

# A new trade frontier? Customs cooperation & trade-efficient borders

Isabella Bellezza & Connor Staggs

Department of Political Science  
Brown University

May 2024

## Abstract

Amidst growing aversion to traditional trade liberalization tools like preferential trade agreements (PTAs), policymakers can do much to 'free' trade simply by making existing trade more efficient. We provide evidence that one increasingly popular trade facilitation tool — trusted trader agreements — is positively correlated with bilateral trade, sometimes surpassing the effects of standard trade liberalization measures like preferential trade agreements (PTAs) and World Trade Organization (WTO) membership. Countries who sign trusted trader agreements mutually recognize each other's exporters that have been certified as compliant with supply chain security standards and agree to subject those trusted traders to less scrutiny at international borders. After estimating a series of gravity models of trade, our findings suggest that the resultant time-saving preferential treatment at borders may indeed increase bilateral trade flows. While we do not offer a causal interpretation of our findings, this paper provides the first empirical exploration of the relationship between a relatively new form of international customs cooperation and international trade, laying the groundwork for future research on the politics of trade facilitation and the globalization of border control.

**Key words:** trade, non-tariff barriers, trade agreements, borders, customs cooperation, gravity model

# 1 Introduction

The United States has pushed for lower trade barriers around the world for decades. These efforts reversed in 2018 when the Trump administration announced tariff increases on a number of Chinese goods, beginning a tit-for-tat exchange of increasing retaliatory tariffs that marked the largest return to protectionism by the U.S. since the 1930 Smoot-Hawley Act. Tariffs remain politically popular, and president Biden has kept his predecessor's tariffs in place. More broadly, the Biden administration has de-emphasized tariff reduction in U.S. trade policy, marking a stark departure from conventional preoccupation with trade liberalization. As put by U.S. National Security Advisor Jake Sullivan in 2023: "In today's world, trade policy needs to be about more than tariff reduction, and trade policy needs to be fully integrated into our economic strategy, at home and abroad."<sup>1</sup> True to word, the administration has resolutely refused to cut trade deals with traditional market access provisions.

The de-emphasis of tariff reduction in U.S. trade policy has been the subject of much debate. Pursuing traditional trade deals has become a political liability associated with outsourcing American working class jobs – anathema to the Biden team's "foreign policy for the middle class." Democratic lawmakers even called on the Biden White House to drop trade provisions from the centerpiece of the administration's Indo-Pacific strategy, the Indo-Pacific Economic Framework (IPEF), because they could hurt "reelection campaigns, giving Republicans an opening to paint the deal as a job-outsourcing global trade agreement."<sup>2</sup> The ensuing collapse of the trade pillar in the IPEF – along with staunch disinterest in pursuing new FTAs, even with willing allies like the UK,<sup>3</sup> has been criticised by free trade proponents as "a blow to US standing in the region,"<sup>4</sup> that blunts a powerful

---

<sup>1</sup>White House Speeches, [Remarks by National Security Advisor Jake Sullivan on Renewing American Economic Leadership at the Brookings Institution](#), 27 April 2023.

<sup>2</sup>Politico, [RIP 'worker-centered trade': Biden's global economic agenda stalls](#), 2 January 2024.

<sup>3</sup>Politico, [Biden quietly shelves trade pact with UK before 2024 elections](#), 18 December 2023.

<sup>4</sup>Bloomberg, [US Washout on Indo-Pacific Trade Deal Opens the Door to China](#), 17 November 2023.

source of U.S. diplomatic leverage, fans inflation,<sup>5</sup> and is "hurting the U.S. economy far more than China's."<sup>6</sup> As put by one pundit: "The only thing that can reliably be counted on, it appears: a growing political aversion to anything branded as 'free trade.'"<sup>7</sup> Stuck between populist backlash to globalization from both the left and the right (Osgood and Ro, 2022) on the one hand, and an enduring commitment to trade liberalization amongst a powerful coalition of pro-trade firms (Osgood, 2021) and congressional committee-chairs (Osgood and Lee, 2019) on the other, U.S. policymakers will be hard-pressed to find politically feasible policy tools that appease both trade skeptics and proponents. Free trade is, once again, under fire (Irwin, 2020).

Fortunately, tariffs are not the most pressing barrier to trade in the 21st century. Though the use of protectionist tools is growing, tariffs around the world remain at or near historic lows.<sup>8</sup> Exporters and importers, however, continue to face non-tariff, technical barriers that delay the movement of goods across international borders (Maggi, Mrázová and Neary, 2022; Persson, 2013; Hummels and Schaur, 2013; Herghelegiu, 2018). Consider, for example, that the average tariff applied to imports by Sub-Saharan Africa is 11.2 percent, whereas the tariff equivalent for costs associated with transportation delays is 25.6 percent (Hummels, 2007). In the aggregate, each additional day that that a product is delayed from crossing a border reduces trade by at least 1 percent, on average – the equivalent of a country distancing itself from its trade partner by 70km (Djankov, Freund and Pham, 2010; Ansón et al., 2020). Policymakers can do much to 'free' trade simply by making existing trade more efficient.

In this paper, we provide evidence of the relative merits of one increasingly popular trade facilitation tool: trusted trader agreements. Trusted trader agreements, often called

---

<sup>5</sup>Washington Post, [Biden has the means to reduce inflation. Why isn't he acting?](#) , 19 May 2022.

<sup>6</sup>Foreign Policy, [Is Biden Fighting the Last War on Trade?](#) , 5 May 2022.

<sup>7</sup>Catherine Rampell, [Biden Trade Framework Misses Key Points About, well, Trade](#), WASH. POST, May 25, 2022

<sup>8</sup>Between 1994 and 2017, average tariffs worldwide fell from 8.6 percent to 2.6 percent. Source: The World Bank, DataBank, [Tariff rate, applied, weighted mean, all products, as percentage](#).

Mutual Recognition Agreements (MRAs), are bilateral understandings between customs agencies to mutually recognize each others' "Authorized Economic Operators" (AEOs) – actors who have been certified by their national customs administration as compliant with World Customs Organization or equivalent supply chain security standards. Different countries have various domestic programs to verify their AEOs,<sup>9</sup> but when two countries sign a trusted trader agreement, they mutually agree to recognize each others' AEOs. Mutual recognition is intended to grant the AEOs of participating countries time-saving preferential treatment at international borders. AEOs may, for example, provide less documentation, receive less physical inspection, and use fast track lanes which – in theory – function to reduce the time it takes for their goods to cross borders, thus expediting market access and increasing bilateral trade.

Since the United States and New Zealand signed the world's inaugural trusted trader agreement based on World Customs Organization (WCO) standards in 2007, these agreements have proliferated across most regions of the globe, totaling 148 extant agreements as of 2022. Their proliferation is driven by widespread optimism that they indeed reduce wait-times at ports-of-entry and increase trade. The Australian Border Force, for example, claims that its trusted trader arrangements signed since 2016 have “supported faster access to international markets with a combined total of \$429 billion in two-way trade.”<sup>10</sup> Accordingly, we ask a simple question: do trusted trader agreements work as intended? Specifically: *what is the effect of trusted trader agreements on bilateral trade, and how do they compare to the effect of traditional preferential trade agreements (PTAs)?*

We find consistent evidence that trusted trader agreements are positively associated with bilateral trade flows. This relationship largely holds even after controlling for a standard set of covariates and accounting for differential effects over time. Moreover, the observed relationship between trusted trader agreements and international trade is

---

<sup>9</sup>In the United States, for example, it's called the Customs Trade Partnership Against Terrorism (CTPAT).

<sup>10</sup>Australian Border Force. [Trusted Trader Arrangements](#).

generally stronger than that of standard trade liberalization indicators, including free trade agreements, shared WTO membership, and regional trade agreement participation. While we do not offer a causal interpretation of our findings, this paper offers the first empirical exploration of the relationship between a relatively new form of international cooperation and international trade, laying the groundwork for future research in this area.

In addition to its practical relevance to the international trading community, this paper is relevant for scholarship on international trade and international borders. First, we hope this paper convinces scholars of trade liberalization that trade *facilitation* – measures which improve the efficiency of trading across international borders – is an exciting and policy-relevant research frontier (Baccini, 2019; Meunier and Roederer-Rynning, 2020; Baccini et al., 2022; Lake, Martin and Risse, 2021; Goldstein and Gulotty, 2021; Brutger, Chaudoin and Kagan, 2023; Kim and Margalit, 2021). The topic is increasingly central to the international trading community, as evidenced by the ratification of the Trade Facilitation Agreement (TFA) in 2017 – the first multilateral pact WTO members have ratified since the conclusion of the Uruguay Round in 1994. The TFA contains a range of provisions intended to expedite the cross-border transit of goods that, if fully implemented, could boost global trade by \$1 trillion per year according to WTO estimates (WTO, 2015).

Economists have produced various projections of potential effects of trade facilitation on trade flows based on assumed reductions in trading costs related to the hypothetical implementation of trade facilitation measures (Zaki, 2015; Moisé and Sorescu, 2013; Persson, 2013; Portugal-Perez and Wilson, 2012; Dennis and Shepherd, 2011). However, empirical evidence about the actual, ex-post impact of concrete trade facilitation measures on trade flows is limited. A handful of recent studies have evaluated discrete trade facilitation policies at the country-level (Roberts et al., 2020; Fernandes, Hillberry and Mendoza Alcántara, 2021) but, to the best of our knowledge, none evaluate *bilateral* trade facilitation

instruments. We fill this gap by drawing on new dyadic data on the full universe of trusted trader agreements signed from 2007 to 2020.

Second, we offer a friendly corrective to the territorial and physical bias in international relations scholarship on borders. The causes and consequences of border infrastructure in a globalized world are undoubtedly an important research agenda ([Simmons and Kenwick, 2022](#)), but the discipline has largely overlooked the fact that customs and border agencies have globalized their activities. The subject of this paper – trusted trader agreements – is one observable manifestation of this transformation whereby border agencies attempt to manage inbound flows “upstream” before they arrive at the border by cooperating with their foreign counterparts. We provide evidence that this channel of border cooperation is associated with an increase in trade between signatories, complicating our understanding about the relationship between international trade and border control in light of recent research that has found border walls are associated with a *reduction* in trade between neighboring countries ([Carter and Poast, 2020](#)).

## 2 Border Barriers to Trade

Preferential trade agreements (PTAs) and international institutions like the World Trade Organization (WTO) have done much to reduce trade barriers and increase trade flows worldwide ([Baier and Bergstrand, 2007](#); [Goldstein, Rivers and Tomz, 2007](#); [Baccini, 2019](#)). However, a range of non-tariff measures remain. Traders continue to face technical barriers associated with crossing international borders, including what some scholars have called “red-tape barriers” ([Camagni, Capello and Caragliu, 2019](#); [Maggi, Mrázová and Neary, 2022](#)). These include customs procedures, clearances, and inspections that effect the *time* it takes for goods to cross international borders.

The cost associated with border-related time delays are non-trivial. [Djankov, Freund and Pham \(2010\)](#) find that each additional day that a product is delayed from crossing

a border reduces bilateral trade by at least 1 percent – an effect that increases for time-sensitive goods due to inventory holding costs, perishability, technological obsolescence, and uncertain demand.<sup>11</sup> [Hummels and Schaur \(2013\)](#) estimate that each day a good is in transit is worth 0.6 to 2.1 percent of the value of the good, effectively amounting to an ad valorem tariff that increases for goods with higher shares of component parts. [Hendy and Zaki \(2021\)](#) find that administrative barriers which prolong time at customs affect both the intensive (value of exports) and the extensive (number of products and number of destinations) margins of trade. Finally, using new data on international parcel flows, [Ansón et al. \(2020\)](#) have found (in line with previous work) that an extra day spent in international transit reduces bilateral trade by nearly 1 percent. Trading *on time* thus appears key to realizing the promises of open trade.

That the new frontier for economic integration involves reducing delays at the border ([Anderson and van Wincoop, 2004](#); [Estevadeordal, 2017](#)) – not just reducing tariffs – can be observed via a growing “trade facilitation” agenda ([Herghelegiu, 2018](#); [Hoekman and Shepherd, 2015](#); [Zaki, 2015](#); [Persson, 2013](#); [Portugal-Perez and Wilson, 2012](#); [Dennis and Shepherd, 2011](#)). The agenda is driven by a commitment to improving the efficiency of trading across international borders, as encapsulated by the World Trade Organization (WTO) Trade Facilitation Agreement (TFA) signed by member states in 2013 and ratified in 2017. Remarkably, the TFA is the first multilateral pact WTO members have ratified since the conclusion of Uruguay Round in 1994.

Three key trade facilitation indicators have since been developed: the World Bank’s Logistics Performance Index (LPI), the World Bank Group’s “Doing Business” (DB) indicators, and the Organisation for Economic Co-operation and Development’s (OECD) Trade Facilitation Indicators (TFIs). Among these, the TFI (which includes 16 indicator based on 97 variables) tracks most closely with the provisions of the WTO Trade Facilitation Agreement (TFA) ([Moïsé, Orliac and Minor, 2011](#)). Using the TFI, the WTO has estimated

---

<sup>11</sup>See also [Liu and Yue \(2013\)](#)

that the full implementation of the TFA could boost global trade by \$1 trillion per year, cutting trade costs by 14.3 percent for low-income countries and more than 13 percent for upper-middle-income countries (WTO, 2015).

A range of projections produce comparably optimistic estimates using the LPI, TFI, and DB (Moisé and Sorescu, 2013; Hillberry and Zhang, 2018; Zaki, 2015; Persson, 2013; Portugal-Perez and Wilson, 2012). It is important to note, however, that these studies *project* the effect of trade facilitation on trade flows based on *assumed* reductions in trading costs at the border. Our knowledge about the actual effect of implemented trade facilitation reforms is limited. Few ex-post studies exist, and those that do have focused on the effect of customs and border management reforms at the country-level. This is an appropriate level-of-analysis for unilateral trade facilitation measures – for example, when a customs agency implements a risk-based inspection system to reduce the physical inspection of imports (Fernandes, Hillberry and Mendoza Alcántara, 2021), adds virtual rather than physical centers to process importers (Roberts et al., 2020), or adds customs officers to ports of entry to reduce wait times (Roberts et al., 2014). Some trade facilitation instruments, however, are *bilateral* and most appropriately measured at the dyadic level. We focus on one such instrument: *trusted trader agreements*.

### 3 Trusted Trader Agreements

Trusted trader agreements, often called Mutual Recognition Agreements (MRAs) of Authorized Economic Operators (AEO), are bilateral understandings between customs agencies to mutually recognize each others' certified traders or "Authorized Economic Operators" (AEOs) with the goal of facilitating market access. An AEO is defined by the World Customs Organization (WCO) as "a party involved in the international movement of goods in whatever function that has been approved by or on behalf of a national customs administration as complying with WCO or equivalent supply chain security standards." WCO



supply chain security standards include considerations like a firm's track record of compliance with customs requirements, its system for management of commercial records, its IT security, the range of threats to its premises, the reliability of its employees, and the safety of partners in the supply chain.<sup>12</sup>

After signing an MRA, the trusted exporters of country A become trusted importers of country B. Traders receive less scrutiny from foreign customs agencies and reduced scrutiny, in turn, is supposed to reduce time delays at the border, increase market access, and increase bilateral throughput. Reducing scrutiny on trusted traders is additionally intended to increase security by enabling time-strapped customs agents to devote their attention to high risk flows. This is the theory. Do trusted trader agreements actually improve the filtering function of international borders and increase bilateral trade between signatories? Before turning to our empirical approach to evaluate this question, we provide a brief overview of the origins and evolution of trusted trader agreements.

### 3.1 Origins

The trusted trader scheme emerged as a solution to the limitations of traditional territorial, unilateral approaches to border control after 9/11. In the immediate aftermath of the terrorist attacks, the U.S. subjected nearly every inbound vehicle and vessel to a security check, effectively closing U.S. borders. Delays at the U.S.- Canada border jumped from a standard 30 minutes to upwards of 12 hours, and each day of gridlock jeopardized \$1.4 billion in bilateral trade tied up in highly integrated, just-in-time supply chains.<sup>13</sup>

Free trade proponents objected to the new emphasis on border security, arguing that it amounted to a non-tariff barrier that would "increase the cost of trading internationally" and "lead to a significant drop in international trade, negatively affecting openness,

---

<sup>12</sup>WCO supply chains standards were first codified in the 2005 "SAFE" Framework of Standards to Secure and Facilitate Global Trade. See the World Customs Organization (WCO) "[AEO Validator Guide](#)" for a detailed overview of an ideal type domestic validation process of trusted traders.

<sup>13</sup>"Economic Consequences of Terrorism." OECD Economic Outlook 71, 2002.

productivity and medium-term output growth”<sup>14</sup> – a “21st century post-9/11 equivalent of Smoot-Hawley” (Vandever, 2008). The impact to trade, so the argument went, would be no less calamitous than the destruction of New York’s twin towers: “The twentieth century ‘playbook’ for responding to a security event at the border – ramping up security inspections or shutting down the border – ended up being a catastrophic ‘cure’ worse than the terrorist threat’s disease” (Stodder, 2020).

Though the economic cost of inspecting every good and person moving across U.S. borders after the post-9/11 border closures quickly proved unsustainable, the politics of the new security reality foreclosed a return to meager inspections at ports of entry. As put by one observer: this was the “end of the [open border] joyride” (Flynn, 2003). The question facing policy-makers was how to achieve both secure *and* trade-efficient borders, that is, how to create borders that function simultaneously as security barriers and economic bridges.

With 40 percent of their GDP tied to trade with the United States, Canadians were especially hostile to the post-9-11 closing of the 49th parallel. Reopening the U.S. border, and keeping it open, catapulted the future of U.S. border control to the top of Ottawa’s foreign policy agenda. The stakes, as put by the Canadian business community, were no less than a matter of survival for the Canadian economy:

Border delays harm productivity and increase the cost of doing business in Canada. If the border is a barrier to the efficient flow of goods and people, it will directly affect the future flow of foreign direct investment into Canada. Without unimpeded access to the U.S. market, companies will be reluctant to establish operations in Canada. In addition, companies with facilities in Canada may relocate, and future investment by Canadian and foreign companies may be reduced.<sup>15</sup>

In response, a Canadian “Coalition for Secure and Trade-Efficient Borders” repre-

---

<sup>14</sup>“Economic Consequences of Terrorism.” OECD Economic Outlook 71, 2002, p. 118.

<sup>15</sup>Statement of Principles, Coalition for Secure and Trade-Efficient Borders 2001, 1.

senting most of the country's business activity met with Cabinet Ministers, members of Parliament, and the then-U.S. Ambassador to Canada, Paul Cellucci, to promote their November 2001 report titled "Rethinking our Borders: A Statement of Principles." In the report, the Coalition called for a new approach to border control informed by the principles of risk management – making analytically informed choices about where to target enforcement, rather than targeting everything (effectively clogging ports of entry to the point of closure) or targeting randomly (seen by security hawks as a de facto open borders policy). Implementing a risk-management approach, the report made clear, would require international cooperation to screen goods and people abroad:

To deal effectively with unknown and high-risk movements, Canadians have to think of the border in terms that go beyond the 49th parallel. This does not mean the disappearance of the border. Rather, border management systems must effectively identify and facilitate known low-risk goods and people, including pre-clearance and other procedures prior to arrival at the 49th parallel. This will relieve pressure on the 49th parallel so that border resources can be targeted to areas of greatest risk. . .

Problems must be detected before they hit Canadian or American shores. In concrete terms, this means screening people and goods and assessing their risk before they depart for North America.<sup>16</sup>

The Coalition reached across the border to its business counterparts in the United States, producing a joint letter to then-President Bush and Prime Minister Chretien that called for a "zone of confidence" between the U.S. and Canada which would transform the 49th parallel into a shared checkpoint. The Coalition also courted John Manley, then the Canadian Foreign Minister, who brought the new border solution to the inaugural White House Director of Homeland Security, Tom Ridge. By December 2001, Ridge signed onto a 30-point U.S.-Canada "Smart" Border Declaration penned by the Canadian Privy Council.

The Declaration was an acknowledgement that hardening the border by traditional

---

<sup>16</sup>Statement of Principles, Coalition for Secure and Trade-Efficient Borders 2001, 3.

means was self-defeating and a demonstration of bilateral political will to try something new: “approaches to move customs and immigration inspection activities away from the [U.S.-Canada] border to improve security and relieve congestion where possible.”<sup>17</sup> It was also the beginning of a much broader shift in border management, as practitioners on both sides of the border argued that the principles underlying the Declaration should be globalized.<sup>18</sup> By 2002, the White House position was that “the border of the future must integrate actions abroad to screen goods and people prior to their arrival in sovereign US territory”<sup>19</sup> and, to this effect, the inaugural 2002 U.S. Security Strategy for Homeland Security stated that “the Department and its partners will conduct border security functions abroad to the extent allowed by technology and international agreements.”<sup>20</sup>

The trusted trader scheme emerged as one component of this new border strategy.<sup>21</sup> The U.S. launched an opt-in supply chain security program – the Customs-Trade Partnership Against Terrorism (C-TPAT) – to certify its own traders as “low-risk” who could demonstrate a history of providing accurate and timely information about their foreign transactions while demonstrating that their company procedures could ensure regulatory compliance. Similar programs diffused to other countries, broadly motivated by the need to assure the U.S. that their traders and shippers were secure – key to preserving continued access to U.S. markets unimpeded by queues at ports of entry. For example, despite initial reluctance to the trusted trader scheme, Australia quickly folded to competitive pressures: “It is apparent that Australian exporters may be disadvantaged at some point in the future unless the [domestic] Trusted Trader program includes export cargo, and is sufficiently robust to enable the establishment of MRAs [mutual recognition agreements]

---

<sup>17</sup>George W. Bush White House archives, “U.S. - Canada Smart Border/30 Point Action Plan Update,” 6 December 2002.

<sup>18</sup>See, for example, [Haynal \(2002\)](#).

<sup>19</sup>President George W. Bush White House Archives, “Securing America’s Borders Fact Sheet: Border Security.”

<sup>20</sup>2002 U.S. National Strategy for Homeland Security.

<sup>21</sup>The trusted trader concept, however, is not a North American invention and pre-dates 9/11. Pioneer programs existed in Sweden (Swedish Gateway) and Finland (Green Corridor) as early as the 1980s, but these programs were limited to contiguous states. See [Karlsson \(2017\)](#).

with Australia's trading partners" ([Widdowson et al., 2014](#)).

U.S. diplomatic efforts in the early 2000s also helped diffuse trusted trader agreements. An inaugural cadre of U.S. homeland security diplomats staffing a new Office of International Affairs within the Department of Homeland Security (DHS) spent significant multilateral effort to embed new supply chain security standards in the World Customs Organization (WCO), which successfully resulted in a 2005 Framework of Standards to Secure and Facilitate Global Trade (SAFE).<sup>22</sup> A central objective of SAFE was, and remains, "to establish and enhance Customs-to-Customs network arrangements to promote the seamless movement of goods through secure international trade supply chains."<sup>23</sup> To accomplish this objective, SAFE encourages member states to establish national "Authorized Economic Operator" (AEO) programs to certify traders as "low-risk" as well as to mutually recognize AEOs (i.e. by signing trusted trader agreements). More recently, trusted trader agreements were included in the 2017 WTO Trade Facilitation Agreement (TFA).<sup>24</sup>

### 3.2 Global proliferation

Since the U.S. and New Zealand signed the world's inaugural trusted trader agreement (MRA) based on World Customs Organization standards in 2007, MRAs have proliferated across most regions of the globe, totaling 148 extant agreements as of 2022 (figure 1). South Korea, China, and the U.S. have signed the most agreements (14, 12, and 11, respectively), but the median number of MRAs for the 49 countries who have signed them is three (figure 2). There is a noticeable absence of MRAs with or between countries in sub-Saharan Africa<sup>25</sup> and in parts of the Middle East, while MRA signage has been most

---

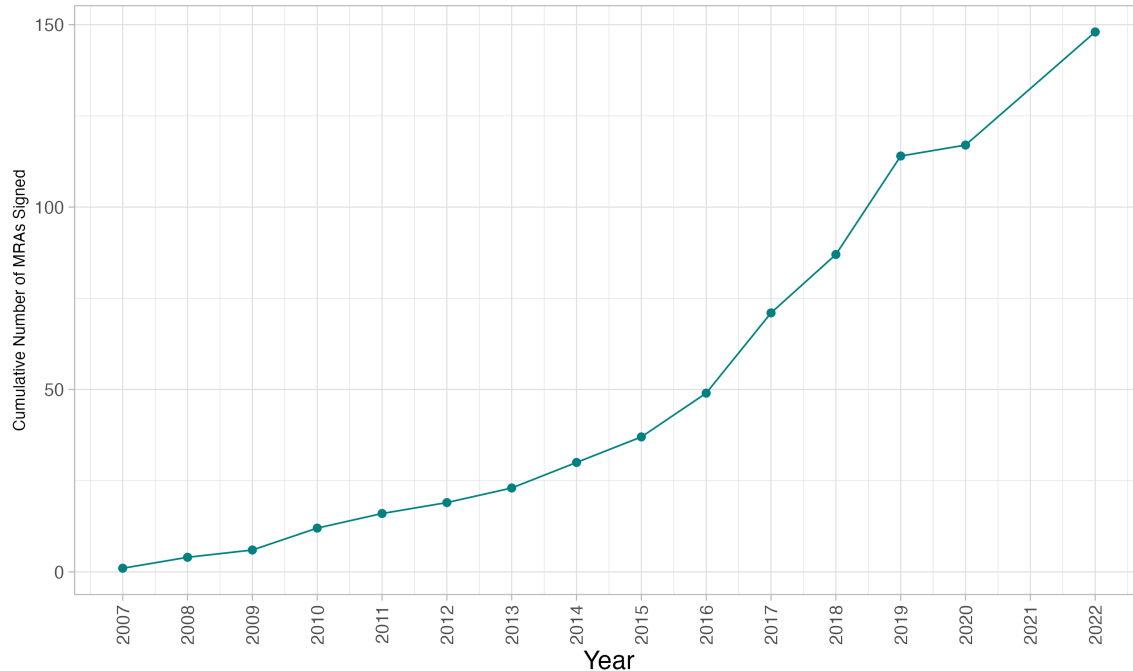
<sup>22</sup>[Mikuriya \(2007\)](#)

<sup>23</sup>World Customs Organization (WCO) SAFE Framework of Standards, p.4.

<sup>24</sup>See Article 1, [Measure 7.7](#) on "Trade Facilitation Measures for Authorized Operators." It states that "Members are encouraged to develop authorized operator schemes on the basis of international standards" and that "in order to enhance the trade facilitation measures provided to operators, Members shall afford to other Members the possibility of negotiating mutual recognition of authorized operator schemes."

<sup>25</sup>Though member states of the South African Customs Union (SACU) have very recently (2023) signed a multilateral MRA. See [here](#) for media release.

**Figure 1. MRAs over time**



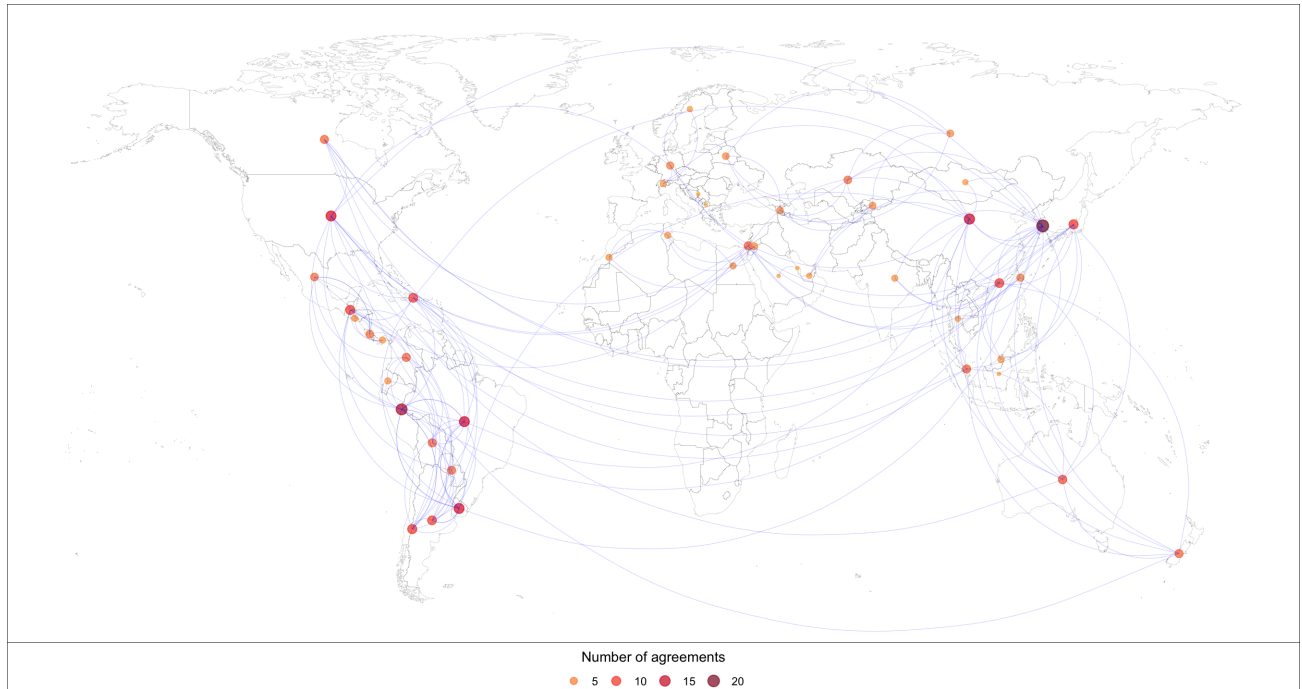
active within and between the Asia Pacific region and the Americas. MRAs are fairly evenly distributed across pairs of states with low, high, and mixed income levels, and they are nearly twice as prevalent amongst democratic dyads than amongst mixed regime dyads.

Unsurprisingly, countries seem to sign trusted trader agreements because they believe that they work. They believe that their exporters would be at a competitive disadvantage relative to countries with trusted trader agreements because their consignments would be deemed by their trade partners to be high-risk and thus subject to increased scrutiny – and time delays – at ports of entry. This view is evident in national press releases. After signing a 2023 arrangement with Australia, the Indian Revenue Authority stated it “shall benefit our exporters to Australia and thereby promote a trade relationship between the two countries.”<sup>26</sup> According to the European Union, its agreement with China marks “a big step forward in our trade relationship.” The agreement is heralded as “fully in the spirit of

---

<sup>26</sup>Indian Ministry of Finance Press Release, “Cabinet approves Mutual Recognition Arrangement of Authorized Economic Operators between India and Australia”, 16 August 2023.

**Figure 2.** Geographic distribution of trusted trader agreements (2022)



trade facilitation, by making customs procedures easier, cheaper and faster for our trusted operators. It is also in the spirit of growth, by improving our business environment and accelerating trade.”<sup>27</sup> Similarly, U.S. agreements with Colombia and Guatemala signed in 2023 “are furthering our efforts to facilitate trade and enhance our economic security mission.”<sup>28</sup>

## 4 Alternative Expectations

While we have emphasized reasons to expect positive effects of trusted trader agreements (MRAs) on bilateral trade, there are at least three reasons to expect they may have no effects or systematically variable effects: limited firm participation, uneven treatment of trusted traders in practice, and variable state capacity to quickly differentiate between trusted

<sup>27</sup>European Commission Press Release, 16 May 2014.

<sup>28</sup>U.S. Customs and Border Protection Press Release, “CBP and Customs Administrations Agree on Strengthening Supply Chain Security,” 18 April 2023.

and regular traders. First, if the firms that sign up to become certified trusted traders (AEOs) do not represent a significant portion of a country's overall trade volume, the impact of MRAs would be minimal in the aggregate. Additionally, smaller and medium-sized firms may perceive the AEO certification process as challenging due to the resources required for compliance with AEO standards, which we expect would disproportionately disadvantage lower income countries.

Second, the effectiveness of MRAs likely depends on how evenly the agreements are implemented. Trusted traders may not all be treated equally. Differences among countries in the interpretation and application of AEO benefits can lead to inconsistencies in the extent to which AEO status confers preferential treatment at the border. For example, a 2023 study conducted by the European Court of Auditors found that “benefits were not uniformly granted across the Member States we visited. One Member State, for example, granted AEOs an overall 50 percent reduction in physical and documentary controls; another Member State selectively took AEO status into account in its risk-assessment procedures for selecting traders for checks.”<sup>29</sup> Countries that include AEO status as one input in a broader risk-assessment procedure would plausibly disadvantage traders from lower income countries, who would likely score as higher risk due to their country of origin. Firms recognized as AEOs in their home country may not always receive the expected level of facilitation when exporting to a partner country, diluting the expected positive effect of MRAs on trade. We expect this to be the case especially in mixed-income dyads.

Relatedly, for MRAs to effectively facilitate trade, customs agencies must have the capacity to implement them – to expedite clearance for AEOs relative to non-AEOs. This requires the technological and infrastructural resources needed to quickly sort inbound certified, low-risk traders from their non-certified higher-risk counterparts. Absent these

---

<sup>29</sup>European Court of Auditors, Special Report, “Authorised Economic Operators: Solid customs programme with untapped potential and uneven implementation,” 5 May 2023, pg. 22.



resources, the benefits of being an AEO might not materialize in the form of faster and more predictable border crossings – in which case the benefits of MRAs would not lower the overall cost of cross-border trade. If this is right, the effects of trusted trader agreements on bilateral trade are likely to differ based on the state capacity of each country involved, privileging high income dyads.

## 5 Empirical Strategy

### 5.1 Data

Our novel dataset on trusted trader agreements covers the full universe of cases, including every bilateral and multilateral trusted trader agreement (MRA) signed since the first such agreement in 2007. Empirically, we note that all MRAs that have been signed so far are still in effect. We obtain dyadic data on MRAs from the Annexes of the 2020 World Customs Organization AEO Compendium and verified signage dates via press releases. See Table A1 in the appendix for a full list. To the best of our knowledge, this is the first study to use dyadic and global data on trusted trader agreements.

We obtain dyadic data on bilateral trade flows from the CEPII *Gravity* database, which includes data up to 2020 and includes a variety of trade-relevant covariates (Conte, Coterlaz and Mayer, 2022). For the purposes of this study, the CEPII data is preferable to the commonly-used Correlates of War trade data, given that the latter dataset only has bilateral trade coverage up to 2014. After subsetting for years in the 2007-2020 range, we merge the CEPII data with our agreement data, matching on dyad-years. For each observation, we construct a binary outcome measure for whether or not an MRA was in effect for a given dyad in a given year.

Other key covariates include those commonly related to trade facilitation in the literature. The CEPII *Gravity* database includes measures of relevant factors, including WTO

membership, bilateral free trade agreements, and regional trade agreements. Given that each of these are expected to be positively correlated with trade flows, we include them as controls in our empirical models to better-isolate the effect of MRAs on trade.

We also obtain regime type data from the V-Dem Institute's *Regimes of the World* dataset, which provides an ordinal (0-3) measure of regime type for each country-year ([Lührmann, Tannenberg and Lindberg, 2018](#)). These data are relevant given both the extant literature on democratic peace (as indicated by trade flows) and the possibility for heterogeneous effects of agreements between dyads of varying political systems. If democracies are known to be more likely to trade in the first place, then we may expect to observe more substantial, positive effects of agreements on trade for dyads with differing regime types. Trust could be a potential mechanism for such an effect. In other words, given that there are greater hurdles to trade between democracies and authoritarian regimes in general, once mixed-regime dyads are able to make credible commitments to enforce the provisions of trusted trader agreements, such dyads may see greater trade benefits than democratic dyads with already-favorable trade conditions.

We do not include extant measures of border walls ([Carter and Poast, 2020](#)) or land-based border crossings ([Simmons and Kenwick, 2022](#)), given that the vast majority of international trade is sea-based.<sup>30</sup> Additionally, only 18% of dyads that have signed trusted trader agreements (as of 2021) share land borders. Accordingly, there is no clear theoretical reason for why the influence of trusted trader agreements on trade should be heavily moderated by physical border infrastructure at land-based points of entry.

## 5.2 Empirical Models

To assess the effects of trusted trader agreements on trade flows, we estimate a series of gravity models of trade. The gravity model is the reference model for the determinants

---

<sup>30</sup>Around 80% of global trade is transported by ship to international ports ([Asariotis et al., 2021](#)).

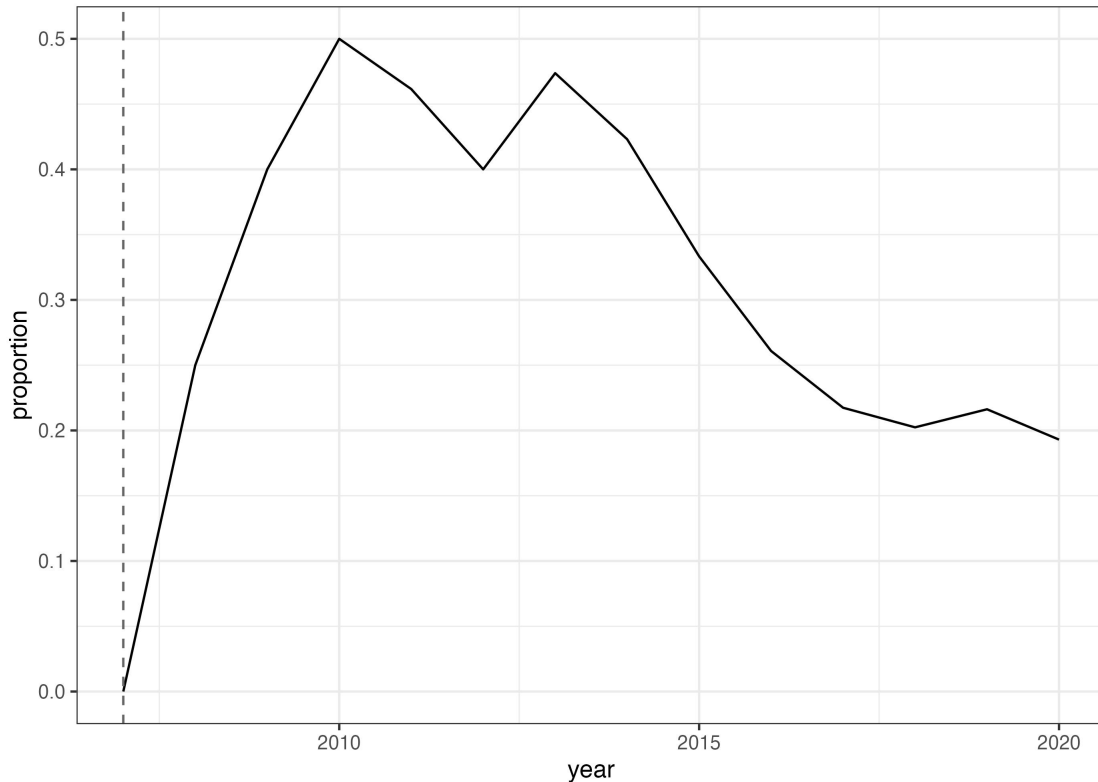
of bilateral trade flows in the political science and economics literatures, relying on the relative size of traders' economies and a distance metric to estimate bilateral trade volumes (Chaney, 2018; Baier and Standaert, 2020). The baseline gravity model can be augmented by including other covariates that are likely to impact trade flows.

In the present case, we include a binary measure of whether a dyad had a trusted trader agreement (formally, a Mutual Recognition Agreement or MRA) in effect in a given year as the key independent variable. To measure the relationship of MRAs with bilateral trade, we begin with a baseline gravity model using only dyads' relative GDPs and geographic distance as predictors, then we gradually add relevant covariates to subsequent models. In each model, we also incorporate year fixed effects to control for any time-related factors that may affect all dyads' trade flows.

We additionally estimate a series of lagged models to discern how trade is affected by trusted trader agreements in the short versus long terms. It may be that the agreements provide boosts to trade in the short-term, but have no durable effects. Likewise, and perhaps more plausibly, they may only have observable impacts on trade over longer time horizons. While we have included year fixed effects to control for unobserved time-related effects on all dyads, a lagged agreement indicator is a time-varying characteristic of individual dyads. We use the Aikaki Information Criterion (AIC) to select the optimal agreement lag length for up to five years post-agreement signing among the fully-specified model with all covariates. We limit our possible lag horizon to five years, given that trusted trader agreements are a relatively recent phenomenon. We find the AIC is minimized using a lag period of four years.

Finally, we test whether the effects of trusted trader agreements vary by country income level as a proxy for customs capacity differences. Accordingly, we estimate models with data subsetting by income, using the World Bank's 2022 GDP threshold for 'high-income' countries of \$13,846 USD per capita as a basis to sort dyads. In other words, we use

**Figure 3.** Proportion of total agreements between major (top 5) trading partners



dyad-years in which both countries were either above or below this threshold as well as observations where dyads have mixed income status.

A preliminary threat to the validity of the study is that trusted trader agreements are possibly only signed among pre-existing major trading partners. As shown in Figure 3, which plots the cumulative proportion of trusted trader agreements signed between dyads that are mutual top-five trading partners, this is not the case. While this proportion is initially low and swiftly reaches a peak of 50% of signed agreements in 2010, the number has since decreased to only about 20% of dyads. In other words, while some longstanding trading partners do sign agreements, agreements are more likely to be signed between countries that do not have longstanding major trade relationships. This suggests that agreements may indeed serve as a basis for expanding flows between countries that otherwise face systematic barriers to trade.

## 6 Results

At the simplest level, we can compare mean trade flows between observations (dyad-years) with or without trusted-trader agreements. Table 1 shows the mean actual trade flows for the full sample and for income-subsetted data with accompanying  $t$  statistics for Welch two-sided difference-in-means tests. Across all groups, dyad-years with agreements in effect have significantly higher observed bilateral trade. The between-group differences are substantively very large across each subset, varying over several multiple orders of magnitude.

**Table 1.** Mean bilateral trade by agreement status (millions USD)

	No Agreement	Agreement in Place	Difference	$t$
<b>Full Sample</b>	347.9	17,662.2	17,314.3	-9.5282
<i>High Income</i>	2,259.6	25,483.5	23,223.9	-6.5761
<i>Low Income</i>	104.7	2,385.3	2,280.5	-2.9028
<i>Mixed Income</i>	428.1	23,057.4	22,629.3	-6.4021

We now turn to the results of our quantitative models. Figure 4 reports the results of a series of linear models estimating using OLS. Each model uses logged trade flows as the dependent variable and includes year fixed-effects. We begin with a baseline model that includes only logged destination and origin GDPs and a distance measure, replicating the finding in the literature that trade flows are positively proportional to countries' economic sizes and inversely proportional to their distances. All subsequent models include our dummy variables for mutual recognition agreements (MRA). In each model, we find that MRAs are positively and significantly associated with bilateral trade flows, even after the inclusion of several other trade liberalization indicators and controls for regime type. None of the dyadic covariates are highly correlated with one another in our data, so multicollinearity is not a concern in this set of models (See Figure A1 in the Appendix).

In terms of substantive effects, we find that MRAs are associated with a *low* of 2.8 times

higher trade flows in the most saturated model (7) and with a *high* of 4.1 times higher trade flows in the simplest model (1). These estimates are obtained by exponentiating the raw coefficient on MRAs, given the logged values of the dependent variable. The size of the coefficient varies between these two values in intermediate models, but it remains consistently positive and substantively large. By comparison, bilateral free trade agreements (FTAs) are only associated with a maximal increase in expected trade flows of about 2.5 times, and regional trade agreements (RTAs) with only about 1.15 times higher flows.

We also obtain estimates from a similar set of models using Poisson maximum-likelihood estimation (PMLE). The effect of MRAs remains positive and significant in all models except for the last two, which include dyadic regime indicators (A2). When we lag the agreement indicator by a period of four years, we find that relationship between agreements and trade remains statistically significant and positive across all models (A3). The substantive effect sizes of MRAs are in the range of 2–2.1 times higher trade flows. Similarly, we re-estimate the same set of initial linear models but on income subsets of the original sample, *i.e.* for dyads that are either both low-income, both high-income, or mixed. Again, we find that the positive relationship between trusted trader agreements and bilateral trade holds across all income subdivisions (A4, A5, A6). Among the low, high, and mixed income subsets, MRAs are substantively associated with between 2.8–9.6<sup>31</sup>, 1.7–2.6, and 1.3–2.7 times higher observed trade flows, respectively.

## 7 Conclusion

Trusted trader agreements are associated with significantly higher bilateral trade flows. The observed relationship between these agreements and international trade is generally stronger than that of standard trade liberalization indicators, including the presence of free

---

<sup>31</sup>We note that this very high estimate is for a baseline model which only includes origin and destination GDP, distance, and the MRA indicator as predictors. See A4, column 2.

**Figure 4. Linear Models**

Dependent Variable: Model:	(1)	(2)	Logged Bilateral Trade				(6)	(7)
<i>Variables</i>								
log(destination GDP)	0.9829*** (0.0021)	0.9820*** (0.0021)	0.9696*** (0.0021)	0.9583*** (0.0021)	0.8962*** (0.0040)	0.9039*** (0.0041)	0.9124*** (0.0045)	
log(origin GDP)	1.248*** (0.0022)	1.247*** (0.0022)	1.234*** (0.0022)	1.224*** (0.0022)	1.114*** (0.0045)	1.121*** (0.0046)	1.132*** (0.0050)	
log(Distance)	-1.499*** (0.0054)	-1.498*** (0.0054)	-1.517*** (0.0054)	-1.317*** (0.0062)	-1.592*** (0.0083)	-1.598*** (0.0083)	-1.423*** (0.0087)	
<b>MRA</b>		1.424*** (0.0643)	1.375*** (0.0654)	1.066*** (0.0608)	1.265*** (0.0774)	1.217*** (0.0772)	1.061*** (0.0715)	
Both WTO			0.6373*** (0.0132)	0.5278*** (0.0133)	0.6595*** (0.0339)	0.7075*** (0.0342)	0.5556*** (0.0372)	
FTA				0.9199*** (0.0127)	0.3973*** (0.0279)	0.3823*** (0.0278)	0.4405*** (0.0283)	
RTA					0.0359** (0.0171)	0.0686*** (0.0179)	0.1430*** (0.0179)	
Both democratic						-0.1571*** (0.0191)	-0.3589*** (0.0207)	
Same regime							0.1961*** (0.0192)	
<i>Fixed-effects</i>								
year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
<i>Fit statistics</i>								
Observations	323,331	323,331	323,331	323,331	62,604	62,604	55,553	
R <sup>2</sup>	0.63237	0.63252	0.63592	0.64078	0.72988	0.73018	0.72190	
Within R <sup>2</sup>	0.63231	0.63246	0.63586	0.64072	0.72791	0.72821	0.71989	

*Heteroskedasticity-robust standard-errors in parentheses*

*Signif. Codes: \*\*\*: 0.01, \*\*: 0.05, \*: 0.1*

trade agreements, WTO membership, and regional trade agreement participation. While we do not claim a causal interpretation to our findings, we highlight that trusted trader agreements appear to be significantly correlated with bilateral trade. Additionally, prior signing of an agreement appears to have a durable, positive effect on trade. Moreover, we find that the relationship appears to hold across varying income levels.

Future research could build on three core limitations of our study. First, scholars could disaggregate our outcome variable, bilateral trade, and explore whether trade in certain sectors (e.g. Agriculture, Mining, Manufacturing and Services) or by certain sized firms are better facilitated through trusted trader agreements. Second, we crudely proxy for state capacity to implement trusted trader agreements with income level, but future work could use more fine-grained measures of port infrastructure pending data availability. Finally, we highlight the observational nature of the present study – it could be the case that there are unobserved factors correlated with both trade agreements and trade that which are driving the observed relationship between the two.

Beyond the economic effects of trusted trader agreements, political scientists could ask the same questions of trade facilitation as they have of trade liberalization. For example: is the adoption of trade facilitation measures, like trusted trader agreements, temporally and spatially clustered? If so, what policy diffusion mechanisms drive this clustering ([Simmons and Elkins, 2004](#))? Do public attitudes about efficient trade diverge from attitudes about open trade ([Mansfield and Mutz, 2009](#); [Hainmueller and Hiscox, 2006](#))? Are leaders who sign trade facilitation agreements during economic hard times rewarded by their domestic constituencies ([Mansfield and Milner, 2018](#))? How do new economic ties created via trusted trader agreements, rather than preferential trade agreements (PTAs), influence security outcomes ([Hafner-Burton and Montgomery, 2012](#)), and what are the law enforcement benefits of trusted trader agreements? Who are the winners and losers of trade facilitation ([Baccini, Pinto and Weymouth, 2017](#)), and what are the political effects



of these distributional consequences?

## References

- Anderson, James E. and Eric van Wincoop. 2004. "Trade Costs." *Journal of Economic Literature* 42(3).
- Ansón, José, Jean-François Arvis, Mauro Boffa, Matthias Helble and Ben Shepherd. 2020. "Time, Uncertainty and Trade Flows." *World Economy* 43(9):2375–2392.
- Asariotis, Regina, Gonzalo Ayala, Mark Assaf, Celine Bacrot, Hassiba Benamara, Dominique Chantrel, Amélie Cournoyer, Marco Fugazza, Poul Hansen, Jan Hoffmann, Tomasz Kulaga, Anila Premti, Luisa Rodríguez, Benny Salo, Kamal Tahiri, Hidenobu Tokuda, Pamela Ugaz and Frida Youssef. 2021. Review of Maritime Transport 2021. Technical report United Nations Conference on Trade and Development.  
**URL:** <https://unctad.org/publication/review-maritime-transport-2021>
- Baccini, Leonardo. 2019. "The Economics and Politics of Preferential Trade Agreements." *Annual Review of Political Science* 22(1):75–92.
- Baccini, Leonardo, Mattia Guidi, Arlo Poletti and Aydin B. Yildirim. 2022. "Trade Liberalization and Labor Market Institutions." *International Organization* 76(1):70–104.
- Baccini, Leonardo, Pablo M. Pinto and Stephen Weymouth. 2017. "The Distributional Consequences of Preferential Trade Liberalization: Firm-Level Evidence." *International Organization* 71(2):373–395.
- Baier, S. L. and J. H. Bergstrand. 2007. "Do free trade agreements actually increase members' international trade?" *Journal of International Economics* 71(1).
- Baier, Scott and Samuel Standaert. 2020. "Gravity Models and Empirical Trade". In *Oxford Research Encyclopedia of Economics and Finance*, ed. Anindya Banerjee, Avinash Dixit,

Sebastian Edwards and Kenneth Judd.

**URL:** <https://oxfordre.com/economics/display/10.1093/acrefore/9780190625979.001.0001/acrefore-9780190625979-e-327>

Brutger, Ryan, Stephen Chaudoin and Max Kagan. 2023. "Trade Wars and Election Interference." *Review of International Organizations* 18(1):1–25.

Camagni, R., R. Capello and A. Caragliu. 2019. "Measuring the impact of legal and administrative international barriers on regional growth." *Regional Science Policy & Practice* 11(2).

Carter, David B. and Paul Poast. 2020. "Barriers to Trade: How Border Walls Affect Trade Relations." *International Organization* 74(1):165–185.

**URL:** <https://www.cambridge.org/core/journals/international-organization/article/barriers-to-trade-how-border-walls-affect-trade-relations/E9D17E0A62C5FB20F348B392FA9C50DB>

Chaney, Thomas. 2018. "The Gravity Equation in International Trade: An Explanation." *Journal of Political Economy* 126(1):150–177.

Conte, Maddalena, Pierre Cotterlaz and Thierry Mayer. 2022. "The CEPII Gravity Database."

**URL:** [http://www.cepii.fr/PDF\\_PUB/wp/2022/wp2022-05.pdf](http://www.cepii.fr/PDF_PUB/wp/2022/wp2022-05.pdf)

Dennis, A. and B. Shepherd. 2011. "Trade facilitation and export diversification." *World Economy* 34(1).

Djankov, S., C. Freund and C. S. Pham. 2010. "Trading on Time." *Review of Economics and Statistics* 92:166–173.

Estevadeordal, Antoni. 2017. Why trade facilitation matters now more than ever. Technical report Brookings.

**URL:** <https://www.brookings.edu/articles/why-trade-facilitation-matters-now-more-than-ever/>

- Fernandes, Ana Margarida, Russell Hillberry and Alejandra Mendoza Alcántara. 2021. "Trade Effects of Customs Reform: Evidence from Albania." *The World Bank Economic Review* 35(1):34–57.
- Flynn, Stephen E. 2003. "End of the Joyride: Confronting the New Homeland Security Imperative in the Age of Globalization." Paper prepared for the Colloquium Series on Border Control and Homeland Security at the Center for Global Change and Governance, Rutgers University.
- Goldstein, Judith, Douglas Rivers and Michael Tomz. 2007. "Institutions in International Relations: Understanding the Effects of the GATT and the WTO on World Trade." *International Organization* 61(1):37–67.
- Goldstein, Judith and Robert Gulotty. 2021. "America and the Trade Regime: What Went Wrong?" *International Organization* 75(2):524–557.
- Hafner-Burton, Emilie M. and Alexander H. Montgomery. 2012. "War, Trade, and Distrust: Why Trade Agreements Don't Always Keep the Peace." *Conflict Management and Peace Science* 29(3):257–278.
- Hainmueller, Jens and Michael Hiscox. 2006. "Learning to Love Globalization: Education and Individual Attitudes Toward International Trade." *International Organization* 60(2):469–498.
- Haynal, George. 2002. "Interdependence, globalization, and North American borders." *Policy Options* 23(7).
- Hendy, Riham and Chahir Zaki. 2021. "Trade Facilitation and Firms Exports: Evidence from Customs Data." *International Review of Economics & Finance* 75:197–209.
- Herghelegiu, C. 2018. "The political economy of non-tariff measures." *The World Economy* 41(1).

- Hillberry, Russell and Xiaohui Zhang. 2018. "Policy and Performance in Customs: Evaluating the Trade Facilitation Agreement." *Review of International Economics* 26(2):438–480.
- Hoekman, B. and B. Shepherd. 2015. "Who profits from trade facilitation initiatives? Implications for African countries." *Journal of African Trade* 2(1-2):51–70.
- Hummels, D. L. and G. Schaur. 2013. "Time as a trade barrier." *American Economic Review* 103(7).
- Hummels, David. 2007. Calculating Tariff Equivalent for Time in Trade. Technical report Nathan Associates. Report for US Agency for International Development.
- Irwin, Douglas A. 2020. *Free Trade under Fire*. 5th ed. Princeton University Press.
- Karlsson, Lars. 2017. "Back to the Future of Customs: A New AEO Paradigm Will Transform the Global Supply Chain for the Better." *World Customs Journal* 11(1):12.
- Kim, Sung Eun and Yotam Margalit. 2021. "Tariffs As Electoral Weapons: The Political Geography of the US–China Trade War." *International Organization* 75(1):1–38.
- Lake, David A., Lisa L. Martin and Thomas Risse. 2021. "Challenges to the Liberal Order: Reflections on International Organization." *International Organization* 75(2):225–257.
- Liu, Lan and Chengyan Yue. 2013. "Investigating the impacts of time delays on trade." *Food Policy* 39:108–114.
- Lührmann, Anna, Marcus Tannenberg and Staffan I. Lindberg. 2018. "Regimes of the World (RoW): Opening New Avenues for the Comparative Study of Political Regimes." *Politics and Governance* 6(1):60–77.
- Maggi, Giovanni, Monika Mrázová and J. Peter Neary. 2022. "Choked by Red Tape? The Political Economy of Wasteful Trade Barriers." *International Economic Review* 63(1).
- Mansfield, Edward D. and Diana C. Mutz. 2009. "Support for Free Trade: Self-Interest, Sociotropic Politics, and Out-Group Anxiety." *International Organization* 63(3):425–457.

- Mansfield, Edward D. and Helen V. Milner. 2018. "The Domestic Politics of Preferential Trade Agreements in Hard Times." *World Trade Review* 17(3):371–403.
- Meunier, Sophie and Christilla Roederer-Rynning. 2020. "Missing in Action? France and the Politicization of Trade and Investment Agreements." *Politics and Governance* 8(1).
- Mikuriya, Kunio. 2007. "Supply chain security: the Customs community's response." *World Customs Journal* 1(2).
- Moïsé, E. and S. Sorescu. 2013. Trade Facilitation Indicators: The Potential Impact of Trade Facilitation on Developing Countries' Trade. OECD Trade Policy Papers 144 OECD Publishing Paris: .
- Moïsé, E., T. Orliac and P. Minor. 2011. Trade Facilitation Indicators: The Impact on Trade Costs. OECD Trade Policy Working Paper 118 OECD Publishing.
- Osgood, Iain. 2021. "Vanguards of Globalization: Organization and Political Action among America's Pro-Trade Firms." *Business & Politics* 23(1):1–35.
- Osgood, Iain and Hyeon-Young Ro. 2022. "Free Trade's Organized Progressive Opposition." *International Studies Quarterly* 66(3).
- Osgood, Iain and Jieun Lee. 2019. "Exports, Jobs, Growth! Congressional Hearings on US Trade Agreements." *Economics & Politics* 31(1):1–26.
- Persson, M. 2013. "Trade facilitation and the extensive margin." *The Journal of International Trade & Economic Development* 22(5).
- Portugal-Perez, A. and J. Wilson. 2012. "Export performance and trade facilitation reform: Hard and soft infrastructure." *World Development* 40(7).
- Roberts, B., A. Rose, N. Heatwole, D. Wei, M. Avetisyan, O. Chan and I. Maya. 2014. "The impact on the US economy of changes in wait times at ports of entry." *Transport Policy* 35.

- Roberts, B. W., F. Prager, C. Baschnagel, A. Rose and B. Shears. 2020. "The economic benefits of trade facilitation: U.S. Customs and Border Protection's Centers of Excellence and Expertise programme." *The World Economy* 44(2):346–366.
- Simmons, Beth A. and Michael R. Kenwick. 2022. "Border Orientation in a Globalizing World." *American Journal of Political Science* 66(4):853–870.
- Simmons, Beth A. and Zachary Elkins. 2004. "The Globalization of Liberalization: Policy Diffusion in the International Political Economy." *American Political Science Review* 98(1):171–189.
- Stodder, Seth M. 2020. *Rethinking Borders: Securing the Flows of Travel and Commerce in the Twenty-First Century*. Belfer Center Studies in International Security Cambridge: The MIT Press pp. 77–99.
- Vandevent, Paul. 2008. The Canadian-United States Supply Chain in an Era of Global Economic Competitiveness. In *Proceedings of the Annual Conference of the Canadian-United States Law Institute*. Vol. 34 pp. 7–34. Remarks on p. 30.
- Widdowson, David, Beverley Blegen, Michael Kashubsky and Andrew Grainger. 2014. "Review of Accredited Operator Scheme.". Australian International Trade & Transport Industry Development Fund 62.
- WTO. 2015. Speeding up trade: benefits and challenges of implementing the WTO Trade Facilitation Agreement. Technical report World Trade Report.  
**URL:** [https://www.wto.org/english/res\\_e/booksp\\_e/world\\_trade\\_report15\\_e.pdf](https://www.wto.org/english/res_e/booksp_e/world_trade_report15_e.pdf)
- Zaki, C. 2015. "How does trade facilitation affect international trade?" *European Journal of Development Research* 27(1):156–185.

## A Appendix

**Table A1.** Trusted Trader Agreement List

#	Country 1	Country 2	signMonth	signYear	Type
1	USA	NEW	June	2007	bilateral
2	JPN	NEW	May	2008	bilateral
3	USA	CAN	June	2008	bilateral
4	USA	JOR	June	2008	bilateral
5	USA	JPN	June	2009	bilateral
6	NOR	EU	September	2009	bilateral
7	CAN	JPN	June	2010	bilateral
8	CAN	ROK	June	2010	bilateral
9	CAN	SIN	June	2010	bilateral
10	EU	JPN	June	2010	bilateral
11	ROK	SIN	June	2010	bilateral
12	ROK	USA	June	2010	bilateral
13	SWZ	EU	January	2011	bilateral
14	ROK	JPN	May	2011	bilateral
15	ROK	NEW	June	2011	bilateral
16	SIN	JPN	June	2011	bilateral
17	EU	USA	May	2012	bilateral
18	CHN	SIN	June	2012	bilateral
19	USA	TAW	November	2012	bilateral
20	CHN	ROK	July	2013	bilateral
21	CHN	HKG	October	2013	bilateral
22	IND	HKG	November	2013	bilateral
23	ISR	TAW	December	2013	bilateral
24	ROK	HKG	February	2014	bilateral
25	ROK	MEC	March	2014	bilateral
26	MAL	JPN	June	2014	bilateral
27	USA	ISR	June	2014	bilateral
28	USA	MEC	October	2014	bilateral

(continued)

#	Country 1	Country 2	signMonth	signYear	Type
29	EU	CHN	November	2014	bilateral
30	USA	SIN	December	2014	bilateral
31	ISR	ROK	March	2015	bilateral
32	ROK	DOM	April	2015	bilateral
33	HKG	THI	June	2015	bilateral
34	ROK	IND	October	2015	bilateral
35	SWZ	NOR	November	2015	bilateral
36	USA	DOM	December	2015	bilateral
37	ROK	TAW	December	2015	bilateral
38	HKG	MAL	March	2016	bilateral
39	MEC	CAN	May	2016	bilateral
40	AUL	NEW	July	2016	bilateral
41	HKG	JPN	August	2016	bilateral
42	BRA	URU	December	2016	bilateral
43	THI	ROK	December	2016	bilateral
44	CHN	SWZ	January	2017	bilateral
45	CAN	AUL	July	2017	bilateral
46	ROK	AUL	July	2017	bilateral
47	ROK	UAE	July	2017	bilateral
48	CAN	ISR	July	2017	bilateral
49	HKG	AUL	July	2017	bilateral
50	ROK	MAL	October	2017	bilateral
51	CHN	ISR	November	2017	bilateral
52	CHN	AUL	November	2017	bilateral
53	CHN	NEW	November	2017	bilateral
54	URU	ROK	December	2017	bilateral
55	PER	ROK	December	2017	bilateral
56	PER	URU	March	2018	bilateral
57	COS	MEX	April	2018	bilateral
58	URU	BOL	April	2018	bilateral



(continued)

#	Country 1	Country 2	signMonth	signYear	Type
59	COS	MEX	April	2018	bilateral
60	AUL	SIN	May	2018	bilateral
61	NEW	HKG	June	2018	bilateral
62	USA	PER	September	2018	bilateral
63	AUL	TAW	September	2018	bilateral
64	CHN	JPN	October	2018	bilateral
65	IND	TAW	December	2018	bilateral
66	ROK	KZK	April	2019	bilateral
67	CHN	KZK	April	2019	bilateral
68	CHN	MON	April	2019	bilateral
69	CHN	URU	April	2019	bilateral
70	MEX	ISR	April	2019	bilateral
71	SIN	NEW	June	2019	bilateral
72	AUL	JPN	June	2019	bilateral
73	ISR	HKG	June	2019	bilateral
74	CHN	UAE	July	2019	bilateral
75	YUG	MAC	August	2019	bilateral
76	ROK	MON	September	2019	bilateral
77	BRA	CHN	October	2019	bilateral
78	ARG	URU	November	2019	bilateral
79	COL	COS	December	2019	bilateral
80	BAH	SAU	December	2019	bilateral
81	INS	ROK	February	2020	bilateral
82	BOL	BRA	September	2020	bilateral
83	BRA	PER	October	2020	bilateral
84	TUN	EGY	April	2016	multilateral
85	TUN	MOR	April	2016	multilateral
86	TUN	JOR	April	2016	multilateral
87	EGY	MOR	April	2016	multilateral
88	EGY	JOR	April	2016	multilateral

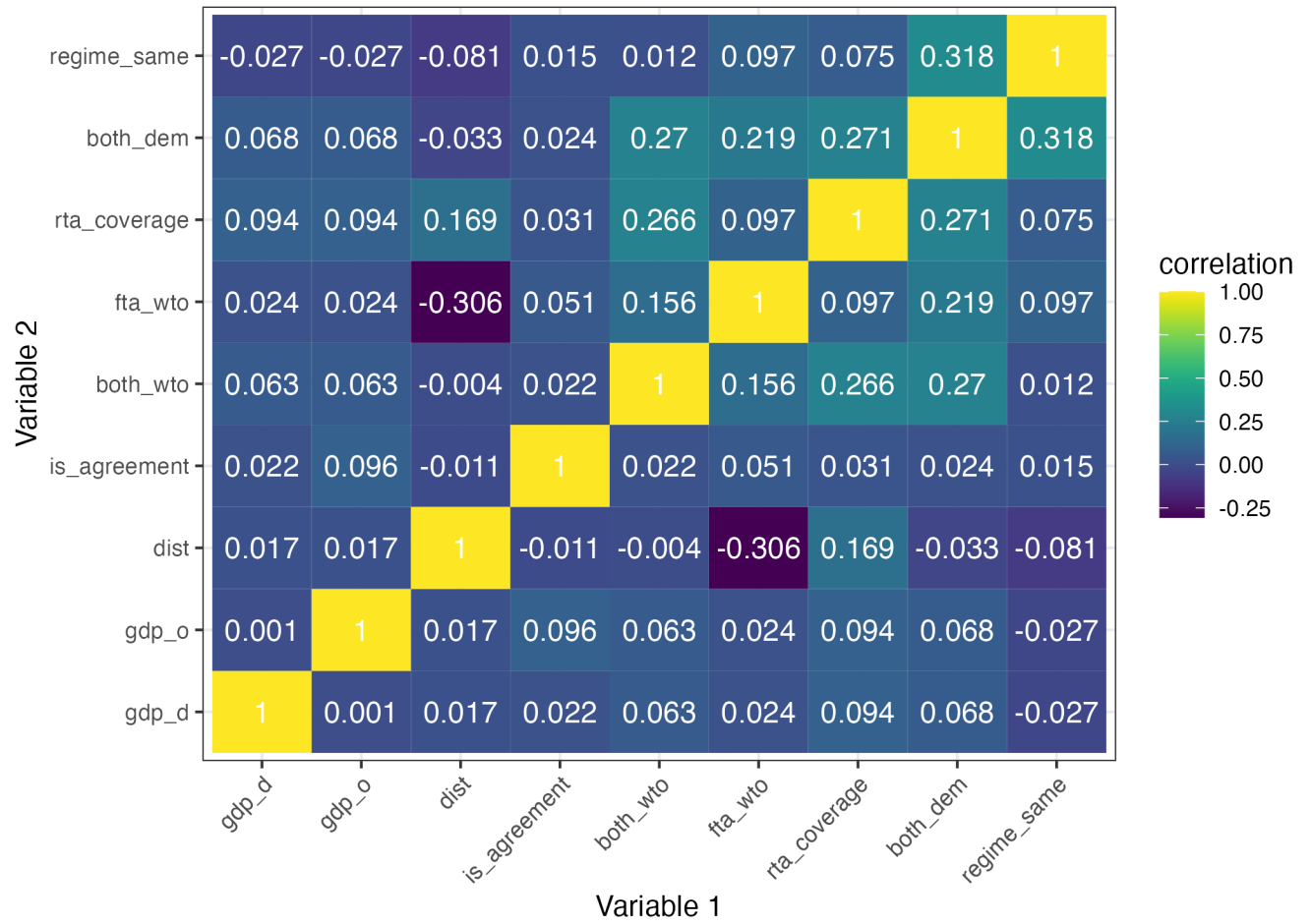
(continued)

#	Country 1	Country 2	signMonth	signYear	Type
89	MOR	JOR	April	2016	multilateral
90	CHL	MEX	July	2018	multilateral
91	CHL	PER	July	2018	multilateral
92	CHL	COL	July	2018	multilateral
93	MEX	PER	July	2018	multilateral
94	MEX	COL	July	2018	multilateral
95	PER	COL	July	2018	multilateral
96	COS	SAL	April	2019	multilateral
97	COS	GUA	April	2019	multilateral
98	COS	PAN	April	2019	multilateral
99	SAL	GUA	April	2019	multilateral
100	SAL	PAN	April	2019	multilateral
101	GUA	PAN	April	2019	multilateral
102	BOL	COL	May	2019	multilateral
103	BOL	ECU	May	2019	multilateral
104	BOL	PER	May	2019	multilateral
105	COL	ECU	May	2019	multilateral
106	COL	PER	May	2019	multilateral
107	ECU	PER	May	2019	multilateral
108	ARM	RUS	April	2017	multilateral
109	ARM	BLR	April	2017	multilateral
110	ARM	KZK	April	2017	multilateral
111	ARM	KYR	April	2017	multilateral
112	RUS	BLR	April	2017	multilateral
113	RUS	KZK	April	2017	multilateral
114	RUS	KYR	April	2017	multilateral
115	BLR	KZK	April	2017	multilateral
116	BLR	KYR	April	2017	multilateral
117	KZK	KYR	April	2017	multilateral
118	ARG	BRA	July	2022	multilateral

(continued)

#	Country 1	Country 2	signMonth	signYear	Type
119	ARG	BOL	July	2022	multilateral
120	ARG	CHL	July	2022	multilateral
121	ARG	GUA	July	2022	multilateral
122	ARG	PAR	July	2022	multilateral
123	ARG	PER	July	2022	multilateral
124	ARG	DOM	July	2022	multilateral
125	ARG	URU	July	2022	multilateral
126	BRA	BOL	July	2022	multilateral
127	BRA	CHL	July	2022	multilateral
128	BRA	GUA	July	2022	multilateral
129	BRA	PAR	July	2022	multilateral
130	BRA	PER	July	2022	multilateral
131	BRA	DOM	July	2022	multilateral
132	BRA	URU	July	2022	multilateral
133	CHL	GUA	July	2022	multilateral
134	CHL	PAR	July	2022	multilateral
135	CHL	PER	July	2022	multilateral
136	CHL	DOM	July	2022	multilateral
137	CHL	URU	July	2022	multilateral
138	GUA	PAR	July	2022	multilateral
139	GUA	PER	July	2022	multilateral
140	GUA	DOM	July	2022	multilateral
141	GUA	URU	July	2022	multilateral
142	PAR	PER	July	2022	multilateral
143	PAR	DOM	July	2022	multilateral
144	PAR	URU	July	2022	multilateral
145	PER	DOM	July	2022	multilateral
146	PER	URU	July	2022	multilateral
147	DOM	URU	July	2022	multilateral
148	USA	BRA	September	2022	bilateral

**Figure A1.** Correlation matrix of predictors



**Figure A2. Poisson Models**

Dependent Variable: Model:	Logged Bilateral Trade						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Variables</i>							
log(destination GDP)	0.8018*** (0.0029)	0.8016*** (0.0027)	0.7922*** (0.0028)	0.8326*** (0.0023)	0.7801*** (0.0036)	0.7921*** (0.0030)	0.7943*** (0.0034)
log(origin GDP)	0.7643*** (0.0017)	0.7534*** (0.0018)	0.7439*** (0.0018)	0.7883*** (0.0025)	0.7651*** (0.0028)	0.7828*** (0.0047)	0.7875*** (0.0054)
log(distance)	-0.5420*** (0.0031)	-0.5396*** (0.0030)	-0.5355*** (0.0029)	-0.3990*** (0.0071)	-0.6279*** (0.0127)	-0.6882*** (0.0060)	-0.7134*** (0.0071)
<b>MRA</b>		0.5227*** (0.0329)	0.5194*** (0.0331)	0.2434*** (0.0292)	0.1195** (0.0479)	0.0230 (0.0537)	-0.0008 (0.0535)
Both WTO			0.4339*** (0.0419)	0.1308*** (0.0377)	-0.1446** (0.0568)	0.1725*** (0.0194)	0.1505*** (0.0219)
FTA				0.8986*** (0.0159)	2.487*** (0.1215)	2.636*** (0.0947)	2.615*** (0.0925)
RTA					0.6133*** (0.0087)	0.6610*** (0.0124)	0.6581*** (0.0137)
Both democratic						-0.5625*** (0.0732)	-0.4664*** (0.0586)
Same regime							-0.1917*** (0.0386)
<i>Fixed-effects</i>							
year	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Fit statistics</i>							
Observations	480,876	480,876	480,876	480,876	70,192	70,192	59,675
Squared Correlation	0.2099	0.2363	0.2422	0.4018	0.6815	0.6645	0.6688
Pseudo R <sup>2</sup>	0.8296	0.8310	0.8324	0.8534	0.8488	0.8577	0.8504
BIC	2.7 × 10 <sup>11</sup>	2.7 × 10 <sup>11</sup>	2.7 × 10 <sup>11</sup>	2.3 × 10 <sup>11</sup>	9.0 × 10 <sup>10</sup>	8.4 × 10 <sup>10</sup>	8.3 × 10 <sup>10</sup>

*Clustered (year) standard-errors in parentheses*  
*Signif. Codes: \*\*\*: 0.01, \*\*: 0.05, \*: 0.1*

**Figure A3. Lagged OLS Models**

Dependent Variable: Model:	(1)	(2)	Logged Bilateral Trade				(6)	(7)
<i>Variables</i>								
log(destination GDP)	0.9829*** (0.0021)	0.9826*** (0.0021)	0.9701*** (0.0021)	0.9586*** (0.0021)	0.8969*** (0.0040)	0.9049*** (0.0041)	0.9131*** (0.0045)	
log(origin GDP)	1.248*** (0.0022)	1.248*** (0.0022)	1.235*** (0.0022)	1.224*** (0.0022)	1.115*** (0.0045)	1.123*** (0.0046)	1.134*** (0.0050)	
log(distance)	-1.499*** (0.0054)	-1.499*** (0.0054)	-1.519*** (0.0054)	-1.317*** (0.0062)	-1.593*** (0.0083)	-1.599*** (0.0083)	-1.423*** (0.0087)	
<b>MRA</b>		0.7456*** (0.0731)	0.7466*** (0.0721)	0.6908*** (0.0715)	0.9890*** (0.1284)	0.9368*** (0.1279)	0.7277*** (0.1182)	
Both WTO			0.6382*** (0.0132)	0.5280*** (0.0133)	0.6581*** (0.0339)	0.7081*** (0.0342)	0.5554*** (0.0372)	
FTA				0.9238*** (0.0127)	0.3999*** (0.0279)	0.3843*** (0.0278)	0.4426*** (0.0283)	
RTA					0.0384** (0.0171)	0.0723*** (0.0179)	0.1475*** (0.0180)	
Both democratic						-0.1634*** (0.0191)	-0.3665*** (0.0207)	
Same regime							0.1982*** (0.0192)	
<i>Fixed-effects</i>								
year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
<i>Fit statistics</i>								
Observations	323,331	323,331	323,331	323,331	62,604	62,604	55,553	
R <sup>2</sup>	0.63237	0.63241	0.63583	0.64073	0.72951	0.72984	0.72154	
Within R <sup>2</sup>	0.63231	0.63235	0.63577	0.64067	0.72754	0.72786	0.71952	

*Heteroskedasticity-robust standard-errors in parentheses*

*Signif. Codes: \*\*\*: 0.01, \*\*: 0.05, \*: 0.1*

**Figure A4. Low-Income OLS Models**

Dependent Variable: Model:	(1)	(2)	Logged Bilateral Trade				(6)	(7)
<i>Variables</i>								
log(destination GDP)	0.8764*** (0.0039)	0.8758*** (0.0039)	0.8723*** (0.0039)	0.8687*** (0.0038)	0.8194*** (0.0108)	0.8210*** (0.0108)	0.8559*** (0.0117)	
log(origin GDP)	1.182*** (0.0039)	1.181*** (0.0039)	1.175*** (0.0039)	1.175*** (0.0038)	1.077*** (0.0111)	1.078*** (0.0111)	1.152*** (0.0123)	
log(distance)	-1.676*** (0.0089)	-1.673*** (0.0089)	-1.691*** (0.0089)	-1.334*** (0.0105)	-1.741*** (0.0207)	-1.740*** (0.0207)	-1.653*** (0.0214)	
<b>MRA</b>		2.258** (0.1029)	2.180*** (0.1126)	1.120*** (0.1012)	1.044*** (0.1148)	1.045*** (0.1145)	1.063*** (0.1121)	
Both WTO			0.6183*** (0.0189)	0.4814** (0.0188)	0.1243** (0.0572)	0.1454** (0.0573)	0.2000*** (0.0578)	
FTA				1.865*** (0.0273)	1.061*** (0.0515)	1.052*** (0.0516)	0.9036*** (0.0525)	
RTA					0.1982*** (0.0411)	0.2021*** (0.0411)	-0.0638 (0.0477)	
Both democratic						-0.1077*** (0.0413)	-0.1299*** (0.0459)	
Same regime							0.1683*** (0.0452)	
<i>Fixed-effects</i>								
year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
<i>Fit statistics</i>								
Observations	140,275	140,275	140,275	140,275	14,537	14,537	13,071	
R <sup>2</sup>	0.51709	0.51733	0.52153	0.53502	0.63775	0.63791	0.62838	
Within R <sup>2</sup>	0.51697	0.51722	0.52142	0.53491	0.63641	0.63657	0.62779	

*Heteroskedasticity-robust standard-errors in parentheses*

*Signif. Codes: \*\*\*: 0.01, \*\*: 0.05, \*: 0.1*

**Figure A5. High-Income OLS Models**

Dependent Variable: Model:	(1)	(2)	Logged Bilateral Trade				(6)	(7)
<i>Variables</i>								
log(destination GDP)	1.076*** (0.0054)	1.074*** (0.0054)	1.054*** (0.0056)	1.059*** (0.0056)	0.9647*** (0.0071)	0.9714*** (0.0071)	0.9540*** (0.0070)	
log(origin GDP)	1.225*** (0.0061)	1.223*** (0.0061)	1.202*** (0.0062)	1.208*** (0.0063)	1.117*** (0.0086)	1.123*** (0.0086)	1.114*** (0.0092)	
log(distance)	-1.238*** (0.0094)	-1.239*** (0.0094)	-1.228*** (0.0093)	-1.090*** (0.0131)	-1.303*** (0.0141)	-1.313*** (0.0141)	-1.209*** (0.0141)	
<b>MRA</b>		0.5693*** (0.0937)	0.6025*** (0.0914)	0.5244*** (0.0860)	0.9601*** (0.1418)	0.8822*** (0.1368)	0.6188*** (0.1135)	
Both WTO			0.7277*** (0.0614)	0.6978*** (0.0620)	1.069*** (0.0882)	1.244*** (0.0977)	0.1822 (0.3038)	
FTA				0.4703*** (0.0294)	-1.037*** (0.0842)	-1.043*** (0.0843)	-0.5859*** (0.0895)	
RTA					0.3932*** (0.0245)	0.3880*** (0.0246)	0.4410*** (0.0239)	
Both democratic						-0.2610*** (0.0534)	-0.7445*** (0.0586)	
Same regime							-0.1461*** (0.0365)	
<i>Fixed-effects</i>								
year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
<i>Fit statistics</i>								
Observations	32,659	32,659	32,659	32,659	16,477	16,477	14,820	
R <sup>2</sup>	0.76928	0.76939	0.77134	0.77338	0.82081	0.82129	0.81368	
Within R <sup>2</sup>	0.76760	0.76771	0.76967	0.77173	0.81832	0.81881	0.81234	

*Heteroskedasticity-robust standard-errors in parentheses*

*Signif. Codes: \*\*\*: 0.01, \*\*: 0.05, \*: 0.1*



**Figure A6. Mixed-Income OLS Models**

Dependent Variable: Model:	(1)	(2)	Logged Bilateral Trade				(6)	(7)
<i>Variables</i>								
log(destination GDP)	1.035*** (0.0030)	1.035*** (0.0030)	1.026*** (0.0030)	1.022*** (0.0030)	0.9964*** (0.0059)	0.9979*** (0.0060)	1.060*** (0.0066)	
log(origin GDP)	1.292*** (0.0031)	1.291*** (0.0031)	1.282*** (0.0031)	1.279*** (0.0031)	1.238*** (0.0068)	1.239*** (0.0069)	1.285*** (0.0075)	
log(distance)	-1.303*** (0.0089)	-1.302*** (0.0089)	-1.342*** (0.0089)	-1.241*** (0.0096)	-1.588*** (0.0132)	-1.588*** (0.0132)	-1.387*** (0.0130)	
<b>MRA</b>		0.9908*** (0.1103)	0.9262*** (0.1106)	0.6986*** (0.1089)	0.4935*** (0.1295)	0.4815*** (0.1301)	0.2895** (0.1256)	
Both WTO			0.5443*** (0.0196)	0.4765*** (0.0197)	0.8759*** (0.0474)	0.8812*** (0.0473)	0.7862*** (0.0481)	
FTA				0.5381*** (0.0163)	0.2890*** (0.0351)	0.2830*** (0.0351)	0.2645*** (0.0353)	
RTA					0.1448*** (0.0231)	0.1549*** (0.0255)	0.1835*** (0.0256)	
Both democratic						-0.0302 (0.0264)	-0.1405*** (0.0269)	
Same regime							0.4118*** (0.0340)	
<i>Fixed-effects</i>								
year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
<i>Fit statistics</i>								
Observations	150,397	150,397	150,397	150,397	31,590	31,590	27,662	
R <sup>2</sup>	0.63137	0.63143	0.63399	0.63612	0.71534	0.71535	0.70939	
Within R <sup>2</sup>	0.63106	0.63111	0.63367	0.63581	0.71123	0.71125	0.70326	

*Heteroskedasticity-robust standard-errors in parentheses*

*Signif. Codes: \*\*\*: 0.01, \*\*: 0.05, \*: 0.1*