whether trade was increased or not instead of making a qualitative judgement on whether trade is positive or negative. Third, as repeated throughout the whole text, even when using the best techniques at hand, our estimates are subject to potential endogeneity. As of now, there is no better solution than to present all the different approaches above showing robustness and being transparent with their limitations.

In conclusion, our study sheds further light on the interplay of international relations and international trade. It contributes to the understanding of how political decisions influence economic outcomes and how different countries navigate the intricacies of international cooperation. Further research should explore the possibility of decomposing the broad Economic category into subcategories and replicating the main results on heterogeneous effects. We hope our database serves the purpose for future research on International Studies, such as the determinants of FDI, the creation of International Organizations, the nature of regionalization processes or the challenges of international taxation, among others.

During the preparation of this work the author(s) used ChatGPT in order to improve English readability. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

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# Appendices

## A Database

Table 13: Treaty Functions and Keywords

Function	Sub-Function	Coding Keywords
1-Natural Resources and Environment	Energy	<ul style="list-style-type: none"> <li>• Energy</li> <li>• Nuclear<sup>13</sup> / uranium</li> <li>• Oil</li> <li>• Petroleum</li> <li>• Natural gas</li> <li>• Coal</li> </ul>
	Environmental Protection	<ul style="list-style-type: none"> <li>• Environment</li> <li>• Pollution</li> <li>• Climate change</li> <li>• Meteorological/ rawinsonde</li> <li>• Conservation</li> <li>• Plant protection</li> <li>• Forest</li> </ul>
	Resource Management	<ul style="list-style-type: none"> <li>• Mineral</li> <li>• Natural resource</li> <li>• Fishery/fisheries / fishing / tuna</li> <li>• Electric/electricity</li> </ul>
	Water	<ul style="list-style-type: none"> <li>• Water resources/water</li> <li>• River</li> <li>• Estuary</li> </ul>

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<sup>13</sup>Unless noted with terms such as “safe guards” and “anti-proliferation,” all nuclear treaties are coded within Function 1

Table 13 – continued from previous page

Function	Sub-Function	Coding Keywords
2-Economic Cooperation and Integration	Agriculture	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• Corn</li> </ul>
	Financial and Monetary Cooperation	<ul style="list-style-type: none"> <li>• Monetary</li> <li>• Investment</li> <li>• Financial</li> <li>• Currency</li> <li>• Money order</li> </ul>
	Industry	<ul style="list-style-type: none"> <li>• Industrial</li> </ul>
	Intellectual Property Rights	<ul style="list-style-type: none"> <li>• Copyright</li> <li>• Patent</li> </ul>
	Economic Integration (General) and Regulatory Harmonization	<ul style="list-style-type: none"> <li>• Economic</li> <li>• Customs</li> <li>• Antitrust</li> <li>• Economic and technical</li> <li>• "Economic, industrial and technical cooperation"</li> <li>• Enterprise</li> <li>• Property</li> </ul>
	Services	
	Taxation	<ul style="list-style-type: none"> <li>• Tax</li> <li>• Asset</li> </ul>

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Table 13 – continued from previous page

Function	Sub-Function	Coding Keywords
	Trade	<ul style="list-style-type: none"> <li>• Trade</li> <li>• Exchange/transfer of goods</li> <li>• Commerce / commercial commodity/commodities</li> <li>• Import</li> <li>• Tariff</li> <li>• Merchant</li> </ul>
3-Human and Social Development	Cultural Affairs	<ul style="list-style-type: none"> <li>• Culture</li> <li>• Film/cinema /audio-visual</li> <li>• Sports</li> </ul>
	Education	<ul style="list-style-type: none"> <li>• Education</li> <li>• Student / Trainee</li> <li>• Youth</li> <li>• School</li> <li>• Diploma</li> <li>• Degree</li> <li>• University/universities</li> </ul>
	Employment, Labor, and Social Security	<ul style="list-style-type: none"> <li>• Social security</li> <li>• Employment/Unemployment</li> <li>• Pension</li> <li>• Insurance</li> <li>• Social/social development</li> <li>• Working holiday</li> </ul>
	Gender	

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Table 13 – continued from previous page

Function	Sub-Function	Coding Keywords
	Health, Medicine, and Disease Prevention	<ul style="list-style-type: none"> <li>• Health</li> <li>• Sanitary</li> <li>• Disease</li> <li>• Vaccine</li> <li>• Medical/medicine</li> <li>• Veterinary</li> </ul>
	Human Rights	
	Knowledge, Information, and Statistics Sharing	
	Research, Science and Technology	<ul style="list-style-type: none"> <li>• Research</li> <li>• Science/scientific</li> <li>• Metrology</li> <li>• Space/outer space</li> </ul>
	Urban and Rural Development	
4-Governance and Institutions <sup>14</sup>	Governance, General	<ul style="list-style-type: none"> <li>• Friendship</li> <li>• Official / official publication</li> <li>• Public administration</li> <li>• Voting</li> <li>• Public officer</li> </ul>
	Diplomatic and Consular Relations	<ul style="list-style-type: none"> <li>• Diplomatic passports</li> <li>• Consular / consulate</li> <li>• Foreign affairs</li> </ul>
	Civil Society	

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<sup>14</sup>Many treaties that do not have specific intents are categorized under this



**Table 13 – continued from previous page**

<b>Function</b>	<b>Sub-Function</b>	<b>Coding Keywords</b>
	Institutional Building and General Cooperation	<ul style="list-style-type: none"> <li>• Integration</li> <li>• Basic agreement</li> <li>• Consultation/political consultation</li> <li>• Establishment of a joint commission</li> <li>• Terminating/termination (previous treaties)</li> <li>• Continued application (previous treaties)</li> </ul>
	Legal and Judicial System	<ul style="list-style-type: none"> <li>• Judicial</li> <li>• Legal matter</li> <li>• Tribunal</li> <li>• Civil procedure</li> <li>• Restitution</li> <li>• Criminal investigation of corporations</li> <li>• Judicial cooperation in civil and criminal laws</li> </ul>
5-Peace and Security	Security and Military Cooperation	<ul style="list-style-type: none"> <li>• Military</li> <li>• Defense/defence</li> <li>• Armed force</li> <li>• Navy/naval</li> <li>• Air force</li> <li>• Marine corps</li> <li>• Forces</li> <li>• Weapon(s)</li> <li>• Terrorism /anti-terrorism</li> <li>• Classified/secret information</li> </ul>

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Table 13 – continued from previous page

Function	Sub-Function	Coding Keywords
	Peace and Conflict Resolution	<ul style="list-style-type: none"> <li>• Ceasefire</li> <li>• Anti-proliferation</li> <li>• Safeguard</li> <li>• War / postwar / war damage</li> </ul>
	Extradition and Criminal Matters	<ul style="list-style-type: none"> <li>• Extradition / transfer of persons</li> <li>• Illicit/illegal</li> <li>• Penal sentence</li> <li>• Crime / criminal</li> <li>• Prisoner</li> <li>• Police</li> </ul>
	Disaster Relief and Preparedness	<ul style="list-style-type: none"> <li>• Emergency</li> </ul>
	Drug Control	<ul style="list-style-type: none"> <li>• Drug</li> <li>• Narcotics</li> </ul>
6-Connectivity	Border Cooperation	<ul style="list-style-type: none"> <li>• Maritime</li> <li>• Boundary</li> <li>• Frontier</li> <li>• Border</li> <li>• Delimitation</li> </ul>
	Infrastructure	

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Table 13 – continued from previous page

Function	Sub-Function	Coding Keywords
	Migration	<ul style="list-style-type: none"> <li>• Migration</li> <li>• Nationality / dual nationality</li> <li>• Readmission</li> <li>• Visa</li> <li>• Movement</li> <li>• Residence</li> <li>• Minors</li> <li>• Refugee</li> </ul>
	Communication Networks	<ul style="list-style-type: none"> <li>• Postal/mail / parcel</li> <li>• Telecommunication / Communications</li> <li>• Radio</li> <li>• TV / television</li> <li>• Media</li> </ul>
	Tourism	<ul style="list-style-type: none"> <li>• Travel</li> </ul>

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**Table 13 – continued from previous page**

Function	Sub-Function	Coding Keywords
	Transportation and Logistics	<ul style="list-style-type: none"> <li>• Transport</li> <li>• Crew</li> <li>• Air transport / air service/civil aviation / airworthiness / flight</li> <li>• Driving/driver license</li> <li>• Rail</li> <li>• Road /highway</li> <li>• Bridge</li> <li>• Navigation / radar</li> <li>• Shipping</li> <li>• Satellite</li> <li>• Motor vehicle</li> <li>• Transit</li> </ul>

Table 14: Country list and end of the period ICAs

Global North				Global South							
ISO 3	Country	Period	ICA	ISO 3	Country	Period	ICA	ISO 3	Country	Period	ICA
ALB	Albania	1945-2020	211	AFG	Afghanistan	1945-2020	66	LYB	Libya	1945-2020	114
AND	Andorra	1945-2020	26	DZA	Algeria	1945-2020	219	MAC	Macao	1945-2020	17
ARM	Armenia	1995-2020	123	AGO	Angola	1945-2020	56	MDG	Madagascar	1945-2020	89
AUS	Australia	1945-2020	865	ATG	Antigua and Barbuda	1945-2020	29	MWI	Malawi	1945-2020	69
AUT	Austria	1945-2020	996	ARG	Argentina	1945-2020	1040	MYS	Malaysia	1945-2020	230
AZE	Azerbaijan	1995-2020	146	BHS	Bahamas	1945-2020	36	MDV	Maldives	1945-2020	17
BLR	Belarus	1995-2020	191	BHR	Bahrain	1945-2020	83	MLI	Mali	1960-2020	127
BEL	Belgium	1945-2020	1070	BGD	Bangladesh	1975-2020	145	MHL	Marshall Islands	1995-2020	11
BIH	Bosnia and Herzegovina	1995-2020	79	BRB	Barbados	1945-2020	73	MRT	Mauritania	1960-2020	94
BGR	Bulgaria	1945-2020	591	BLZ	Belize	1945-2020	60	MUS	Mauritius	1945-2020	125
CAN	Canada	1945-2020	1206	BEN	Benin	1945-2020	148	MEX	Mexico	1945-2020	977
HRV	Croatia	1995-2020	205	BOL	Bolivia	1945-2020	322	MNG	Mongolia	1960-2020	201
CYP	Cyprus	1945-2020	297	BWA	Botswana	1970-2020	79	MAR	Morocco	1945-2020	332
CZE	Czech Republic	1995-2020	756	BRA	Brazil	1945-2020	1647	MOZ	Mozambique	1945-2020	118
CSK	Czechoslovakia	1945-1990	472	BRN	Brunei	1945-2020	35	MMR	Myanmar	1945-2020	98
DNK	Denmark	1945-2020	943	BFA	Burkina Faso	1960-2020	144	NAM	Namibia	1945-2020	81
EST	Estonia	1995-2020	342	BDI	Burundi	1965-2020	54	NPL	Nepal	1945-2020	70
FIN	Finland	1945-2020	981	KHM	Cambodia	1955-2020	107	NIC	Nicaragua	1945-2020	171
FRA	France	1945-2020	2681	CMR	Cameroon	1945-2020	117	NER	Niger	1960-2020	93
GEO	Georgia	1995-2020	125	CPV	Cape Verde	1945-2020	81	NGA	Nigeria	1945-2020	126
DEU	Germany	1945-2020	4069	CAF	Central African Republic	1960-2020	49	PRK	North Korea	1960-2020	65
GRC	Greece	1945-2020	523	TCD	Chad	1960-2020	81	OMN	Oman	1945-2020	106
HUN	Hungary	1945-2020	622	CHL	Chile	1945-2020	424	PAK	Pakistan	1945-2020	360
ISL	Iceland	1945-2020	220	CHN	China	1945-2020	845	PAN	Panama	1945-2020	208
IRL	Ireland	1945-2020	364	COL	Colombia	1945-2020	361	PNG	Papua New Guinea	1945-2020	47
ISR	Israel	1945-2020	916	COM	Comoros	1965-2020	22	PRY	Paraguay	1945-2020	262
ITA	Italy	1945-2020	858	COG	Congo	1945-2020	93	PER	Peru	1945-2020	399
JPN	Japan	1945-2020	787	COK	Cook Islands	1945-2020	25	PHL	Philippines	1945-2020	435
KAZ	Kazakhstan	1995-2020	159	CRI	Costa Rica	1945-2020	191	QAT	Qatar	1960-2020	131
LVA	Latvia	1995-2020	472	CIV	Cote d'Ivoire	1945-2020	128	RWA	Rwanda	1965-2020	61
LIE	Liechtenstein	1945-1945	0	CUB	Cuba	1945-2020	235	KNA	Saint Kitts and Nevis	1945-2020	18
LTU	Lithuania	1995-2020	441	COD	Democratic Republic of Congo	1945-2020	113	LCA	Saint Lucia	1945-2020	30
LUX	Luxembourg	1945-2020	394	DJI	Djibouti	1945-2020	46	VCT	Saint Vincent and the Grenadines	1945-2020	22
MKD	Macedonia	1995-2020	121	DMA	Dominica	1965-2020	28	WSM	Samoa	1945-2020	28
MLT	Malta	1945-2020	164	DOM	Dominican Republic	1945-2020	148	STP	Sao Tome and Principe	1945-2020	16
MDA	Moldova	1995-2020	112	ECU	Ecuador	1945-2020	256	SAU	Saudi Arabia	1945-2020	146
MNE	Montenegro	2010-2020	24	EGY	Egypt	1945-2020	442	SEN	Senegal	1945-2020	155
NLD	Netherlands	1945-2020	1740	SLV	El Salvador	1945-2020	170	SYC	Seychelles	1945-2020	41
NZL	New Zealand	1945-2020	512	GNQ	Equatorial Guinea	1945-2020	31	SLE	Sierra Leone	1945-2020	53
NOR	Norway	1945-2020	664	ETH	Ethiopia	1945-2020	139	SLB	Solomon Islands	1945-2020	18
POL	Poland	1945-2020	747	FJI	Fiji	1945-2020	55	SOM	Somalia	1960-2020	40
PRT	Portugal	1945-2020	446	GAB	Gabon	1960-2020	84	ZAF	South Africa	1945-2020	628
ROU	Romania	1945-2020	664	GMB	Gambia	1945-2020	55	LKA	Sri Lanka	1945-2020	163
RUS	Russia	1995-2020	1396	GHA	Ghana	1945-2020	124	SDN	Sudan	1945-2020	94
SMR	San Marino	2000-2020	38	GRD	Grenada	1945-2020	30	SUR	Suriname	1945-2020	55
SRB	Serbia	2010-2020	50	GTM	Guatemala	1945-2020	164	SWZ	Swaziland	1945-2020	36
SCG	Serbia and Montenegro	1995-2005	58	GIN	Guinea	1945-2020	87	SYR	Syria	1945-2020	162
SGP	Singapore	1965-2020	230	GNB	Guinea-Bissau	1945-2020	26	TJK	Tajikistan	1995-2020	70
SVK	Slovak Republic	1995-2020	684	GUY	Guyana	1945-2020	67	TZA	Tanzania	1945-2020	112
SVN	Slovenia	1995-2020	182	HTI	Haiti	1945-2020	67	THA	Thailand	1945-2020	303
YUG	Socialist Federal Republic of Yugoslavia	1945-1990	436	HND	Honduras	1945-2020	150	TLS	Timor	2005-2020	14
KOR	South Korea	1945-2020	820	HKG	Hong Kong	1945-2020	77	TGO	Togo	1945-2020	57
SUN	Soviet Union	1945-1990	927	IND	India	1945-2020	584	TON	Tonga	1945-2020	24
ESP	Spain	1945-2020	1505	IDN	Indonesia	1945-2020	406	TTO	Trinidad and Tobago	1945-2020	93
SWE	Sweden	1945-2020	948	IRN	Iran	1945-2020	206	TUN	Tunisia	1945-2020	262
CHE	Switzerland	1945-2020	908	IRQ	Iraq	1945-2020	120	TKM	Turkmenistan	1995-2020	65
TWN	Taiwan	1945-2020	25	JAM	Jamaica	1945-2020	164	UGA	Uganda	1945-2020	89
TUR	Turkey	1945-2020	678	JOR	Jordan	1945-2020	259	ARE	United Arab Emirates	1945-2020	144
UKR	Ukraine	1995-2020	294	KEN	Kenya	1945-2020	171	URY	Uruguay	1945-2020	255
GBR	United Kingdom	1945-2020	2480	KWT	Kuwait	1945-2020	190	UZB	Uzbekistan	1995-2020	178
USA	United States	1945-2020	6758	KGZ	Kyrgyz Republic	1995-2020	88	VUT	Vanuatu	1945-2020	18
				LAO	Laos	1955-2020	127	VEN	Venezuela	1945-2020	378
				LBN	Lebanon	1945-2020	163	VNM	Vietnam	1955-2020	298
				LSO	Lesotho	1945-2020	51	YEM	Yemen	1945-2020	119
				LBR	Liberia	1945-2020	104	ZMB	Zambia	1945-2020	92
								ZWE	Zimbabwe	1945-2020	96

## 1.1 Dealing with Successor States

This subsection explains how we dealt with the Succession of States in respect to Treaties: States that are created from separations or dissolutions (like the former Soviet Union) or from the unification of two or more States (such as Yemen), and what to do with the obligations contracted by the previous state that ceases to exist.

### Vienna Convention of 1978

The Vienna Convention (1978) ([link](#)) specifies that the new States automatically assume the obligations of the State that they replace. However, the Convention took 20 years to go into effect because it did not acquire the 15 necessary adhesions to do so. Additionally, none of the major powers joined the Convention, and most International Law experts agree that it has no effect in practice. We broadly follow the Council of Europe ([link](#)) who argued in 1998 that the Convention is not valid and that it must be taken on a case-by-case basis.

**Trade Flows Consideration** The decision on why we don't overlap the ending year of a country with the starting year of the succeeding state is based on trade flows. This will depend on the case. For instance, SCG stops recording treaties in 2005—a year before its formal dissolution—while the USSR stops recording in 1991, and Russia starts recording in 1992.

### USSR and Russian Federation

We assign USSR treaties to Russia after the dissolution of the USSR. This is because, according to the Council of Europe:

The situation was, however, nuanced by the claim of the Russian Federation to be the continuing State ("gosudarstvo-prodolzatel") of the former USSR instead of just a successor State similar to the other CIS member States. This claim, which must be taken to mean that the Russian Federation guarantees the continuity of all rights and obligations of the USSR under international law, was soon accepted by the international community. Hence, the Russian Federation simply took over the seat of the former USSR in many international organisations including the UN Security Council. The Russian Federation, consistent with this position, has declared that it will continue to honour the international treaties concluded by the former USSR.

**Socialist Federal Republic of Yugoslavia (SFRY)** Treaties for the Former Socialist Yugoslavia ceased with the dissolution of Socialist Yugoslavia. Below is why:

In July 1992, the Badinter Commission reached the conclusion that the process of dissolution had been completed. Consequently, the Commission found that "the SFRY no longer exists." Instead, a number of new States had been created. Croatia, Slovenia, and Bosnia and Herzegovina had met with general recognition and had been admitted as new members of the United Nations on 22 May 1992. These States have generally accepted *ipso facto* succession to treaties of the former SFRY, subject however to their constitutional provisions. In many cases, the fate of bilateral treaties has been decided between the parties concerned. Serbia and Montenegro too had, as the Commission underlined, created a new State, the Federal Republic of Yugoslavia (FRY). Thus, the Commission denied Serbian claims that the FRY is identical with or a continuation of the former SFRY: the FRY was to be regarded as merely one of the five successors to the SFRY.

The term "former Yugoslavia" is now commonly used retrospectively. In May 2006, Montenegro invoked its right under the Constitutional Charter of Serbia and Montenegro to hold a referendum on independence from the state union. The referendum was successful, and Montenegro declared itself an independent nation on 3 June 2006. Two days later, Serbia declared that it was the successor state to the union of Serbia and Montenegro. In October 2006, the Serbian parliament unanimously approved—and a referendum confirmed—a new constitution for the country. ([Link to UN](#))

Recap: we keep treaties for SFRY as YUG for pre-1992. As YUG was not recognized as a continuing state of SFRY, the "new" Yugoslavia will be called SCG (Serbia and Montenegro) to merge it with the Gravity database.

We assume all treaties signed by YUG (post-1992) and SCG are taken by Serbia in 2006 as per the continuation announced to the UN. YUG after 1992 will be SCG for simplicity. SFRY WILL BE CALLED YUG to merge with Gravity data pre-1992.

**Unification of Germany** We drop East Germany (GDR) treaties but keep the ones from West Germany (FRG). From the Council of Europe:

This Unification Treaty also details the various points of departure concerning issues related to succession. Thus, Articles 11 and 12 regulate the fate of treaties to which either of the two German States was a party with Article 11 basically continuing the treaties to which the old FRG was a party, and Article 12 providing for consultations with treaty partners with a view to deciding upon the fate of treaties to which the former GDR was a party.

**United Arab Republic** United Arab Republic agreements are assigned to Egypt. The United Arab Republic (UAR) was a sovereign state in the Middle East from 1958 to 1961. It was initially a political union between Egypt (including the occupied Gaza Strip) and Syria from 1958 until Syria seceded from the union after the 1961 Syrian coup d'état—leaving a rump state. Egypt continued to be known officially as the United Arab Republic until 1971.

**Czechoslovakia** As both the Czech Republic and Slovakia honored the Vienna Convention and respected the obligations emanating from agreements signed by Czechoslovakia, these two countries “inherit” such agreements (and the respective counterparts). Please note that this inheritance happens with the new appearance of the country (1993) and that doesn't create any link between them (i.e., An agreement between the USA and Czechoslovakia will become two separate agreements: one between the USA and the Czech Republic and another between the USA and Slovakia).

From the European Commission:

Finally, as regards the dissolution of the Czech and Slovak Federal Republic, where the two successor States have clearly favored the applicability of the rule contained in Art. 34 of the Vienna Convention on Succession of States in Respect of Treaties, i.e., automatic succession in regard of both bilateral and multilateral treaties of their predecessor State, it appears that a relatively large number of States have by and large accepted that approach. This seems to be true even for some third parties that had originally favored applying the clean-slate rule. And again, it has been accepted and confirmed that localized treaties have devolved upon the respective successor States.

**Unification of Yemen** We don't have data for South Yemen before the unification. All the agreements belong to a single Yemen in the database.

**Sudan** Sudan (SDN) maintains all country's agreements after the separation of South Sudan (SSD), which starts with a clean sheet.

**Unification of Vietnam** We don't have data for North Vietnam before the unification. All the agreements belong to a single Vietnam in the database.

**Separation of Pakistan and Bangladesh** Pakistan keeps all the country's agreements prior to the division, and Bangladesh starts with a clean sheet.

**Separation of Malaysia and Singapore** Malaysia keeps all the country's agreements prior to the division, and Singapore starts with a clean sheet.

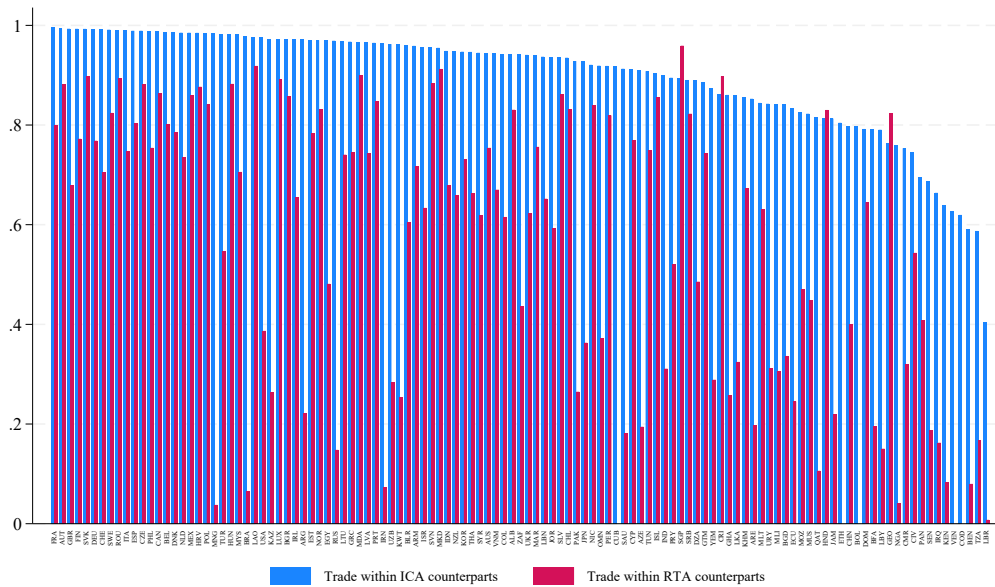
**Separation of Ethiopia and Eritrea** Ethiopia keeps all the country's agreements prior to the division, and Eritrea starts with a clean sheet.

## 1.2 Descriptive statistics

Table 15

	count	mean	sd	min	max
$Exports_{ij}$	1159734	319516.6	3996080	0	4.81e+08
$ICA_{ij}$	2313960	1.038558	6.012456	0	630.4724
$\ln(ICA_{ij})$	400148	.9224566	1.233983	-3.295837	6.446469
$RTA_{ij}$	2313960	.0625028	.2420666	0	1
$Y_{ij}$	1753466	1.253065	3.425838	-12.64076	27.03385
$UNVoting_{ij}$	1560470	-1.009275	.8242232	-5.784511	-4.00e-07
$IgoMemb_{ij}$	2039167	9.688344	14.75207	0	106
$Alliance_{ij}$	1464976	.0777569	.2677888	0	1
$Democ_{ij}$	1326208	-2.549635	6.407906	-10	10

Figure 13: The share of trade within ICA counterparts is higher than the share of trade within RTA counterparts for almost every country



Countries displayed have at least 100 cumulative ICAs. Most countries trade more within ICA counterparts than within RTA counterparts. Only countries trading more within RTA counterparts are Singapore, Costa Rica, Honduras and Georgia.



## 2 Robustness checks

### 2.1 Effects on trade

Table 16: International Cooperation Agreements increase bilateral trade flows: only bilateral ICAs

	<i>Exports</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
$\ln(\text{BilateralICA}_{ij})$	0.0837*** (0.0313)	0.0816** (0.0317)	0.0834*** (0.0314)	0.0699** (0.0319)	0.0715** (0.0320)	0.239*** (0.0462)
$\text{RTA}_{ij}$		0.166*** (0.0270)	0.167*** (0.0265)	0.171*** (0.0260)	0.171*** (0.0260)	0.400*** (0.0636)
$Y_{ij}$				-0.000109 (0.0193)	0.000499 (0.0192)	0.0188 (0.0194)
Observations	351,183	351,183	351,183	341,649	341,649	341,692
Pair FE	YES	YES	YES	YES	YES	NO
Reporter#year FE	YES	YES	YES	YES	YES	YES
Partner#year FE	YES	YES	YES	YES	YES	YES
IR controls	NO	NO	YES	NO	YES	YES
Gravity controls	NO	NO	NO	NO	NO	YES

All regressions include pair, reporter-year and partner-year fixed effects. Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering- in parentheses. The dependent variable is export flows from country  $i$  to country  $j$ .  $Y_{ij,t} = \ln\left(\frac{\text{GDP}_{i,t}}{\text{population}_{i,t}}\right) \times \ln\left(\frac{\text{GDP}_{j,t}}{\text{population}_{j,t}}\right)$ . International Relations (IR) controls include:  $\text{UNVoting}_{ij,t}$  is the absolute value of the Ideal Point Distance taken from Bailey et al. (2017),  $\text{IgoMemb}_{ij,t}$  is the number of International Governmental Organizations in which both countries are members, taken from the Correlates of War project,  $\text{Alliance}_{ij,t}$  is a dummy equal 1 if the dyad is part of a military alliance, as reported by the Correlates of War project,  $\text{Democ}_{ij,t}$  is the minimum democracy/autocracy score in the dyad as reported in the Polity V database. Gravity controls include:  $\text{DIST}_{ij}$  is the natural log of the distance between most populated city of each country (km),  $\text{CONTIG}_{ij}$  is a dummy equal 1 if countries are countiguous,  $\text{LANG}_{ij}$  is a dummy equal 1 if countries share common official or primary language,  $\text{ComColonizer}_{ij}$  equals 1 if countries share a common colonizer post 1945,  $\text{RELIGION}_{ij}$  is a religious proximity index,  $\text{Legal}_{ij}$  equals 1 if countries share common legal origins,  $\text{CLNY}_{ij}$  equals 1 if pair ever was in colonial or dependency bilateral (including before 1948),  $\text{Siblingever}_{ij}$  equals 1 if pair ever had the same colonizer (including before 1948). Observation counts might differ among columns based on the limited availability of data for the variables included. For IR and gravity controls, whenever missing we replace them by value -99. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 17: International Cooperation Agreements increase bilateral trade flows: Not weighting multilateral ICAs

	<i>Exports</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
$\ln(ICA_{ij})$	0.0918*** (0.0283)	0.0859*** (0.0285)	0.0888*** (0.0280)	0.0785*** (0.0286)	0.0809*** (0.0282)	0.270*** (0.0435)
$RTA_{ij}$		0.171*** (0.0257)	0.171*** (0.0256)	0.176*** (0.0248)	0.176*** (0.0249)	0.382*** (0.0600)
$Y_{ij}$				0.00465 (0.0199)	0.00551 (0.0198)	0.0146 (0.0192)
Observations	374,692	374,692	374,692	363,831	363,831	363,910
Pair FE	YES	YES	YES	YES	YES	NO
Reporter#year FE	YES	YES	YES	YES	YES	YES
Partner#year FE	YES	YES	YES	YES	YES	YES
IR controls	NO	NO	YES	NO	YES	YES
Gravity controls	NO	NO	NO	NO	NO	YES

All regressions include pair, reporter-year and partner-year fixed effects. Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering- in parentheses. The dependent variable is export flows from country  $i$  to country  $j$ .  $Y_{ij,t} = \ln\left(\frac{GDP_{i,t}}{population_{i,t}}\right) \times \ln\left(\frac{GDP_{j,t}}{population_{j,t}}\right)$ . International Relations (IR) controls include:  $UNVoting_{ij,t}$  is the absolute value of the Ideal Point Distance taken from Bailey et al. (2017),  $IgoMemb_{ij,t}$  is the number of International Governmental Organizations in which both countries are members, taken from the Correlates of War project,  $Alliance_{ij,t}$  is a dummy equal 1 if the dyad is part of a military alliance, as reported by the Correlates of War project,  $Democ_{ij,t}$  is the minimum democracy/autocracy score in the dyad as reported in the Polity V database. Gravity controls include:  $DIST_{ij}$  is the natural log of the distance between most populated city of each country (km),  $CONTIG_{ij}$  is a dummy equal 1 if countries are countiguous,  $LANG_{ij}$  is a dummy equal 1 if countries share common official or primary language,  $ComColonizer_{ij}$  equals 1 if countries share a common colonizer post 1945,  $RELIGION_{ij}$  is a religious proximity index,  $Legal_{ij}$  equals 1 if countries share common legal origins,  $CLNY_{ij}$  equals 1 if pair ever was in colonial or dependency bilateral (including before 1948),  $Siblinever_{ij}$  equals 1 if pair ever had the same colonizer (including before 1948). Observation counts might differ among columns based on the limited availability of data for the variables included. For IR and gravity controls, whenever missing we replace them by value -99. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 18: Main results are robust to different specifications

	Poisson : last 5 year ICAs				OLS ln(Exports)			OLS ln(Exports) 5 year differences		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$\ln(ICA_{ij})$	0.00453** (0.00227)	0.00519** (0.00207)	0.00543*** (0.00201)	0.00539** (0.00261)	0.125*** (0.0289)	0.124*** (0.0282)	0.122*** (0.0278)	0.0560*** (0.0138)	0.0564*** (0.0139)	0.0431** (0.0167)
$RTA_{ij}$		0.195*** (0.0539)	0.209*** (0.0525)	0.207*** (0.0515)		0.270*** (0.0609)	0.266*** (0.0573)		0.104*** (0.0271)	0.131*** (0.0314)
$Y_{ij}$			0.0258 (0.0218)	0.0254 (0.0225)		0.0766*** (0.0189)	0.0761*** (0.0187)		0.0296** (0.0120)	0.0207* (0.0124)
Observations	144,434	144,434	140,557	140,557	374,678	363,828	363,828	319,022	308,877	229,110
R-squared					0.891	0.893	0.893	0.267	0.266	0.293
IR controls	NO	NO	YES	YES	NO	NO	YES	NO	NO	YES

All regressions include pair, reporter-year and partner-year fixed effects except for column (4) which does not include pair fixed effects. Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering- in parentheses. The dependent variable is export flows from country  $i$  to country  $j$ . Columns (1)-(4) correspond to a Poisson estimate where the explanatory variable is in logs of 5years cumulative ICAs. Columns (5)-(7) correspond to OLS regressions in levels where the explained and the explanatory variables are both in logs. Columns (8)-(10) correspond to OLS regressions in differences where the explained and the explanatory variables are both differenced in logs.  $Y_{ij,t} = \ln\left(\frac{GDP_{i,t}}{population_{i,t}}\right) \times \ln\left(\frac{GDP_{j,t}}{population_{j,t}}\right)$ . International Relations controls include:  $UNVoting_{ij,t}$  is the absolute value of the Ideal Point Distance taken from Bailey et al. (2017),  $IgoMemb_{ij,t}$  is the number of International Governmental Organizations in which both countries are members, taken from the Correlates of War project,  $Alliance_{ij,t}$  is a dummy equal 1 if the dyad is part of a military alliance, as reported by the Correlates of War project,  $Democ_{ij,t}$  is the minimum democracy/autocracy score in the dyad as reported in the Polity V database. Observation counts differ among columns based on the limited availability of data for the variables included. For IR and gravity controls, whenever missing we replace them by value -99. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 19: Future agreements signed do not affect exports in OLS differenced in logs

	$\ln(Exports)$		
	(1)	(2)	(3)
$\Delta_{t-5}\ln(ICA_{ij})$	0.0513*** (0.0140)	0.0498*** (0.0140)	0.0428** (0.0167)
$\Delta_{t+5}\ln(ICA_{ij})$	0.0179 (0.0172)	0.0129 (0.0186)	-0.000308 (0.0200)
$RTA_{ij}$		0.139*** (0.0334)	0.133*** (0.0314)
$Y_{ij}$		0.0287** (0.0137)	0.0236* (0.0140)
Observations	268,621	259,740	227,507
R-squared	0.284	0.284	0.293
IR controls	NO	NO	YES

All regressions include pair, reporter-year and partner-year fixed effects. Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering- in parentheses. The dependent variable is export flows from country  $i$  to country  $j$ .  $\Delta_{t+5}$  indicate 5 years future variable, whereas other variables are level value in year  $t$ .  $Y_{ij,t} = \ln\left(\frac{GDP_{i,t}}{population_{i,t}}\right) \times \ln\left(\frac{GDP_{j,t}}{population_{j,t}}\right)$ . International relations controls include  $UNVoting_{ij}$ ,  $IgoMemb_{ij}$ ,  $Alliance_{ij}$  and  $Democ_{ij}$ . Observation counts might differ among columns based on the limited availability of data for the variables included. For IR and gravity controls, whenever missing we replace them by value -99. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 20: Instrumental variables approach is robust to OLS log regressions

Regressions in levels						
	(1)	(2)	(3)	(4)	(5)	(6)
	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage
$\ln(ICA_{ij})$	0.532*		0.575*		0.583*	
	(0.299)		(0.303)		(0.317)	
$\ln(IV_{ij})$		54.63**		58.72**		57.36**
		(23.46)		(25.53)		(27.46)
$RTA_{ij}$			0.249***	0.0696***	0.273***	0.0757***
			(0.0616)	(0.0154)	(0.0680)	(0.0203)
$Y_{ij}$			0.0681***	0.000734	0.0654***	-0.00270
			(0.0193)	(0.00633)	(0.0196)	(0.00663)
Observations	77,189	82,062	74,925	79,192	46,492	48,933
IR controls	NO	NO	NO	NO	YES	YES
Cragg-Donald Wald F statistic	662.1		670.0		418.2	
Kleibergen-Paap rk Wald F statistic	6.141		6.047		4.519	
Differenced regressions						
	(1)	(2)	(3)	(4)	(5)	(6)
	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage
$\Delta_{t-5}\ln(ICA_{ij})$	0.0570		0.144***		0.103***	
	(0.0628)		(0.0459)		(0.0352)	
$\Delta_{t-5}\ln(IV_{ij})$		248.7***		282.7***		527.2**
		(59.98)		(88.67)		(256.6)
$\Delta_{t-5}RTA_{ij}$			0.136***	0.0311***	0.170***	0.0464***
			(0.0327)	(0.00680)	(0.0408)	(0.0122)
$Y_{ij}$			0.0239	-0.000822	0.00885	-0.00220
			(0.0151)	(0.00209)	(0.0175)	(0.00277)
Observations	67,314	72,790	65,050	69,800	39,262	42,006
IR controls	NO	NO	NO	NO	YES	YES
Cragg-Donald Wald F statistic	3003		2846		2819	
Kleibergen-Paap rk Wald F statistic	11.57		10.39		4.056	

All regressions include pair, reporter-year and partner-year fixed effects. Robust standard errors clustered by country  $i$  and country  $j$  -two way clustering- in parentheses We restrict sample to every 5 years (from 1945 to 2020), but results hold when using the full sample. The dependent variable is export flows from country  $i$  to country  $j$ .  $\Delta_{t-5}$  indicates 5 years past change,  $Y_{ij,t} = \ln\left(\frac{GDP_{i,t}}{population_{i,t}}\right) \times \ln\left(\frac{GDP_{j,t}}{population_{j,t}}\right)$ . International relations controls include  $UNVoting_{ij}$ ,  $IgoMemb_{ij}$ ,  $Alliance_{ij}$  and  $Democ_{ij}$ . Observation counts might differ among columns based on the limited availability of data for the variables included. For IR and gravity controls, whenever missing we replace them by value -99. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .