

# Good Names Beget Favors: The Impact of Country Image on Trade Flows and Welfare

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## Online Appendix

### A Data Appendix

This appendix documents the source of the data and definitions of the variables used in the analysis. The summary statistics are provided in Table A.1.

#### A.1 Country Image

The country coverage of the BBC WSP varies in each annual release. The 2014 version was kindly provided by Lionel Bellier at GlobeScan. As documented in the main text, it has 2005–2014 data on 25 evaluating countries. In 2017, GlobeScan reinstated the survey, and the latest 2017 version kept only 19 tracking evaluating countries. We primarily work with the data from the 2014 release for all estimations. Nonetheless, the counterfactual welfare analysis in Section 5 uses some of the country image data in 2017. Figure 1 looks very similar when we instead use only the 19 tracking evaluating countries of the 2017 version.

As indicated in the main text, there are five types of response: “mainly positive” ( $PS$ ), “mainly negative” ( $NG$ ), “depends” ( $DP$ ), “neither/neutral” ( $NN$ ), and “DK/NA (don’t know or no answer)”. We treat entries such as “\*”, “-”, or “NA (not available)” in the raw data as missing. By definition,  $PS + NG + NU + NA = 1$  and  $RS \equiv PS + NG + NU = 1 - NA$ , where  $NU \equiv DP + NN$ . In the data, the sum of the five responses (treating missing as zero) is equal to 1 for the majority of observations, with discrepancies by a margin of at most 0.02 for some country pairs.

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## A.2 Trade Flow

For the aggregate merchandise trade flows, we use the International Trade dataset maintained by the Correlates of War (COW) project.<sup>1</sup> The COW merchandise trade data are constructed based on the Direction of Trade Statistics (DOTS) of the International Monetary Fund (IMF).<sup>2</sup> For example, COW replaces missing import entries with the corresponding export entries reported by the counterparty in DOTS if available. Given COW, we downloaded DOTS independently and verified the consistency of the entries.<sup>3</sup> We fill in remaining missing entries of COW trade data by corresponding DOTS import values if available, and by corresponding DOTS export values if the former is also missing, in the same spirit as how COW constructs its trade dataset.

In addition to merchandise trade, we compile bilateral service trade data, obtained from the “WTO-UNCTAD-ITC annual trade in services dataset.”<sup>4</sup> Two databases are available: “Trade in commercial services, 2005–onwards (BPM6)” and “Trade in commercial services, 1980–2013 (BPM5).” We use the entries under “*Memo item: Total services*” (with code “*S200*”) from BPM6 as the first choice and supplement the missing entries with data from BPM5 if available. We further supplement any remaining missing entries with information from the World Bank’s “Trade in Services Database” if available.<sup>5</sup> The total bilateral trade flows used in the study are the sum of the bilateral merchandise and the service trade flows.

For the sector-level trade flows, we source the data from the UN COMTRADE,<sup>6</sup> using the HS2002 nomenclature at the 4-digit level for the analysis based on the BEC classifications, and the SITC2 nomenclature at the 3-digit level for the analysis based on the Rauch classifications. All the trade statistics are reported in current US dollars. We replace missing bilateral import entries with zeros if the corresponding export values reported by the exporter are zero.

## A.3 Intra-firm Trade

We source the intra-firm trade data from the OECD AMNE (Activity of Multinational Enterprises) database.<sup>7</sup> See the main text for the documentation. Note that the original trade flows are reported in home currency. We use the exchange rates from the Penn World Table version 9.1 to convert the values into US dollars.<sup>8</sup>

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<sup>1</sup><http://www.correlatesofwar.org>. The data were last downloaded on 5 April 2019.

<sup>2</sup><https://data.imf.org/?sk=9D6028D4-F14A-464C-A2F2-59B2CD424B85>.

<sup>3</sup>The data were last downloaded on 21 January 2019.

<sup>4</sup>[https://www.wto.org/english/res\\_e/statis\\_e/trade\\_datasets\\_e.htm](https://www.wto.org/english/res_e/statis_e/trade_datasets_e.htm). The data were last downloaded on 14 February 2019.

<sup>5</sup><https://datacatalog.worldbank.org/dataset/trade-services-database>. The data were last downloaded on 12 March 2019. We use the entries under “*Total EBOPS Services*,” available for 1985–2011.

<sup>6</sup><https://wits.worldbank.org>, via the WITS (World Integrated Trade Solutions) interface.

<sup>7</sup><https://www.oecd.org/sti/ind/amne.htm>.

<sup>8</sup><https://www.rug.nl/ggdc/productivity/pwt/>.

## A.4 Classification of Goods

We use the UN Broad Economic Categories (BEC, Rev.4) classification and assign sectors into one of four categories: consumer goods, intermediate goods, capital goods, and not classified.<sup>9</sup> Together with the correlation table between HS2002 and BEC4—which provides the correspondence between HS 6-digit sectors and BEC codes—maintained by the UN Statistics Division,<sup>10</sup> we mapped each of the HS 6-digit sectors to one of the four types of goods mentioned above. We classify an HS 4-digit sector as consumer goods if all its 6-digit sub-sectors are consumer goods, and similarly for the classification of intermediate and capital goods. There are 1244 HS 4-digit sectors. Among them, 236 sectors are classified as consumer goods, 753 as intermediates, 70 as capital goods, 8 not classified, and 177 as mixed sectors.

We downloaded the Rauch (1999) goods classification from James Rauch’s website.<sup>11</sup> All 237 SITC2 3-digit sectors are accounted for and assigned to one of the three types of goods classified by Rauch.

## A.5 Bilateral Trade Cost Proxies

The data on most of the bilateral trade cost proxy variables are obtained from the CEPII website,<sup>12</sup> a French research center in international economics. The time-invariant variables include: population-weighted bilateral distance ( $Dist_{ij}$ ); common language indicator ( $ComLang_{ij}$ ), which equals one if a language is spoken by at least 9% of the population in both countries; common legal origin indicator ( $ComLeg_{ij}$ ), which equals one if two countries share a common legal origin; indicator for whether exporter  $i$  has ever been a colonizer of importer  $j$  ( $Exheg_{ij}$ ); indicator for whether importer  $j$  has ever been a colonizer of exporter  $i$  ( $Imheg_{ij}$ ); common colonizer indicator ( $ComCol_{ij}$ ), which equals one if two countries have had a common colonizer after 1945; and common border indicator ( $Border_{ij}$ ), which equals one if two countries are contiguous.

The data on preferential trade agreement indicator ( $PTA_{ijt}$ ), which equals one if a preferential trade agreement is in force between two countries in year  $t$ , come from the Database on Economic Integration Agreements (April 2017) constructed by Scott Baier and Jeffrey Bergstrand.<sup>13</sup> We supplement missing entries with information from the Regional Trade Agreements Database of the World Trade Organization.<sup>14</sup>

The data on whether importer  $j$  offers GSP preferential treatment to exporter  $i$  in year  $t$  ( $GSP_{ijt}$ ) come from the Database on Economic Integration Agreements (April 2017) constructed by Scott Baier and Jeffrey Bergstrand.<sup>15</sup> In the case of missing entries, we fill in the information

<sup>9</sup><https://unstats.un.org/unsd/tradekb/Knowledgebase/50089/Classification-by-Broad-Economic-Categories-Rev4>.

<sup>10</sup><http://unstats.un.org/unsd/trade/classifications/correspondence-tables.asp>.

<sup>11</sup>[http://econweb.ucsd.edu/~jrauch/rauch\\_classification.html](http://econweb.ucsd.edu/~jrauch/rauch_classification.html).

<sup>12</sup><http://www.cepii.fr>. The data were last downloaded on 20 January 2019.

<sup>13</sup><https://www3.nd.edu/~jbergstr/>. Ornelas and Ritel (2018) provide a detailed introduction to this database. The data were last downloaded on 8 April 2019.

<sup>14</sup><https://rtais.wto.org/UI/PublicMaintainRTAHome.aspx>. The data were last downloaded on 21 February 2019.

<sup>15</sup><https://www3.nd.edu/~jbergstr/>.

from WTO’s Database on Preferential Trade Agreements.<sup>16</sup> If data are also missing in the second source, we compile the data manually from the “Generalized System of Preferences: List of Beneficiary Countries” reported by the UNCTAD.<sup>17</sup> The UNCTAD updates the information on the GSP schemes from time to time, but not annually. The information on the GSP schemes is only available for 2001, 2005, 2006, 2008, 2009, 2011, and 2015. We fill in the gap by using the data from the previous nearest available year. The symmetric version used in the correlation regression is defined as:  $GSP_{jj'}^b \equiv GSP_{jj'} + GSP_{j'j}$  and similarly defined for  $GSP_{ii'}^b$ , where  $GSP_{jj'}$  is the average of  $GSP_{jj't}$  across periods of study.

The data on common currency indicator ( $ComCur_{ijt}$ ), which equals one if two countries use a common currency, come from the International Economics Data and Programs website maintained by José de Sousa.<sup>18</sup> We supplement the data with information from CEPII’s Gravity dataset if missing in the former database.

## A.6 Tariff and Non-Tariff Measures

The data on tariff and non-tariff measures (NTMs) are obtained through the World Integrated Trade Solution (WITS) interface.<sup>19</sup> The tariff data are available from two sources: TRAINS and WTO-IDB. We use tariffs reported by TRAINS as default and fill in missing entries with those from WTO-IDB. Four types of tariff information are available: preferential rates (PRF), MFN applied rates (MFN), MFN bound rates (BND) and effectively applied rates (AHS). We use effectively applied rates as the default and replace missing entries with PRF, MFN, and BND in this order when the previous alternative is missing. We consider all three kinds of average schemes provided by the system: weighted average, simple average, and simple tariff line average.

The data on NTMs come from the TRAINS database. We identify the products at the HS 6-digit level that are subject to some coverage of non-tariff measures. A product may be subject to multiple non-tariff measures. We identify the number of measures for each product and the trading partner that is subject to each of these measures imposed by an importing country  $j$  in year  $t$ . Some non-tariff measures are bilateral (specific to a certain trading partner), while others are multilateral, in which case, all the importing country’s trading partners are affected. Special care is taken to deal with the EU countries, for whom a common set of NTMs are implemented against external trading partners but nil NTMs on trade within the EU. We sum the total number of non-tariff measures (preferential or multilateral) imposed by an importer  $j$  against a trading partner  $i$  in year  $t$  across products, and denote it by  $Num_{ijt}^{NTM}$ . We normalize the number by its maximum across all  $ijt$  and obtain the intensity measure of NTMs:  $NTM_{ijt} \equiv Num_{ijt}^{NTM} / \max_{ijt} \{Num_{ijt}^{NTM}\}$ .

Despite of the efforts to compile data on NTMs, the quality of the data on non-tariff barriers is less than ideal. In particular, data coverage does not appear to be comprehensive. There are a large number of entries for the US, whereas the entries for other countries are very sparse. For

<sup>16</sup><http://ptadb.wto.org/>.

<sup>17</sup><http://unctad.org/en/Pages/DITC/GSP/GSP-List-of-Beneficiary-Countries.aspx>.

<sup>18</sup><http://jdesousa.univ.free.fr/data.htm>. The data were last downloaded on 22 January 2019.

<sup>19</sup><https://wits.worldbank.org/>.

example, the total number of NTMs implemented in 2010 by the US (summing across all its trading partners) is 282,720. Meanwhile, the number is well under 100 for all the other countries, and zero for several countries. This casts doubt on the reliability of the data on non-tariff barriers and the measure  $NTM_{ijt}$ . We hence rely mainly on the tariff measures throughout the paper (for both aggregate and sector-level analysis).

## A.7 Additional Variables Used in the Correlation Analysis of $PS_{ijt}$

The data on historical military disputes between countries are obtained from the Correlates of War (COW) project.<sup>20</sup> The variable ( $MID_{ij}$ ) is a weighted sum of Militarized Interstate Disputes (MIDs) directed from exporter  $i$  to importer  $j$  during the period of 1816–1945, where the following five levels of exporter’s hostility are used as weights: 1 = No militarized action, 2 = Threat to use force, 3 = Display of force, 4 = Use of force, and 5 = War. The symmetric version used in the correlation regression is defined as:  $MID_{jj'}^b \equiv MID_{jj'} + MID_{j'j}$  and similarly defined for  $MID_{ii'}^b$ .

The data on alliance indicator ( $alliance_{ijt}$ ) come from the COW Formal Interstate Alliance Dataset. The indicator equals one if two countries ( $i, j$ ) are in a military alliance in year  $t$  (defense pact, neutrality or non-aggression treaty, or entente agreement). The end year of this dataset is 2012. We extended the dataset to 2014 by assuming that the alliance pattern in 2013–2014 remains the same as in 2012.

To define whether two countries share the same political system in year  $t$  ( $ComPol_{ijt}$ ), we use the information from the website, “Regime Types and Regime Change: A New Dataset,” maintained by Christian Bjørnskov and Martin Rode.<sup>21</sup> We classify a country’s political institution as either democratic or non-democratic. The indicator  $ComPol_{ijt}$  equals one if two countries are both democracies, or are both non-democracies.

The data on the geographic region of a country come from the World Bank,<sup>22</sup> where countries fall into one of seven regions: East Asia and Pacific, Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa, North America, South Asia, and Sub-Saharan Africa. The indicator  $ComRegion_{ij}$  equals one if two countries are located in the same region.

The data on the development stage of a country come from the Appendix Table 2 of Subramanian and Wei (2003). The indicator  $ComDev_{ij}$  equals one if two countries are both industrial countries or are both non-industrial countries. The data on genetic distance ( $GenDist_{ij}$ ) come from the dataset constructed by Spolaore and Wacziarg (2016).<sup>23</sup>

## A.8 Machine-Learning Democracy Index

Gründler and Krieger (2016, 2021) developed a machine-learning democracy index for 186 countries from 1919 to 2019, based on a supervised Machine Learning technique—Support Vector Machines

<sup>20</sup><http://www.correlatesofwar.org>.

<sup>21</sup><http://www.christianbjoernskov.com/bjoernskovrodedata/>.

<sup>22</sup><https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>.

<sup>23</sup>[https://www.anderson.ucla.edu/faculty\\_pages/romain.wacziarg/papersum.html](https://www.anderson.ucla.edu/faculty_pages/romain.wacziarg/papersum.html).

(SVM)—for pattern recognition that aims to reveal the unknown relationship between a set of input characteristics and an outcome variable. They use the method to transform ten underlying regime characteristics of democracy (see Table 4 in Gründler and Krieger, 2021) into a measure of democracy: i) on a dichotomous scale, or ii) on a continuous scale that ranges from 0 (fully autocratic) to 1 (fully democratic), based on the SVM classification tool and the SVM regression tool, respectively. We use the continuous version of the index.<sup>24</sup> We construct the variable  $MLDI_{ijt}$  as the distance (i.e., absolute difference) in the machine-learning democracy indices between countries  $i$  and  $j$  in year  $t$ .

## A.9 Diplomatic Visit Variables

*Who are the leaders?* We classify the head of state, the head of government, and their deputies as the leaders of a country. For example, president, vice president, premier, and vice premier are considered as the leaders of China. Due to differences in political systems across countries, some titles do not apply in some countries (e.g., no prime minister in Argentina). In other cases, one title is both the head of state and head of government (e.g., president of Chile). We identify and compile the relevant top office holders for each country in our sample. For some countries, there are two deputies for a head office (e.g., Peru, with first vice president and second vice president). In this case, we consider only the first deputy as the deputy head of state (or government). The same applies to the first deputy prime minister of Spain. Usually, one title is held by only one person at a time. But sometimes one title can be held by multiple persons, for example, Musalia Mudavadi and Uhuru Kenyatta were both deputy prime ministers of Kenya during 2008–2013. In such cases, we recognize both persons as the deputy head of government. The list of the leaders (their names, titles, and time in office) for each country is available on request. We also mark the most powerful head (the No. 1 leader) of each country. As an illustration, Yoshihiko Noda was the prime minister and head of government of Japan from 2 September 2011 to 26 December 2012, and is identified by us as the most powerful head of Japan during this period.

*Search for the leader visit information using the Google and Baidu search engines.* Given the list of leaders, we searched for their visits (if any) in each year to each of the countries in our sample during their term. Take, for example, Yoshihiko Noda’s visit in 2011 to China. The search procedure was as follows.

- (1) We used the Google/Baidu search engines, and searched using the keywords: “Yoshihiko Noda visit China.” We bookmarked the links that had a header or keywords identified by the search engines as having potential relevance up to the first two pages of search results.
- (2) We repeated Step 1, and searched using the keywords: “Yoshihiko Noda visit China,” and in addition, specified the search date range from 1 January 2011 to 31 December 2011. We bookmarked the links that had a header or keywords identified by the search engines as having potential relevance up to the first two pages of search results.

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<sup>24</sup>Refer to the website for further information: <https://www.ml-democracy-index.net/downloads/>.

- (3) We determined whether Yoshihiko Noda visited China in 2011 or not by reviewing the list of bookmarked links identified in Steps 1 and 2 above. If no visit was identified, we set the visit order as 0.
- (4) If any visit took place, we sifted through the news and the websites that described the details of the visit. The visit order was set as 1 in this case. We then recorded the details of the visit: the start and end dates (or the month if the exact date was not available); whether the visit was to attend a multilateral summit or meeting (e.g., G20 or United Nations General Assembly); and whether the visit concluded with some implementable and practical measures or agreements to facilitate bilateral trade and investment (including, e.g., signing of trade agreements, opening of new air/sea routes, or easing of visa requirements).

If multiple visits of a leader to a country in one year were identified, we changed the order of visit from 1 to 2 and to 3 (and so on) according to the order of each visit. In addition to the media reports, some countries’ government websites provide archives of their leaders’ visits overseas.<sup>25</sup> In some cases, Wikipedia also documents some countries’ leader visits abroad.<sup>26</sup> We combined information from such official archives and Wikipedia with those we identified above, to arrive at a more comprehensive set of records and information. The websites we relied upon for each record of visit are documented in the same file (as the list of leaders), available upon request. The resulting indicator variables on bilateral leader visits are defined in Section 4.1.5.

## A.10 GDP, Value-added Share, Gross Output, and Population

We use the gross domestic product figures expressed in current US dollars from the World Development Indicators (WDI)<sup>27</sup> and supplement missing entries with the GDP data from the CEPII website. The data on population come from the WDI, the IMF’s International Financial Statistics (IFS)<sup>28</sup> and the CEPII, in that order when the previous alternative is missing. We construct gross output  $Y_{it}$  data by taking the ratio of GDP and the value-added share  $\kappa_{it}$  in gross output:  $Y_{it} = GDP_{it}/\kappa_{it}$ .

The data on value-added share  $\kappa_{it}$  were compiled from several sources. We use them in lexicographic order (i.e., we use the first source if its data are available; otherwise, we use the second source. If the second source is also unavailable, we use the third source, etc.). The first source is “STAN SStructural ANalysis Database”<sup>29</sup> which covers 37 countries for years 1970–2017. We take the ratio of “*Value added, current prices*” over “*Production (gross output), current prices*” for “*In-*

<sup>25</sup>For example, the Ministry of Foreign Affairs of Japan: <https://www.mofa.go.jp/region/asia-paci/china/data.html>; <https://www.mofa.go.jp/region/asia-paci/china/archives.html>.

<sup>26</sup>For example, [https://en.wikipedia.org/wiki/List\\_of\\_international\\_trips\\_made\\_by\\_presidents\\_of\\_Iran](https://en.wikipedia.org/wiki/List_of_international_trips_made_by_presidents_of_Iran).

<sup>27</sup><https://databank.worldbank.org/data/reports.aspx?source=world-development-indicators>. The data were last downloaded on 19 January 2019.

<sup>28</sup><https://data.imf.org/?sk=4C514D48-B6BA-49ED-8AB9-52B0C1A0179B>. The data were last downloaded on 21 January 2019.

<sup>29</sup><https://www.oecd.org/industry/ind/stanstructuralanalysisdatabase.htm>.

dustry: Total.”<sup>30</sup> The second source is the WIOD Socio-Economic Accounts.<sup>31</sup> It has three releases: November 2016 release (with data for 2000–2014), July 2014 release (with data for 1995–2011), and February 2012 release (with data for 1995–2009). We use figures from the latest available release. The third source is the Input-Output Tables (IOTs) from the OECD Input-Output database.<sup>32</sup> There are four editions of Input-Output Tables reported: 2018 edition (ISIC Rev.4), 2015 edition (ISIC Rev.3), 2002 edition (ISIC Rev.3), and 1995 edition (ISIC Rev.2). Again, we use figures from the latest available edition. Given the 2018 edition IOTs, we calculate the value-added share by aggregating the “*Value added at basic prices*” and “*Output at basic prices*” across all sectors. Despite all these alternatives, some countries may have no data in some years. In that case, we fill in the missing entries as follows: (1)  $\kappa_{it} = \kappa_{i,T_i^e}$  for all  $t > T_i^e$ , where  $T_i^e$  is the latest year with data on value-added share for country  $i$ ; (2)  $\kappa_{it} = \kappa_{i,T_i^s}$  for all  $t < T_i^s$ , where  $T_i^s$  is the earliest year with data on value-added share for country  $i$ ; (3)  $\kappa_{it} = (\kappa_{i,t_i^1} + \kappa_{i,t_i^2})/2$  for  $t_i^1 < t < t_i^2$ , where  $t_i^1$  and  $t_i^2$  are the two years nearest to  $t$  and with data available. For countries without any information, we use the value-added shares of the Rest of the World (ROW), available in the 2015 edition IOTs.

## A.11 Expenditure

Based on bilateral trade flows, we construct the trade deficit of a country by:  $\tilde{D}_{jt} = \sum_i X_{ijt} - \sum_i X_{jit}$ . The resulting world trade deficit  $\tilde{D}_{wt}$  does not always add to zero. Given this, we allocate the discrepancy  $\tilde{D}_{wt}$  to each country in proportion to its output share of the world, i.e.,  $D_{jt} = \tilde{D}_{jt} - s_j \tilde{D}_{wt}$ . The gross expenditure of a country is then constructed as:  $E_{jt} = Y_{jt} + D_{jt}$ .

## A.12 Pseudo World in the Counterfactual Analysis

In the counterfactual analysis, we consider all countries in the world and their bilateral trade flows, where data permit. We drop countries for which GDP data are not available. We also drop countries that do not import from or export to any other countries. Given the set of countries available in each year, we construct trade deficit and expenditure as discussed above, and drop countries if the constructed expenditure is negative. We also drop countries if the implied internal trade is negative:  $X_{iit} \equiv Y_{it} - \sum_{j \neq i} X_{ijt} < 0$ . These are small territories whose data are prone to measurement errors. We iterate the procedure of constructing trade deficit and expenditure after each round of adjustment in the set of countries, until the constructed expenditure and internal trade of all countries are positive. We call this set of countries the pseudo world and calculate the supply and expenditure shares of each country relative to the pseudo world. As shown in Table 13, the total GDP (imports) of these countries in the pseudo world relative to the real world are close to 100%. Thus, the pseudo world closely represents the real world.

<sup>30</sup>[https://stats.oecd.org/Index.aspx?DataSetCode=STANI4\\_2016](https://stats.oecd.org/Index.aspx?DataSetCode=STANI4_2016).

<sup>31</sup><http://www.wiod.org/database/seas16>.

<sup>32</sup><https://www.oecd.org/sti/ind/input-outputtables.htm>.

### A.13 International Aid

Data on aid are obtained from “AidData,” a research lab at the William & Mary Global Research Institute.<sup>33</sup> In particular, the aid data for the US come from the “AidData Core Research Release, Version 3.1,”<sup>34</sup> which includes the bilateral aid data in constant 2011 US dollars for the period 1947–2013. We aggregate US foreign aid across recipients in a given year as its total international aid in the year.

The aid data for China come from “AidData’s Geocoded Global Chinese Official Finance, Version 1.1.1.”<sup>35</sup> The dataset geolocates 3,485 Chinese Government-financed projects that were implemented between 2000–2014. The aid amount is in constant 2014 US dollars. To be comparable with the figures of the US, we convert the aid value of each project to constant 2011 US dollars using the deflator provided by the same dataset. We then aggregate the aid value across projects in a given year to obtain China’s total international aid in the year.

In calculating the pecuniary gain in real income, we use the GDP deflator from the WDI to convert nominal GDP figures into figures in constant 2011 US dollars.

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<sup>33</sup><https://www.aiddata.org/datasets>.

<sup>34</sup><https://www.aiddata.org/data/aiddata-core-research-release-level-1-3-1>.

<sup>35</sup><https://www.aiddata.org/data/geocoded-chinese-global-official-finance-dataset>.

Table A.1: Summary statistics.

Variable	Description	Mean	Standard Deviation	Observations	Observation Unit
$X_{ijt}$	bilateral country trade flows (million US \$)	20,709.97	47,935.06	2,486	$i, j, t$
$PS_{ijt}$	positive response ratio	0.40	0.20	2,486	$i, j, t$
$PTA_{ijt}$	preferential trade agreement indicator	0.37	0.48	2,486	$i, j, t$
$GSP_{ijt}$	Generalized System of Preferences indicator	0.16	0.37	2,486	$i, j, t$
$ComCur_{ijt}$	common currency indicator	0.01	0.12	2,486	$i, j, t$
$LogTariff_{ijt}^{wa}$	log of (1 + tariff rate): based on weighted average tariff rate	0.05	0.05	2,366	$i, j, t$
$LogTariff_{ijt}^{sa}$	log of (1 + tariff rate): based on simple average tariff rate	0.06	0.04	2,366	$i, j, t$
$LogTariff_{ijt}^{la}$	log of (1 + tariff rate): based on simple tariff line average tariff rate	0.07	0.04	2,366	$i, j, t$
$NTM_{ijt}$	intensity of non-tariff measures	0.02	0.13	2,486	$i, j, t$
$alliance_{ijt}$	alliance indicator	0.21	0.41	2,486	$i, j, t$
$ComPol_{ijt}$	same political system indicator	0.67	0.47	2,486	$i, j, t$
$MLDI_{ijt}$	distance in the machine-learning democracy indices between countries $i$ and $j$ in year $t$	0.24	0.30	2,486	$i, j, t$
$LeaderVisitI_{ijt}$	indicator for diplomatic visit by top office holders from country $i$ to country $j$ in year $t$ , excluding visits that are related to multilateral meetings	0.22	0.41	2,486	$i, j, t$
$LeaderVisitII_{ijt}$	indicator for diplomatic visit by top office holders from country $i$ to country $j$ in year $t$ , excluding visits that are related to multilateral meetings and visits that are related to trade and investment	0.20	0.40	2,486	$i, j, t$
$LeaderVisitIII_{ijt}$	indicator for diplomatic visit by top office holders from country $i$ to country $j$ in year $t$ , excluding visits that are related to multilateral meetings and visits that are conducted by the No. 1 leader of country $i$ in year $t$	0.09	0.29	2,486	$i, j, t$
$LeaderVisitIV_{ijt}$	indicator for diplomatic visit by top office holders from country $i$ to country $j$ in year $t$ , excluding visits that are related to multilateral meetings, visits that are related to trade and investment, and visits that are conducted by the No. 1 leader of country $i$ in year $t$	0.08	0.27	2,486	$i, j, t$
$LogDist_{ij}$	log of population-weighted bilateral distance (km)	8.84	0.68	353	$i, j$
$ComLang_{ij}$	common language indicator	0.26	0.44	353	$i, j$

$ComLeg_{ij}$	common legal origin indicator	0.28	0.45	353	$i, j$
$Exheg_{ij}$	indicator for whether exporter $i$ has ever been a colonizer of importer $j$	0.03	0.18	353	$i, j$
$Imheg_{ij}$	indicator for whether importer $j$ has ever been a colonizer of exporter $i$	0.03	0.17	353	$i, j$
$colony$	indicator for whether two countries have ever been in a colonial relationship	0.06	0.24	353	$i, j$
$Comcol_{ij}$	indicator for whether two countries have had a common colonizer after 1945	0.04	0.20	353	$i, j$
$Border_{ij}$	common border indicator	0.05	0.21	353	$i, j$
$MID_{ij}$	weighted sum of militarized interstate disputes directed from $i$ to $j$ during 1816–1945	7.05	17.66	353	$i, j$
$ComRegion_{ij}$	same region indicator	0.13	0.34	353	$i, j$
$ComDev_{ij}$	indicator for common development stage (= 1 if two countries are both industrialized countries or are both non-industrialized countries)	0.50	0.50	353	$i, j$
$GenDist_{ij}$	genetic distance	0.08	0.06	353	$i, j$
$X_{ijkt}^{HS}$	HS2002 4-digit sector-level goods trade (million US \$)	24.83	345.15	1,661,164	$i, j, k, t$
$LogTariff_{ijkt}^{HS,wa}$	log of (1 + HS2002 4-digit tariff rate): weighted average	0.05	0.08	1,586,063	$i, j, k, t$
$X_{ijkt}^{SITC}$	SITC2 3-digit sector-level goods trade (million US \$)	98.02	759.30	434,749	$i, j, k, t$
$LogTariff_{ijkt}^{SITC,wa}$	log of (1 + SITC2 3-digit tariff rate): weighted average	0.06	0.09	414,657	$i, j, k, t$
$X_{ijt}^{a2h}$	trade flows from affiliates to parent companies ( $a2h$ ) (million US \$)	6,237.17	12,894.19	187	$i, j, t$
$X_{ijt}^{h2a}$	trade flows from parent companies to affiliates ( $h2a$ ) (million US \$)	8,930.26	12,371.12	168	$i, j, t$
$X_{ijt}^{intrafirm}$	intra-firm trade flows (sum of $a2h$ and $h2a$ ) (million US \$)	9,696.85	15,755.70	275	$i, j, t$
$GDP_{it}$	GDP (million US \$)	2,153,965.00	3,257,142.00	229	$i, t$
$\kappa_{it}$	value-added share	0.49	0.05	229	$i, t$

Table A.2: Regression of correlations in  $PS_{ijt}$  across evaluating countries  $jj'$  and evaluated countries  $ii'$ .

Dependent variable: $corr(PS_{ijt}, PS_{ij't})$		Dependent variable: $corr(PS_{ijt}, PS_{i'jt})$	
$MID_{jj'}^b$	-0.000547** (0.000273)	$MID_{ii'}^b$	0.00106*** (0.000241)
$alliance_{jj'}$	0.0455* (0.0246)	$alliance_{ii'}$	0.0979*** (0.0262)
$ComPol_{jj'}$	0.0679*** (0.0231)	$ComPol_{ii'}$	0.0311* (0.0186)
$ComRegion_{jj'}$	0.0583* (0.0306)	$ComRegion_{ii'}$	-0.00199 (0.0422)
$ComDev_{jj'}$	0.0548*** (0.0176)	$ComDev_{ii'}$	0.0496** (0.0198)
$GenDist_{jj'}$	-0.641*** (0.133)	$GenDist_{ii'}$	0.834*** (0.180)
$LogDist_{jj'}$	0.0285 (0.0184)	$LogDist_{ii'}$	-0.0489** (0.0217)
$ComLang_{jj'}$	0.0588** (0.0234)	$ComLang_{ii'}$	-0.0198 (0.0239)
$ComLeg_{jj'}$	-0.00916 (0.0217)	$ComLeg_{ii'}$	0.0183 (0.0242)
$colony_{jj'}$	0.0775** (0.0360)	$colony_{ii'}$	0.0827** (0.0338)
$Comcol_{jj'}$	-0.0688 (0.0450)	$Comcol_{ii'}$	0.0344 (0.0527)
$Border_{jj'}$	0.0256 (0.0445)	$Border_{ii'}$	-0.0987** (0.0399)
$PTA_{jj'}$	-0.00695 (0.0207)	$PTA_{ii'}$	0.108*** (0.0217)
$GSP_{jj'}^b$	0.0640*** (0.0225)	$GSP_{ii'}^b$	0.105*** (0.0247)
$ComCur_{jj'}$	-0.0299 (0.0733)	$ComCur_{ii'}$	0.132 (0.0963)
Evaluated-country $i$ FE	Y	Evaluating-country $j$ FE	Y
Observations	3,443	Observations	2,460
$R^2$	0.062	$R^2$	0.230

Note: Since correlations are symmetric in  $(j, j')$  or in  $(i, i')$ , we use only the lower-triangle of the correlation matrix (excluding the diagonal of ones). In the case of correlations across  $(j, j')$ , we drop the entries of correlations involving Greece as an evaluating country, since it has data in only two years (which leads to artificial correlations of 1 or  $-1$  with respect to the other evaluating countries). Similarly, in the case of correlations across  $(i, i')$ , we drop the matrix involving Greece as an evaluating country, since it consists of either 1 or  $-1$  for all  $(i, i')$  for the same reason. See Appendix A for the definitions of the variables. Since the time dimension is removed by the correlation calculation, the covariates used in Table A.2 are the average of the variables across time if they are time-varying. Since correlation is symmetric, the symmetric bilateral version of the covariates are used if the original variable is directional. For example,  $MID_{jj'}^b \equiv MID_{jj'} + MID_{j'j}$  and  $GSP_{jj'}^b \equiv GSP_{jj'} + GSP_{j'j}$ . The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table A.3: Regression of correlations in  $\Delta PS_{ijt}$  across evaluating countries  $jj'$  and evaluated countries  $ii'$ .

Dependent variable: $corr(\Delta PS_{ijt}, \Delta PS_{ij't})$		Dependent variable: $corr(\Delta PS_{ijt}, \Delta PS_{i'jt})$	
$MID_{jj'}^b$	-0.000332 (0.000324)	$MID_{ii'}^b$	0.00101*** (0.000271)
$alliance_{jj'}$	-0.0454 (0.0293)	$alliance_{ii'}$	0.107*** (0.0294)
$ComPol_{jj'}$	0.0596** (0.0270)	$ComPol_{ii'}$	0.000170 (0.0208)
$ComRegion_{jj'}$	0.0365 (0.0366)	$ComRegion_{ii'}$	0.0240 (0.0475)
$ComDev_{jj'}$	0.0889*** (0.0212)	$ComDev_{ii'}$	0.0520** (0.0223)
$GenDist_{jj'}$	-0.768*** (0.158)	$GenDist_{ii'}$	0.699*** (0.203)
$LogDist_{jj'}$	0.0160 (0.0220)	$LogDist_{ii'}$	-0.0340 (0.0244)
$ComLang_{jj'}$	0.0874*** (0.0279)	$ComLang_{ii'}$	-0.0342 (0.0272)
$ComLeg_{jj'}$	-0.0276 (0.0260)	$ComLeg_{ii'}$	0.0399 (0.0274)
$colony_{jj'}$	0.107** (0.0425)	$colony_{ii'}$	0.0136 (0.0380)
$Comcol_{jj'}$	-0.181*** (0.0533)	$Comcol_{ii'}$	0.0311 (0.0594)
$Border_{jj'}$	0.108** (0.0536)	$Border_{ii'}$	-0.147*** (0.0450)
$PTA_{jj'}$	0.0364 (0.0250)	$PTA_{ii'}$	0.0650*** (0.0244)
$GSP_{jj'}^b$	0.0459* (0.0275)	$GSP_{ii'}^b$	0.101*** (0.0279)
$ComCur_{jj'}$	-0.0689 (0.0869)	$ComCur_{ii'}$	0.0521 (0.108)
Evaluated-country $i$ FE	Y	Evaluating-country $j$ FE	Y
Observations	3,378	Observations	2,442
$R^2$	0.037	$R^2$	0.227

Note:  $\Delta PS_{ijt} \equiv PS_{ijt} - PS_{ij,t-1}$ , defined for  $t = 2006, \dots, 2014$  given our sample period 2005–2014 and 2017 for  $PS_{ijt}$ . Since correlations are symmetric in  $(j, j')$  or in  $(i, i')$ , we use only the lower-triangle of the correlation matrix (excluding the diagonal of ones). We drop the entries of correlations with values of 1 or -1. See Appendix A for the definitions of the variables. Since the time dimension is removed by the correlation calculation, the covariates used in Table A.3 are the average of the variables across years of 2006–2014 if they are time-varying. Since correlation is symmetric, the symmetric bilateral version of the covariates are used if the original variable is directional. For example,  $MID_{jj'}^b \equiv MID_{jj'} + MID_{j'j}$  and  $GSP_{jj'}^b \equiv GSP_{jj'} + GSP_{j'j}$ . The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table A.4: IV estimation results — PS-based IVs.

	$jj'$ -based IVs			$ii'$ -based IVs			$ii'$ and $jj'$ -based IVs		
	IV GMM (1)	1st stage (2)	IV PPML (3)	IV GMM (4)	1st stage (5)	IV PPML (6)	IV GMM (7)	1st stage (8)	IV PPML (9)
$PS_{ijt}$	1.490*** (0.532)		1.182*** (0.325)	1.250* (0.667)		1.228*** (0.389)	1.447*** (0.501)		1.204*** (0.283)
$LogDist_{ij}$	-0.819*** (0.090)	0.011 (0.012)	-0.764*** (0.062)	-0.829*** (0.092)	-0.000 (0.011)	-0.772*** (0.062)	-0.832*** (0.090)	0.009 (0.008)	-0.767*** (0.061)
$ComLang_{ij}$	0.494*** (0.159)	0.018 (0.021)	0.570*** (0.131)	0.541*** (0.165)	0.036* (0.019)	0.583*** (0.129)	0.495*** (0.155)	0.015 (0.014)	0.568*** (0.129)
$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$
$LogTariff_{ijt}^{wa}$	-0.706 (1.303)	0.089 (0.075)	1.300 (0.940)	0.081 (1.080)	-0.020 (0.076)	1.450 (0.909)	-0.040 (1.051)	0.044 (0.062)	1.427 (0.875)
$PS_{ij't}^{alliance,c}$		-0.841** (0.331)						-0.587** (0.267)	
$PS_{ij't}^{ComRegion,c}$		-2.337*** (0.393)						-2.122*** (0.313)	
$PS_{ij't}^{ComDev,c}$		-0.490*** (0.104)						-0.239*** (0.080)	
$PS_{ij't}^{ComLang,c}$		-1.668*** (0.274)						-1.267*** (0.213)	
$PS_{i'jt}^{alliance,c}$					-1.160*** (0.233)			-0.840*** (0.179)	
$PS_{i'jt}^{ComDev,c}$					-0.468*** (0.108)			-0.315*** (0.087)	
$PS_{i'jt}^{GenDist,c}$					-0.640*** (0.136)			-0.481*** (0.108)	
Exporter-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	2,360	2,360	2,366	2,357	2,357	2,363	2,357	2,357	2,363
Hansen $J$ -statistic	3.152		0.995	2.340		0.471	5.212		1.539
$\chi^2$ $p$ -value	0.369		0.803	0.310		0.790	0.517		0.957
1st stage $F$ -statistic		74.324			77.995			92.133	
$R^2$	0.352	0.846		0.350	0.832		0.351	0.893	

Note:  $PS_{ij't}^{alliance,c}$ ,  $PS_{ij't}^{ComRegion,c}$ ,  $PS_{ij't}^{ComDev,c}$ , and  $PS_{ij't}^{ComLang,c}$  are, respectively, the average of  $PS_{ij't}$  across  $j'$  in year  $t$ : where  $j'$  is not in an alliance with  $j$  in year  $t$ , is not located in the same geographical region as  $j$ , is not at the same development stage as  $j$ , and does not share a common language with  $j$ . Similarly,  $PS_{i'jt}^{alliance,c}$ ,  $PS_{i'jt}^{ComDev,c}$ , and  $PS_{i'jt}^{GenDist,c}$  are, respectively, the average of  $PS_{i'jt}$  across  $i'$  in year  $t$ : where  $i'$  is not in an alliance with  $i$  in year  $t$ , is not at the same development stage as  $i$ , and has a genetic distance from  $i$  larger than  $i$ 's median distance to all  $i'$ . The basic list of covariates is the same as in Columns 3 and 9 of Table 3. We use the Stata commands `ivreghdfe cue` and `ivpoisson igmm` for the main estimations unless otherwise noted; and `ivregress gmm` with `weakivtest` to obtain the first-stage estimation results and effective  $F$ -statistics (Montiel Olea and Pflueger, 2013). Note that `ivreghdfe` only reports the within- $R^2$  (excluding the variations explained by the fixed effects). The standard errors are clustered at the (directional) country-pair level. The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively. Some of the potential PS-based IVs are dropped from the analysis typically because the resulting IVs provide limited additional sources of variations for identification. For example, the set of the candidate countries  $j'$  may not vary substantially across  $ijt$  given the criterion/determinant. Alternatively, the candidate IV may be insignificant in the first-stage regression or fail to pass the Hansen test if included in the list of IVs.

Table A.5: Variations of  $PS_{ijt}$  explained by FEs.

$PS_{ijt}$								
$R^2$	0.876	0.547	0.699	0.942	0.766	0.724	0.943	0.780
Observations	2,451	2,483	2,486	2,451	2,483	2,366	2,332	2,364
Gravity regressors						Y	Y	Y
Exporter-Year FE			Y	Y	Y	Y	Y	Y
Importer-Year FE			Y	Y	Y	Y	Y	Y
Exporter-Importer FE	Y			Y			Y	
Pol-Pol FE		Y			Y			Y
Dev-Dev FE		Y			Y			Y
Region-Region FE		Y			Y			Y

Note: Refer to Table 4 for the definition of the block-block FEs. The list of gravity regressors is the same as in Columns 3 and 9 of Table 3.

Table A.6: IV estimation results — subset of PS-based IVs with block-block FEs.

	$jj'$ -based IVs			$ii'$ -based IVs			$ii'$ and $jj'$ -based IVs		
	IV GMM (1)	1st stage (2)	IV PPML (3)	IV GMM (4)	1st stage (5)	IV PPML (6)	IV GMM (7)	1st stage (8)	IV PPML (9)
$PS_{ijt}$	2.088*** (0.748)		1.767*** (0.682)	2.013*** (0.714)		1.699*** (0.566)	2.048*** (0.595)		1.726*** (0.476)
$LogDist_{ij}$	-0.584*** (0.147)	0.014* (0.009)	-0.490*** (0.096)	-0.582*** (0.146)	0.014* (0.008)	-0.489*** (0.096)	-0.583*** (0.146)	0.009 (0.008)	-0.490*** (0.096)
$ComLang_{ij}$	0.270 (0.172)	0.039*** (0.011)	0.267** (0.113)	0.274 (0.182)	0.036*** (0.011)	0.270** (0.122)	0.268 (0.171)	0.026** (0.010)	0.268** (0.115)
$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$
$LogTariff_{ijt}^{wa}$	-0.894 (1.045)	0.119** (0.047)	0.365 (0.529)	-0.888 (1.053)	-0.036 (0.048)	0.379 (0.559)	-0.902 (1.043)	0.015 (0.045)	0.376 (0.549)
$PS_{ij't}^{ComLang,c}$		-2.465*** (0.163)						-1.995*** (0.153)	
$PS_{i'jt}^{GenDist,c}$					-1.238*** (0.067)			-1.051*** (0.063)	
Exporter-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Pol-Pol FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Dev-Dev FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region-Region FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	2,357	2,360	2,366	2,356	2,359	2,365	2,356	2,359	2,365
Hansen $J$ -statistic							0.009		
$\chi^2$ $p$ -value							0.923		
1st stage $F$ -statistic		234.421			349.765			272.577	
$R^2$	0.120	0.810		0.123	0.816		0.121	0.835	

Note: Refer to Table 5 for the definitions of the IVs. The basic list of covariates is the same as in Columns 3 and 9 of Table 3. We use the Stata commands *ivreghdfe* and *ivpoisson igmm* for the main estimations unless otherwise noted; and *ivregress gmm* with *weakivtest* to obtain the first-stage estimation results and effective  $F$ -statistics (Montiel Olea and Pflueger, 2013). Note that *ivreghdfe* only reports the within- $R^2$  (excluding the variations explained by the fixed effects). The standard errors are clustered at the (directional) country-pair level for the second-stage estimation results. The first-stage results are based on robust errors, because the program *ivregress gmm* reported warnings and stopped running for the specification with block-block FEs and with errors clustered at the country-pair level. The *ivpoisson* in the current specification can only converge with the one-step GMM estimator, but not with the two-step or iterative GMM estimator (our default). The *ivpoisson* with the one-step GMM estimator, however, does not report the Hansen test; this explains the absence of the Hansen  $J$ -statistic and its  $\chi^2$   $p$ -value in Column 9. The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table A.7: Arellano and Bond (1991) dynamic panel estimation with  $PS_{ijt}$  and  $PS_{ij,t-1}$ .

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$PS_{ijt}$	0.891** (0.426)	0.799** (0.401)	0.790** (0.387)	0.564 (0.367)	0.955** (0.429)	0.849** (0.403)	0.831** (0.389)	0.611* (0.369)
$PS_{ij,t-1}$	0.472 (0.405)	0.401 (0.383)	0.293 (0.369)	0.516 (0.352)	0.533 (0.407)	0.459 (0.385)	0.351 (0.372)	0.572 (0.354)
$\ln x_{ij,t-1}$	0.304*** (0.035)	0.306*** (0.035)	0.306*** (0.035)	0.297*** (0.034)	0.306*** (0.035)	0.309*** (0.035)	0.309*** (0.035)	0.301*** (0.034)
$\ln x_{ij,t-2}$					-0.040 (0.029)	-0.040 (0.029)	-0.040 (0.029)	-0.046 (0.028)
$PTA_{ijt}$	0.030 (0.098)	0.027 (0.098)	0.019 (0.097)	0.012 (0.096)	0.020 (0.099)	0.017 (0.098)	0.008 (0.097)	0.000 (0.096)
$GSP_{ijt}$	-0.045 (0.138)	-0.031 (0.136)	-0.036 (0.135)	-0.017 (0.134)	-0.043 (0.138)	-0.031 (0.136)	-0.038 (0.135)	-0.019 (0.134)
$LogTariff_{ijt}^{wa}$	-1.859** (0.912)	-1.637** (0.741)	-1.623*** (0.616)	-1.260** (0.574)	-1.667* (0.924)	-1.514** (0.747)	-1.537** (0.620)	-1.186** (0.576)
Exporter-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Lags included in the IVs <sup>†</sup>	1	2	3	4	1	2	3	4
Arellano-Bond test								
Order 1: $z$ -statistic	-12.104	-12.350	-12.356	-12.556	-14.391	-14.831	-14.884	-15.338
Order 1: $p$ -value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Order 2: $z$ -statistic	-1.223	-1.200	-1.208	-1.195	-0.487	-0.421	-0.412	-0.175
Order 2: $p$ -value	0.221	0.230	0.227	0.232	0.626	0.674	0.680	0.861
Observations	1,564	1,564	1,564	1,564	1,564	1,564	1,564	1,564

Note:  $PS_{ijt}$ ,  $PS_{ij,t-1}$ , and  $LogTariff_{ijt}^{wa}$  are allowed to be endogenous. The one-step GMM estimator is used. Standard errors are based on the conventionally derived variance estimator for generalized method of moments estimation. <sup>†</sup>The IVs used for the first-difference equation are:  $\ln x_{ij,t-2}$  and higher-order lagged trade flows;  $PS_{ij,t-2-L}$  and  $LogTariff_{ij,t-1-L}^{wa}$  for  $L = 1, \dots, 4$ . Data on trade flows for 1995–2014 are used. The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table A.8: Blundell and Bond (1998) dynamic panel estimation.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta PS_{ijt}$	0.891** (0.418)	0.831** (0.379)	0.792** (0.356)	0.598* (0.332)	0.942** (0.421)	0.866** (0.380)	0.816** (0.356)	0.626* (0.333)
$PS_{ij,t-1}$	0.661 (0.485)	0.614 (0.441)	0.517 (0.413)	0.386 (0.394)	0.735 (0.489)	0.671 (0.444)	0.565 (0.415)	0.436 (0.395)
$\ln x_{ij,t-1}$	0.304*** (0.035)	0.305*** (0.035)	0.304*** (0.035)	0.295*** (0.034)	0.306*** (0.035)	0.308*** (0.035)	0.307*** (0.035)	0.298*** (0.034)
$\ln x_{ij,t-2}$					-0.035 (0.029)	-0.035 (0.029)	-0.035 (0.029)	-0.040 (0.028)
$PTA_{ijt}$	0.052 (0.098)	0.052 (0.097)	0.038 (0.096)	0.036 (0.095)	0.044 (0.099)	0.044 (0.098)	0.029 (0.097)	0.025 (0.096)
$GSP_{ijt}$	-0.025 (0.138)	-0.017 (0.136)	-0.020 (0.135)	0.004 (0.132)	-0.022 (0.138)	-0.016 (0.136)	-0.020 (0.135)	0.003 (0.132)
$LogTariff_{ijt}^{wa}$	-2.019** (0.903)	-1.927*** (0.729)	-1.860*** (0.605)	-1.547*** (0.562)	-1.864** (0.913)	-1.829** (0.734)	-1.793*** (0.608)	-1.489*** (0.563)
Exporter-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Lags included in the IVs <sup>†</sup>	1	2	3	4	1	2	3	4
Arellano-Bond test <sup>#</sup>								
Order 1: $z$ -statistic	-3.181	-3.119	-3.087	-2.961	-3.437	-3.404	-3.394	-3.276
Order 1: $p$ -value	0.002	0.002	0.002	0.003	0.001	0.001	0.001	0.001
Order 2: $z$ -statistic	-0.498	-0.484	-0.479	-0.491	-0.302	-0.277	-0.274	-0.224
Order 2: $p$ -value	0.619	0.629	0.632	0.623	0.763	0.782	0.784	0.823
Observations	1,948	1,948	1,948	1,948	1,948	1,948	1,948	1,948

Note:  $\Delta PS_{ijt}$ ,  $PS_{ij,t-1}$ , and  $LogTariff_{ijt}^{wa}$  are allowed to be endogenous. The one-step GMM estimator is used. Standard errors are based on the conventionally derived variance estimator for generalized method of moments estimation. <sup>†</sup>The IVs used for the first-difference equation are:  $\ln x_{ij,t-2}$  and higher-order lagged trade flows;  $\Delta PS_{ij,t-1-L}$ ,  $PS_{ij,t-2-L}$ , and  $LogTariff_{ij,t-1-L}^{wa}$  for  $L = 1, \dots, 4$ . <sup>#</sup>Arellano-Bond test uses the robust standard error estimator because the Arellano-Bond test cannot be computed for one-step system estimators with  $vce(gmm)$ . Data on trade flows for 1995–2014 are used. The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table A.9: Blundell and Bond (1998) dynamic panel estimation with  $PS_{ijt}$  and  $PS_{ij,t-1}$ .

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$PS_{ijt}$	0.891** (0.426)	0.799** (0.401)	0.790** (0.387)	0.564 (0.367)	0.955** (0.429)	0.849** (0.403)	0.831** (0.389)	0.611* (0.369)
$PS_{ij,t-1}$	0.472 (0.405)	0.401 (0.383)	0.293 (0.369)	0.516 (0.352)	0.533 (0.407)	0.459 (0.385)	0.351 (0.372)	0.572 (0.354)
$\ln x_{ij,t-1}$	0.304*** (0.035)	0.306*** (0.035)	0.306*** (0.035)	0.297*** (0.034)	0.306*** (0.035)	0.309*** (0.035)	0.309*** (0.035)	0.301*** (0.034)
$\ln x_{ij,t-2}$					-0.040 (0.029)	-0.040 (0.029)	-0.040 (0.029)	-0.046 (0.028)
$PTA_{ijt}$	0.030 (0.098)	0.027 (0.098)	0.019 (0.097)	0.012 (0.096)	0.020 (0.099)	0.017 (0.098)	0.008 (0.097)	0.000 (0.096)
$GSP_{ijt}$	-0.045 (0.138)	-0.031 (0.136)	-0.036 (0.135)	-0.017 (0.134)	-0.043 (0.138)	-0.031 (0.136)	-0.038 (0.135)	-0.019 (0.134)
$LogTariff_{ijt}^{wa}$	-1.859** (0.912)	-1.637** (0.741)	-1.623*** (0.616)	-1.260** (0.574)	-1.667* (0.924)	-1.514** (0.747)	-1.537** (0.620)	-1.186** (0.576)
Exporter-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Lags included in the IVs <sup>†</sup>	1	2	3	4	1	2	3	4
Arellano-Bond test <sup>#</sup>								
Order 1: $z$ -statistic	-3.125	-3.081	-3.059	-2.947	-3.331	-3.309	-3.310	-3.185
Order 1: $p$ -value	0.002	0.002	0.002	0.003	0.001	0.001	0.001	0.001
Order 2: $z$ -statistic	-0.514	-0.490	-0.484	-0.472	-0.274	-0.236	-0.227	-0.101
Order 2: $p$ -value	0.607	0.624	0.628	0.637	0.784	0.814	0.820	0.920
Observations	1,948	1,948	1,948	1,948	1,948	1,948	1,948	1,948

Note:  $PS_{ijt}$ ,  $PS_{ij,t-1}$ , and  $LogTariff_{ijt}^{wa}$  are allowed to be endogenous. The one-step GMM estimator is used. Standard errors are based on the conventionally derived variance estimator for generalized method of moments estimation. <sup>†</sup>The IVs used for the first-difference equation are:  $\ln x_{ij,t-2}$  and higher-order lagged trade flows;  $PS_{ij,t-2-L}$  and  $LogTariff_{ij,t-1-L}^{wa}$  for  $L = 1, \dots, 4$ . <sup>#</sup>Arellano-Bond test uses the robust standard error estimator because the Arellano-Bond test cannot be computed for one-step system estimators with  $vce(gmm)$ . Data on trade flows for 1995–2014 are used. The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table A.10: Correlations of country image and leadership approval

	$corr(PS_{ijt}, AP_{ijt})$	$corr(NG_{ijt}, DA_{ijt})$
CHN	0.731	0.784
DEU	0.648	0.602
GBR	0.716	0.574
RUS	0.428	0.706
USA	0.752	0.753
pool 5 countries	0.694	0.750

Notes:  $AP_{ijt}$  stands for leadership approval rating and  $DA_{ijt}$  leadership disapproval rating.

Table A.11: Cost-benefit analysis of major shifts in country image.

	(1)	(2)	(1) – (2)
	Pecuniary gain	Aid cost	Net benefit in real income
<i>Panel A1. The George W. Bush Effects (<math>PS_{US,j,2011} \rightarrow PS_{US,j,2007}</math>)</i>			
Scenario 1	-19.86	-2.90	-16.97
Scenario 2	-35.39	-2.90	-32.49
Scenario 3	-34.59	-2.90	-31.70
<i>Panel A2. The George W. Bush Effects on the US (<math>PS_{o,j,2011} \rightarrow PS_{o,j,2007}</math>, <math>o \in \{US, UK, FR, DE\}</math>)</i>			
Scenario 1	-19.70	-2.90	-16.81
Scenario 2	-35.06	-2.90	-32.17
Scenario 3	-34.23	-2.90	-31.34
<i>Panel C1. The Senkaku-Islands Dispute Effects: China (<math>PS_{CN,j,2012} \rightarrow PS_{CN,j,2013}</math>)</i>			
Scenario 1	-6.06	1.04	-7.10
Scenario 2	-13.77	1.04	-14.81
Scenario 3	-13.04	1.04	-14.09
<i>Panel C2. The Senkaku-Islands Dispute Effects: China (<math>PS_{o,j,2012} \rightarrow PS_{o,j,2013}</math>, <math>o \in \{CN, JP\}</math>)</i>			
Scenario 1	-5.87	1.04	-6.91
Scenario 2	-13.46	1.04	-14.50
Scenario 3	-12.67	1.04	-13.71

Note: The unit is constant 2011 US dollars in billions. Data on aid are obtained from “AidData,” a research lab at the William & Mary Global Research Institute. More details are provided in Appendix A.13.

## B Appendix Tables: Estimation Results with Standard Errors Clustered at the Exporter Level

In the main text, we chose to cluster the standard errors at primarily the (directed) country-pair level in the static panel regressions. In this appendix, we provide rationales for this choice, and then report the estimation results if we instead cluster the errors at the exporter level.

To motivate our choice, let us consider the following simple bivariate regression:  $Y_{g,k} = \beta_0 + \beta_1 x_{g,k} + e_{g,k}$ , where  $Y_{g,k}$  is the dependent variable for element  $k$  in cluster or group  $g$ ,  $x_{g,k}$  is the corresponding regressor, and  $e_{g,k} = v_g + \eta_{g,k}$  is the residual consisting of a group-specific component  $v_g$  and an idiosyncratic component  $\eta_{g,k}$ .<sup>36</sup> According to Angrist and Pischke (2009), the Moulton factor (by which the standard error of the slope coefficient should be scaled up if correlation within cluster is taken into account) is the square root of

$$1 + \left[ \frac{V(n_g)}{\bar{n}} + \bar{n} - 1 \right] \rho_x \rho_e, \quad (1)$$

where  $\bar{n}$  is the average group size,  $V(n_g)$  is the variance of group size,  $\rho_e \equiv V(v_g)/V(e_{g,k})$  is the intra-cluster correlation coefficient of  $e_{g,k}$ , and  $\rho_x$  is the intra-cluster correlation of  $x_{g,k}$ . The general Moulton formula states that clustering tends to have a bigger impact on standard errors when one or more of the conditions hold: (i) when  $\rho_x$  is larger, (ii) when  $\rho_e$  is larger, and (iii) when  $W \equiv V(n_g)/\bar{n} + \bar{n} - 1$  is larger. Hence, we examine each of these conditions.

Let us start with condition (i). Note that equation (1) implies the impact of clustering vanishes when  $\rho_x = 0$ . That is, if the  $x_{g,k}$ 's are uncorrelated within groups (clusters  $g$ ), the grouped error structure does not matter for the estimation of standard errors of the slope coefficient  $\beta_1$ . Thus, it is informative to evaluate the magnitude of  $\rho_x$ .

To this end, we first regress  $PS_{ijt}$  on the list of other controls in the regression and call the residual  $\widetilde{PS}_{ijt}$ . This enables us to convert our multivariate framework to a bivariate framework where trade flow and perception measure are already conditioned on all other controls. We then calculate  $\rho_x$  for  $\widetilde{PS}_{ijt}$  at a given level of clustering (grouping).<sup>37</sup> In Table B.1, we report the estimates of the intra-cluster correlation  $\rho_x$  for different scenarios, where a scenario is a combination of the controls included in the regression and the level at which the cluster is defined. As scenario (1) shows,  $\rho_x$  is estimated at zero when the group is defined at the exporter level  $i$  and our baseline controls—importer-year and exporter-year fixed effects as well as the gravity variables—are included in the regression. As scenarios (2)–(4) show, the point estimate of  $\rho_x$  is also equal to zero for clustering at each of exporter-year ( $it$ ), importer ( $j$ ), and importer-year ( $jt$ ) levels. In contrast, the intra-cluster correlation is large at the exporter-importer level  $ij$ , as indicated in scenario (5).

In fact, once we control for  $it$  FEs, the intra-cluster correlation within cluster  $i$  (or  $it$ ) of  $\widetilde{PS}_{ijt}$

<sup>36</sup>Except for  $PS_{ijt}$ ,  $\varepsilon_{ijt}$ , and subscripts  $i$ ,  $j$ , and  $t$ , the notations used in this appendix are stand-alone. For example  $e_{g,k}$  has no relation to  $e_{jt}$  defined in Section 3.

<sup>37</sup>As suggested by Angrist and Pischke (2009), we use Stata's *loneway* command.

becomes negligible, as indicated in scenarios (6) and (7). Similarly, once we control for  $jt$  FEs, the intra-cluster correlation within cluster  $j$  (or  $jt$ ) of  $\widetilde{PS}_{ijt}$  becomes negligible, as indicated in scenarios (13) and (14). Meanwhile, the intra-cluster correlation within cluster  $ij$  of  $\widetilde{PS}_{ijt}$  remains large, as indicated in scenarios (10) and (15).

We now turn to condition (ii) and conduct a similar analyses for  $\rho_e$ . We first run a regression of the benchmark equation (6), and also its variations that include only subsets of FEs controls. We then compute  $\rho_e$  using the trade residuals  $\varepsilon_{ijt}$ . As reported in Table B.2, the pattern of intra-cluster correlation for  $\rho_e$  is similar to that for  $\rho_x$ . That is, the intra-cluster correlation  $\rho_e$  is estimated at zero when errors are clustered at the exporter, exporter-year, importer, or importer-year level, given the benchmark specification. In contrast, the intra-cluster correlation of trade residuals at the exporter-importer level  $ij$  is sizable.

Let us now turn to condition (iii). It is straightforward to compute  $W$ . When the group is defined by  $i$ ,  $it$ ,  $j$ ,  $jt$ , and  $ij$ ,  $W$  is 161.0, 18.0, 108.2, 11.9, and 6.8, respectively. Basically, there are more observations per cluster, when the cluster is defined at a more aggregate level. Nevertheless, since both  $\rho_x$  and  $\rho_e$  are nearly zero at the exporter level (but substantial at the exporter-importer  $ij$  level), taken together, it is most compelling to cluster at the country-pair  $ij$  level (when the  $it$  and  $jt$  FEs are controlled for). This choice of clustering is also the standard approach in the empirical gravity literature.

In addition to allowing for clustering at the  $ij$  level in the static panel setting, we also adopt the dynamic panel estimators of Arellano and Bond (1991) and Blundell and Bond (1998) to accommodate both serial dependence in trade flows and potential omitted country-pair unobservables, as discussed in Section 4.1.8.

Nevertheless, we report below in Tables B.3–B.6 the estimation results (in parallel to Tables 4–7) when errors are instead clustered at the exporter level. These tables show that clustering at the exporter level overall does not change the significance result, although it tends to cause numerical convergence problems (and second-best algorithms need to be used in some estimations, the details of which are provided in the footnotes under the tables).

Table B.1: Intra-cluster correlation of residual variations in  $PS_{ijt}$ 

Scenario	Controls Included	Cluster Defined at	Intra-cluster Correlation	Asy. S.E.	[95% Conf. Interval]
(1)	( <i>it</i> FE, <i>jt</i> FE, gravity vars.)	<i>i</i>	0.00000	0.00241	0.00000 0.00472
(2)	( <i>it</i> FE, <i>jt</i> FE, gravity vars.)	<i>it</i>	0.00000	0.00692	0.00000 0.01357
(3)	( <i>it</i> FE, <i>jt</i> FE, gravity vars.)	<i>j</i>	0.00000	0.00308	0.00000 0.00605
(4)	( <i>it</i> FE, <i>jt</i> FE, gravity vars.)	<i>jt</i>	0.00000	0.00871	0.00000 0.01708
(5)	( <i>it</i> FE, <i>jt</i> FE, gravity vars.)	<i>ij</i>	0.74537	0.01728	0.71149 0.77924
(6)	( <i>it</i> FE, gravity vars.)	<i>i</i>	0.00000	0.00241	0.00000 0.00472
(7)	( <i>it</i> FE, gravity vars.)	<i>it</i>	0.00000	0.00692	0.00000 0.01357
(8)	( <i>it</i> FE, gravity vars.)	<i>j</i>	0.29254	0.06582	0.16352 0.42155
(9)	( <i>it</i> FE, gravity vars.)	<i>jt</i>	0.34268	0.02823	0.28735 0.39800
(10)	( <i>it</i> FE, gravity vars.)	<i>ij</i>	0.74315	0.01739	0.70906 0.77724
(11)	( <i>jt</i> FE, gravity vars.)	<i>i</i>	0.47537	0.09631	0.28660 0.66414
(12)	( <i>jt</i> FE, gravity vars.)	<i>it</i>	0.45927	0.03447	0.39172 0.52683
(13)	( <i>jt</i> FE, gravity vars.)	<i>j</i>	0.00000	0.00308	0.00000 0.00605
(14)	( <i>jt</i> FE, gravity vars.)	<i>jt</i>	0.00000	0.00871	0.00000 0.01708
(15)	( <i>jt</i> FE, gravity vars.)	<i>ij</i>	0.85494	0.01105	0.83328 0.87659

Table B.2: Intra-cluster correlation of residual variations in trade ( $\varepsilon_{ijt}$ )

Scenario	Controls Included	Cluster Defined at	Intra-cluster Correlation	Asy. S.E.	[95% Conf. Interval]
(1)	( <i>it</i> FE, <i>jt</i> FE, gravity vars., $PS_{ijt}$ )	<i>i</i>	0.00000	0.00241	0.00000 0.00473
(2)	( <i>it</i> FE, <i>jt</i> FE, gravity vars., $PS_{ijt}$ )	<i>it</i>	0.00000	0.00694	0.00000 0.01360
(3)	( <i>it</i> FE, <i>jt</i> FE, gravity vars., $PS_{ijt}$ )	<i>j</i>	0.00000	0.00309	0.00000 0.00606
(4)	( <i>it</i> FE, <i>jt</i> FE, gravity vars., $PS_{ijt}$ )	<i>jt</i>	0.00000	0.00874	0.00000 0.01712
(5)	( <i>it</i> FE, <i>jt</i> FE, gravity vars., $PS_{ijt}$ )	<i>ij</i>	0.86377	0.01049	0.84322 0.88432
(6)	( <i>it</i> FE, gravity vars., $PS_{ijt}$ )	<i>i</i>	0.00000	0.00241	0.00000 0.00473
(7)	( <i>it</i> FE, gravity vars., $PS_{ijt}$ )	<i>it</i>	0.00000	0.00694	0.00000 0.01360
(8)	( <i>it</i> FE, gravity vars., $PS_{ijt}$ )	<i>j</i>	0.07232	0.02339	0.02646 0.11817
(9)	( <i>it</i> FE, gravity vars., $PS_{ijt}$ )	<i>jt</i>	0.02002	0.01048	0.00000 0.04057
(10)	( <i>it</i> FE, gravity vars., $PS_{ijt}$ )	<i>ij</i>	0.86467	0.01043	0.84424 0.88510
(11)	( <i>jt</i> FE, gravity vars., $PS_{ijt}$ )	<i>i</i>	0.19461	0.06167	0.07375 0.31548
(12)	( <i>jt</i> FE, gravity vars., $PS_{ijt}$ )	<i>it</i>	0.16985	0.02319	0.12440 0.21530
(13)	( <i>jt</i> FE, gravity vars., $PS_{ijt}$ )	<i>j</i>	0.00000	0.00309	0.00000 0.00606
(14)	( <i>jt</i> FE, gravity vars., $PS_{ijt}$ )	<i>jt</i>	0.00000	0.00874	0.00000 0.01712
(15)	( <i>jt</i> FE, gravity vars., $PS_{ijt}$ )	<i>ij</i>	0.86860	0.01016	0.84868 0.88851

Table B.3: OLS/PPML estimation results with errors clustered at the exporter level.

	OLS (1)	OLS (2)	PPML (3)	PPML (4)
$PS_{ijt}$	1.435* (0.742)	0.931* (0.475)	1.314*** (0.446)	0.764*** (0.216)
$LogDist_{ij}$	-0.819*** (0.113)	-0.557*** (0.109)	-0.768*** (0.064)	-0.483*** (0.123)
$ComLang_{ij}$	0.534*** (0.174)	0.333** (0.117)	0.581*** (0.199)	0.320** (0.125)
⋮	⋮	⋮	⋮	⋮
$LogTariff_{ijt}^{wa}$	-0.714 (2.023)	-0.804 (1.311)	1.307 (1.277)	0.571 (0.621)
Exporter-Year FE	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y
Pol-Pol FE		Y		Y
Dev-Dev FE		Y		Y
Region-Region FE		Y		Y
Errors clustered by exporter	Y	Y	Y	Y
Observations	2,360	2,357	2,366	2,364
$R^2$	0.548	0.677		
Pseudo $R^2$			0.128	0.150

Note: See Table 4 footnotes. The basic list of covariates is the same as in Columns 3 and 9 of Table 3, but some of the estimates are omitted from the table above to conserve space. The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table B.4: IV estimation results — subset of PS-based IVs with errors clustered at the exporter level.

	$jj'$ -based IVs			$ii'$ -based IVs			$ii'$ and $jj'$ -based IVs		
	IV GMM (1)	1st stage (2)	IV PPML (3)	IV GMM (4)	1st stage (5)	IV PPML (6)	IV GMM (7)	1st stage (8)	IV PPML (9)
$PS_{ijt}$	2.408** (0.998)		1.538*** (0.331)	1.677 (1.159)		1.367** (0.632)	2.838** (1.001)		1.426*** (0.463)
$LogDist_{ij}$	-0.817*** (0.112)	-0.002 (0.006)	-0.765*** (0.062)	-0.818*** (0.112)	-0.003 (0.005)	-0.767*** (0.065)	-0.849*** (0.110)	-0.003 (0.005)	-0.766*** (0.064)
$ComLang_{ij}$	0.490** (0.168)	0.028*** (0.010)	0.573*** (0.189)	0.523*** (0.168)	0.019** (0.010)	0.580*** (0.200)	0.535** (0.187)	0.010 (0.009)	0.576*** (0.194)
$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$
$LogTariff_{ijt}^{wa}$	-0.738 (2.034)	0.079 (0.049)	1.285 (1.219)	-0.720 (2.033)	-0.105** (0.050)	1.302 (1.246)	-1.867 (2.269)	-0.042 (0.049)	1.303 (1.248)
$PS_{ijt}^{ComLang,c}$		-2.588*** (0.171)						-2.056*** (0.154)	
$PS_{ijt}^{GenDist,c}$					-1.287*** (0.071)			-1.098*** (0.066)	
Exporter-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Errors clustered by exporter	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	2,360	2,360	2,366	2,359	2,359	2,365	2,359	2,359	2,365
Hansen $J$ -statistic							1.770		
$\chi^2$ $p$ -value							0.183		
1st stage $F$ -statistic		232.433			329.766			287.755	
$R^2$	0.342	0.763		0.352	0.776		0.324	0.800	

Note: See Table 5 footnotes. The basic list of covariates is the same as in Columns 3 and 9 of Table 3. We use the Stata commands *ivreghdfe cue* and *ivpoisson igmm* for the main estimations unless otherwise noted; and *ivregress gmm* with *weakivtest* to obtain the first-stage estimation results and effective  $F$ -statistics (Montiel Olea and Pflueger, 2013). Note that *ivreghdfe* only reports the within- $R^2$  (excluding the variations explained by the fixed effects). The standard errors are clustered at the exporter level for the second-stage estimation results. The first-stage results are based on robust errors, because the program *ivregress gmm* reported warnings and stopped running for the specification with the two sets of FEs and with errors clustered at the exporter level. The *ivpoisson* in the current specification can only converge with the one-step GMM estimator, but not with the two-step or iterative GMM estimator (our default). The *ivpoisson* with the one-step GMM estimator, however, does not report the Hansen test; this explains the absence of the Hansen  $J$ -statistic and its  $\chi^2$   $p$ -value in Column 9. The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table B.5: IV estimation results — non-PS-based IVs with errors clustered at the exporter level.

	MLDI			MLDI + Diplomatic Visit I			MLDI + Diplomatic Visit II			MLDI + Diplomatic Visit III			MLDI + Diplomatic Visit IV		
	IV GMM (1)	1st stage (2)	IV PPML (3)	IV GMM (4)	1st stage (5)	IV PPML (6)	IV GMM (7)	1st stage (8)	IV PPML (9)	IV GMM (10)	1st stage (11)	IV PPML (12)	IV GMM (13)	1st stage (14)	IV PPML (15)
$PS_{ijt}$	5.276* (2.520)		2.639*** (0.742)	5.301** (1.974)		2.836*** (0.711)	4.918** (1.925)		2.697*** (0.673)	5.320* (2.491)		2.754*** (0.806)	4.853* (2.383)		2.675*** (0.787)
$LogDist_{ij}$	-0.810*** (0.135)	-0.001 (0.007)	-0.755*** (0.073)	-0.810*** (0.133)	-0.000 (0.007)	-0.754*** (0.075)	-0.806*** (0.129)	-0.000 (0.007)	-0.755*** (0.073)	-0.815*** (0.128)	-0.001 (0.007)	-0.754*** (0.075)	-0.784*** (0.119)	-0.001 (0.007)	-0.755*** (0.074)
$ComLang_{ij}$	0.362* (0.198)	0.045*** (0.011)	0.530*** (0.201)	0.361* (0.187)	0.044*** (0.011)	0.521*** (0.198)	0.373* (0.183)	0.044*** (0.011)	0.527*** (0.198)	0.365* (0.198)	0.044*** (0.011)	0.524** (0.205)	0.354* (0.188)	0.044*** (0.011)	0.528*** (0.204)
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
$LogTariff_{ijt}^{wa}$	-0.809 (2.105)	0.030 (0.052)	1.189 (1.325)	-0.827 (1.750)	0.026 (0.052)	1.177 (1.337)	-0.530 (1.565)	0.027 (0.052)	1.185 (1.324)	-0.877 (2.049)	0.028 (0.052)	1.185 (1.335)	-0.377 (1.756)	0.028 (0.052)	1.187 (1.329)
$MLDI_{ijt}$		-0.200*** (0.020)			-0.201*** (0.020)			-0.201*** (0.020)			-0.201*** (0.020)			-0.201*** (0.020)	
$LeaderVisitI_{ijt}$					0.015** (0.007)										
$LeaderVisitII_{ijt}$							0.015** (0.007)								
$LeaderVisitIII_{ijt}$										0.017* (0.009)					
$LeaderVisitIV_{ijt}$														0.019** (0.010)	
Exporter-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Errors clustered by exporter	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	2,360	2,360	2,366	2,360	2,360	2,366	2,360	2,360	2,366	2,360	2,360	2,366	2,360	2,360	2,366
Hansen $J$ -statistic				0.000			0.054			0.016			0.258		
$\chi^2$ $p$ -value				0.987			0.817			0.899			0.612		
1st stage $F$ -statistic		99.658			52.010			50.289			50.246			49.562	
$R^2$	0.194	0.737		0.192	0.738		0.222	0.738		0.190	0.738		0.225	0.738	

Note: See Table 6 footnotes. The basic list of covariates is the same as in Columns 3 and 9 of Table 3. We use the Stata commands *ivreghdfe cue* and *ivpoisson igmm* for the main estimations unless otherwise noted; and *ivregress gmm* with *weakivtest* to obtain the first-stage estimation results and effective  $F$ -statistics (Montiel Olea and Pflueger, 2013). Note that *ivreghdfe* only reports the within- $R^2$  (excluding the variations explained by the fixed effects). The standard errors are clustered at the exporter level for the second-stage estimation results. The first-stage results are based on robust errors, because the program *ivregress gmm* reported warnings and stopped running for the specification with the two sets of FEs and with errors clustered at the exporter level. The *ivpoisson* in the current specification can only converge with the one-step GMM estimator, but not with the two-step or iterative GMM estimator (our default). The *ivpoisson* with the one-step GMM estimator, however, does not report the Hansen test; this explains the absence of the Hansen  $J$ -statistic and its  $\chi^2$   $p$ -value in Columns 6, 9, 12 and 15. The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table B.6: IV estimation results with block-block FEs and with errors clustered at the exporter level.

	PS-based IVs			PS-based IVs + MLDI			PS-based IVs + MLDI + Diplomatic Visit I			PS-based IVs + MLDI + Diplomatic Visit II		
	IV GMM (1)	1st stage (2)	IV PPML (3)	IV GMM (4)	1st stage (5)	IV PPML (6)	IV GMM (7)	1st stage (8)	IV PPML (9)	IV GMM (10)	1st stage (11)	IV PPML (12)
$PS_{ijt}$	2.056** (0.876)		1.726*** (0.456)	2.041** (0.871)		1.746*** (0.523)	2.009** (0.838)		1.748*** (0.493)	2.046** (0.859)		1.734*** (0.502)
$LogDist_{ij}$	-0.579*** (0.096)	0.009 (0.008)	-0.490*** (0.120)	-0.572*** (0.093)	0.014* (0.008)	-0.490*** (0.120)	-0.572*** (0.095)	0.014* (0.008)	-0.490*** (0.120)	-0.560*** (0.091)	0.015* (0.008)	-0.489*** (0.121)
$ComLang_{ij}$	0.263** (0.098)	0.026** (0.010)	0.268** (0.114)	0.243** (0.089)	0.026** (0.010)	0.268** (0.113)	0.245** (0.095)	0.026** (0.010)	0.268** (0.112)	0.236** (0.093)	0.025** (0.010)	0.269** (0.112)
$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$
$LogTariff_{ijt}^{wa}$	-0.955 (1.309)	0.015 (0.045)	0.376 (0.641)	-0.594 (1.093)	-0.001 (0.043)	0.373 (0.652)	-0.547 (1.118)	-0.004 (0.043)	0.372 (0.648)	-0.533 (1.128)	-0.004 (0.043)	0.376 (0.646)
$PS_{ij't}^{ComLang,c}$		-1.995*** (0.153)			-1.910*** (0.151)			-1.916*** (0.150)			-1.913*** (0.150)	
$PS_{i'jt}^{GenDist,c}$		-1.051*** (0.063)			-1.017*** (0.061)			-1.018*** (0.061)			-1.017*** (0.061)	
$MLDI_{ijt}$					-0.179*** (0.026)			-0.181*** (0.026)			-0.180*** (0.026)	
$LeaderVisitI_{ijt}$								0.014*** (0.005)				
$LeaderVisitII_{ijt}$											0.011* (0.006)	
Exporter-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Pol-Pol FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Dev-Dev FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region-Region FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Errors clustered by exporter	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	2,356	2,359	2,365	2,356	2,359	2,365	2,356	2,359	2,365	2,356	2,359	2,365
Hansen $J$ -statistic	0.022			0.620			0.582			0.796		
$\chi^2$ $p$ -value	0.882			0.734			0.901			0.851		
1st stage $F$ -statistic		272.577			208.600			161.738			158.982	
$R^2$	0.121	0.835		0.120	0.840		0.121	0.841		0.119	0.840	

Note: See Table 7 footnotes. The basic list of covariates is the same as in Columns 3 and 9 of Table 3. We use the Stata commands *ivreghdfe cue* and *ivpoisson igmm* for the main estimations unless otherwise noted; and *ivregress gmm* with *weakivtest* to obtain the first-stage estimation results and effective  $F$ -statistics (Montiel Olea and Pflueger, 2013). Note that *ivreghdfe* only reports the within- $R^2$  (excluding the variations explained by the fixed effects). The standard errors are clustered at the exporter level for the second-stage estimation results. The first-stage results are based on robust errors, because the program *ivregress gmm* reported warnings and stopped running for the specification with the five sets of FEs and with errors clustered at the exporter level. The *ivpoisson* in the current specification can only converge with the one-step GMM estimator, but not with the two-step or iterative GMM estimator (our default). The *ivpoisson* with the one-step GMM estimator, however, does not report the Hansen test; this explains the absence of the Hansen  $J$ -statistic and its  $\chi^2$   $p$ -value in Columns 3, 6, 9, and 12. The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

## C Appendix Tables: Static Model Estimation Results with Exporter-Importer FEs

Table C.1: OLS/PPML estimation results with exporter-importer fixed effect.

	OLS (1)	PPML (2)
$PS_{ijt}$	0.181 (0.195)	0.122 (0.117)
$PTA_{ijt}$	0.009 (0.069)	-0.057 (0.068)
$GSP_{ijt}$	0.047 (0.082)	0.071 (0.061)
$LogTariff_{ijt}^{wa}$	-0.798 (0.683)	-0.132 (0.412)
Exporter-Year FE	Y	Y
Importer-Year FE	Y	Y
Exporter-Importer FE	Y	Y
Errors clustered by (directional) country-pair	Y	Y
Observations	2,327	2,327
$R^2$	0.955	
Pseudo $R^2$		0.180

Note: The basic list of covariates is the same as in Columns 3 and 9 of Table 3; time-invariant country-pair specific covariates are dropped, due to the inclusion of country-pair FE controls.  $ComCur_{ijt}$  is dropped due to limited variations across years within country-pairs during the sample period. The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.2: IV estimation results — PS-based IVs with exporter-importer FEs.

	$jj'$ -based IVs			$ii'$ -based IVs			$ii'$ and $jj'$ -based IVs		
	IV GMM (1)	1st stage (2)	IV PPML (3)	IV GMM (4)	1st stage (5)	IV PPML (6)	IV GMM (7)	1st stage (8)	IV PPML (9)
$PS_{ijt}$	0.017 (0.360)		-0.562 (0.352)	0.226 (0.317)		0.346 (0.254)	0.138 (0.250)		-0.060 (0.196)
$PTA_{ijt}$	0.010 (0.069)	0.010 (0.010)	-0.054 (0.072)	0.009 (0.069)	0.014 (0.010)	-0.058 (0.066)	0.009 (0.069)	0.014 (0.010)	-0.059 (0.068)
$GSP_{ijt}$	0.047 (0.083)	0.007 (0.013)	0.085 (0.065)	0.047 (0.082)	-0.003 (0.012)	0.066 (0.061)	0.051 (0.082)	0.001 (0.011)	0.081 (0.063)
$LogTariff_{ijt}^{wa}$	-0.797 (0.681)	-0.001 (0.049)	-0.087 (0.437)	-0.798 (0.685)	-0.043 (0.046)	-0.147 (0.407)	-0.749 (0.666)	-0.045 (0.045)	-0.110 (0.416)
$PS_{ij't}^{ComLang,c}$		-1.937*** (0.134)						-1.670*** (0.129)	
$PS_{i'jt}^{GenDist,c}$					-1.039*** (0.082)			-0.905*** (0.078)	
Exporter-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Exporter-Import FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	2,327	2,360	2,366	2,326	2,359	2,365	2,326	2,359	2,365
Hansen $J$ -statistic							0.241		
$\chi^2$ $p$ -value							0.624		
1st stage $F$ -statistic		217.578			167.317			182.774	
$R^2$	0.004	0.951		0.005	0.952		0.005	0.957	

Note: See Table 5 footnotes. The basic list of covariates is the same as in Columns 3 and 9 of Table 3; time-invariant country-pair specific covariates are dropped, due to the inclusion of country-pair FE controls.  $ComCur_{ijt}$  is dropped due to limited variations across years within country-pairs during the sample period. We use the Stata commands *ivreghdfe cue* and *ivpoisson igmm* for the main estimations unless otherwise noted; and *ivregress gmm* with *weakivtest* to obtain the first-stage estimation results and effective  $F$ -statistics (Montiel Olea and Pflueger, 2013). Note that *ivreghdfe* only reports the within- $R^2$  (excluding the variations explained by the fixed effects). The standard errors are clustered at the (directional) country-pair level for the second-stage estimation results. The first-stage results are based on robust errors, because the program *ivregress gmm* reported warnings and stopped running for the specification with country-pair FEs and with errors clustered at the country-pair level. The *ivpoisson* in the current specification can only converge with the one-step GMM estimator, but not with the two-step or iterative GMM estimator (our default). The *ivpoisson* with the one-step GMM estimator, however, does not report the Hansen test; this explains the absence of the Hansen  $J$ -statistic and its  $\chi^2$   $p$ -value in Column 9. The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.3: IV estimation results — non-PS-based IVs with exporter-importer FEs.

	MLDI			MLDI + Diplomatic Visit I			MLDI + Diplomatic Visit II			MLDI + Diplomatic Visit III			MLDI + Diplomatic Visit IV		
	IV GMM (1)	1st stage (2)	IV PPML (3)	IV GMM (4)	1st stage (5)	IV PPML (6)	IV GMM (7)	1st stage (8)	IV PPML (9)	IV GMM (10)	1st stage (11)	IV PPML (12)	IV GMM (13)	1st stage (14)	IV PPML (15)
$PS_{ijt}$	-2.370 (3.312)		0.868 (1.327)	-0.976 (1.566)		0.607 (0.853)	-1.524 (2.064)		0.795 (0.962)	-2.071 (2.642)		0.883 (1.101)	-2.647 (3.190)		0.947 (1.165)
$PTA_{ijt}$	0.032 (0.082)	0.009 (0.010)	-0.060 (0.064)	0.023 (0.072)	0.009 (0.010)	-0.059 (0.065)	0.027 (0.075)	0.008 (0.010)	-0.059 (0.065)	0.031 (0.079)	0.009 (0.010)	-0.060 (0.064)	0.034 (0.084)	0.009 (0.010)	-0.060 (0.064)
$GSP_{ijt}$	0.057 (0.101)	0.003 (0.014)	0.055 (0.065)	0.057 (0.089)	0.002 (0.014)	0.061 (0.063)	0.059 (0.093)	0.002 (0.014)	0.057 (0.063)	0.059 (0.098)	0.003 (0.014)	0.055 (0.064)	0.053 (0.103)	0.003 (0.014)	0.054 (0.064)
$LogTariff_{ijt}^{wa}$	-0.778 (0.651)	0.013 (0.052)	-0.182 (0.393)	-0.764 (0.660)	0.013 (0.052)	-0.161 (0.391)	-0.770 (0.656)	0.013 (0.052)	-0.176 (0.388)	-0.784 (0.653)	0.012 (0.052)	-0.183 (0.386)	-0.773 (0.648)	0.013 (0.052)	-0.187 (0.386)
$MLDI_{ijt}$		-0.159*** (0.057)			-0.157*** (0.057)			-0.157*** (0.057)			-0.159*** (0.057)			-0.159*** (0.057)	
$LeaderVisitI_{ijt}$					0.005 (0.004)										
$LeaderVisitII_{ijt}$								0.004 (0.004)							
$LeaderVisitIII_{ijt}$											0.003 (0.005)				
$LeaderVisitIV_{ijt}$														0.001 (0.005)	
Exporter-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Exporter-Import FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	2,327	2,360	2,366	2,327	2,360	2,366	2,327	2,360	2,366	2,327	2,360	2,366	2,327	2,360	2,366
Hansen $J$ -statistic				0.348			0.166			0.032			0.050		
$\chi^2$ $p$ -value				0.556			0.684			0.858			0.823		
1st stage $F$ -statistic		8.071			5.504			4.889			4.684			4.563	
$R^2$		0.944			0.945			0.945			0.944			0.944	

Note: See Table 6 footnotes. The basic list of covariates is the same as in Columns 3 and 9 of Table 3; time-invariant country-pair specific covariates are dropped, due to the inclusion of country-pair FE controls.  $ComCur_{ijt}$  is dropped due to limited variations across years within country-pairs during the sample period. We use the Stata commands *ivreghdfe* and *ivpoisson igmm* for the main estimations unless otherwise noted; and *ivregress gmm* with *weakivtest* to obtain the first-stage estimation results and effective  $F$ -statistics (Montiel Olea and Pflueger, 2013). Note that *ivreghdfe* only reports the within- $R^2$  (excluding the variations explained by the fixed effects). As a result, within- $R^2$  will tend to be low given comprehensive sets of FEs controls. In Columns 1, 4, 7, 10 and 13, the  $R^2$  in fact becomes negative, which could happen in the IV estimation framework (Wooldridge, 2012, p. 523); in any case,  $R^2$  has no statistical meaning in the context of IV estimations (Wooldridge, 2012), so we suppress reporting negative within- $R^2$ . The standard errors are clustered at the (directional) country-pair level for the second-stage estimation results. The first-stage results are based on robust errors, because the program *ivregress gmm* reported warnings and stopped running for the specification with country-pair FEs and with errors clustered at the country-pair level. The *ivpoisson* in the current specification can only converge with the one-step GMM estimator, but not with the two-step or iterative GMM estimator (our default). The *ivpoisson* with the one-step GMM estimator, however, does not report the Hansen test; this explains the absence of the Hansen  $J$ -statistic and its  $\chi^2$   $p$ -value in Columns 6, 9, 12, and 15. The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table C.4: IV estimation results with exporter-importer FEs.

	PS-based IVs			PS-based IVs + MLDI			PS-based IVs + MLDI + Diplomatic Visit I			PS-based IVs + MLDI + Diplomatic Visit II		
	IV GMM (1)	1st stage (2)	IV PPML (3)	IV GMM (4)	1st stage (5)	IV PPML (6)	IV GMM (7)	1st stage (8)	IV PPML (9)	IV GMM (10)	1st stage (11)	IV PPML (12)
$PS_{ijt}$	0.138 (0.250)		-0.060 (0.196)	0.110 (0.248)		-0.006 (0.199)	0.095 (0.245)		0.003 (0.195)	0.102 (0.248)		0.014 (0.198)
$PTA_{ijt}$	0.009 (0.069)	0.014 (0.010)	-0.059 (0.068)	0.019 (0.068)	0.014 (0.010)	-0.058 (0.068)	0.021 (0.068)	0.014 (0.010)	-0.058 (0.068)	0.019 (0.068)	0.013 (0.010)	-0.058 (0.068)
$GSP_{ijt}$	0.051 (0.082)	0.001 (0.011)	0.081 (0.063)	0.052 (0.082)	0.000 (0.011)	0.079 (0.062)	0.049 (0.082)	0.001 (0.011)	0.079 (0.062)	0.047 (0.081)	-0.001 (0.011)	0.078 (0.062)
$LogTariff_{ijt}^{wa}$	-0.749 (0.666)	-0.045 (0.045)	-0.110 (0.416)	-0.665 (0.645)	-0.040 (0.045)	-0.102 (0.417)	-0.642 (0.638)	-0.040 (0.045)	-0.103 (0.416)	-0.651 (0.642)	-0.039 (0.045)	-0.104 (0.415)
$PS_{ij't}^{ComLang,c}$		-1.670*** (0.129)			-1.673*** (0.129)			-1.676*** (0.128)			-1.675*** (0.129)	
$PS_{ij't}^{GenDist,c}$		-0.905*** (0.078)			-0.899*** (0.078)			-0.902*** (0.078)			-0.901*** (0.078)	
$MLDI_{ijt}$					-0.143*** (0.048)			-0.141*** (0.049)			-0.142*** (0.049)	
$LeaderVisitI_{ijt}$								0.007** (0.003)				
$LeaderVisitII_{ijt}$											0.005 (0.003)	
Exporter-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Importer-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Exporter-Importer FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	2,326	2,359	2,365	2,326	2,359	2,365	2,326	2,359	2,365	2,326	2,359	2,365
Hansen $J$ -statistic	0.241			1.071			1.253			1.334		
$\chi^2$ $p$ -value	0.624			0.585			0.740			0.721		
1st stage $F$ -statistic		182.774			129.319			103.267			102.743	
$R^2$	0.005	0.957		0.004	0.957		0.004	0.957		0.004	0.957	

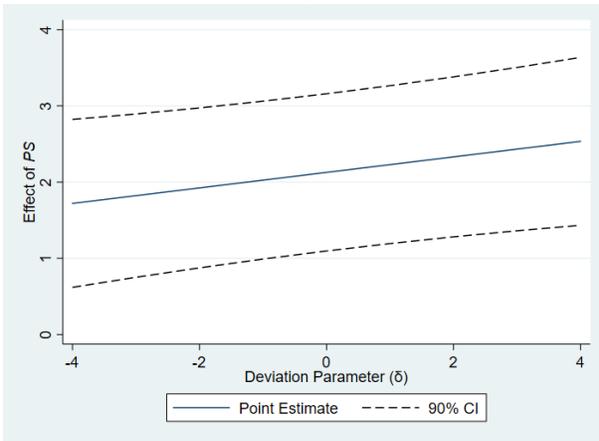
Note: See Table 7 footnotes. The basic list of covariates is the same as in Columns 3 and 9 of Table 3; time-invariant country-pair specific covariates are dropped, due to the inclusion of country-pair FE controls.  $ComCur_{ijt}$  is dropped due to limited variations across years within country-pairs during the sample period. We use the Stata commands *ivreghdfe cue* and *ivpoisson igmm* for the main estimations unless otherwise noted; and *ivregress gmm* with *weakivtest* to obtain the first-stage estimation results and effective  $F$ -statistics (Montiel Olea and Pflueger, 2013). Note that *ivreghdfe* only reports the within- $R^2$  (excluding the variations explained by the fixed effects). The standard errors are clustered at the (directional) country-pair level for the second-stage estimation results. The first-stage results are based on robust errors, because the program *ivregress gmm* reported warnings and stopped running for the specification with country-pair FEs and with errors clustered at the country-pair level. The *ivpoisson* in the current specification can only converge with the one-step GMM estimator, but not with the two-step or iterative GMM estimator (our default). The *ivpoisson* with the one-step GMM estimator, however, does not report the Hansen test; this explains the absence of the Hansen  $J$ -statistic and its  $\chi^2$   $p$ -value in Columns 3, 6, 9, and 12. The symbols \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

## D Appendix Figures: Extra Analysis à la Conley, Hansen, and Rossi (2012)

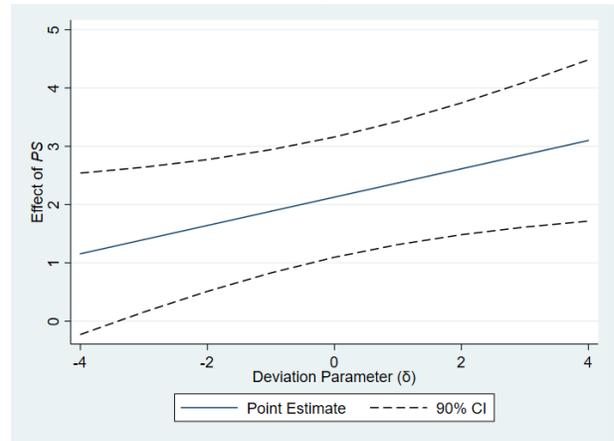
In this appendix, we report the analysis à la Conley, Hansen, and Rossi (2012) when we use the specification with four IVs as in Columns 10–11 of Table 7. In this case, although the indicators  $MLDI_{ijt}$  and  $LeaderVisitII_{ijt}$  are both bounded in the range of  $[0, 1]$  as with  $PS_{ijt}$ , it is less clear how their direct effect on trade flows, if any, will compare to the treatment effect of  $PS_{ijt}$  in magnitude. As a first cut, we simply adopt the same range of deviation for all instruments as we did in the case with only the PS-based IVs. Note that because the two PS-based IVs and  $MLDI_{ijt}$  are negatively correlated with  $PS_{ijt}$  (by the first-stage estimates), a negative  $\hbar$  weakens the effect estimate of  $PS_{ijt}$ . The reverse is true for  $LeaderVisitII_{ijt}$ . Plots (a) and (b) of Figure D.1 suggest the robustness of the treatment effect of  $PS_{ijt}$  based on the instrument  $PS_{ijt}^{ComLang,c}$  or  $PS_{ijt}^{GenDist,c}$  is further improved with the inclusion of the two non-PS-based IVs, albeit only slightly, compared with plots (a) and (b) of Figure 5. Plots (c) and (d) also indicate that the findings are robust to deviations from the exclusion restriction by the instrument  $MLDI_{ijt}$  (up to approximately  $\delta = -2.5$ ) and by  $LeaderVisitII_{ijt}$  (up to  $\delta = 4$ ). Given that there are potentially many combinations of directions in which the four IVs can deviate from the exclusion restriction, we consider two illustrative scenarios. Since the first three IVs are negatively correlated with  $PS_{ijt}$  while  $LeaderVisitII_{ijt}$  is positively correlated with  $PS_{ijt}$ , a negative  $\hbar$  for the first three IVs and a positive  $\hbar$  for  $LeaderVisitII_{ijt}$  moderate the effect estimate of  $PS_{ijt}$  downward four-fold (in a sense) compared with only one of them deviating; hence this represents a less favorable scenario to the positive finding. On the other hand, when the four IVs deviate in the same direction (e.g., a negative  $\hbar$ ), the downward adjustment due to the first three IVs is offset to some extent by the upward adjustment due to  $LeaderVisitII_{ijt}$ ; thus, this represents a more favorable scenario to the positive conclusion. Plot (e) suggests that the conclusion of positive trade effects of  $PS_{ijt}$  is robust to deviations close to  $\delta = -2$  by all four IVs simultaneously in the same direction. Plot (f) indicates that in the less favorable scenario, the positive conclusion is still robust to reasonable deviations from the exclusion restriction by the four IVs (close to  $\delta = -1.2$  by the first three IVs and  $\delta = 1.2$  by  $LeaderVisitII_{ijt}$ ) at the same time.

Figure D.1: Robustness of the  $PS_{ijt}$  effect estimates (with block-block FEs) to deviations from the exclusion restriction for IVs (Conley, Hansen, and Rossi, 2012)—with four IVs used ( $PS_{ijt}^{ComLang,c} + PS_{ijt}^{GenDist,c} + MLDI_{ijt} + LeaderVisitII_{ijt}$ ).

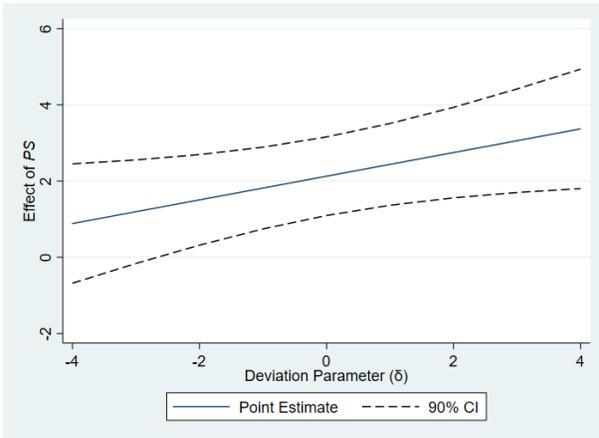
(a) deviation w.r.t.  $PS_{ijt}^{ComLang,c}$



(b) deviation w.r.t.  $PS_{ijt}^{GenDist,c}$



(c) deviation w.r.t.  $MLDI_{ijt}$



(d) deviation w.r.t.  $LeaderVisitII_{ijt}$

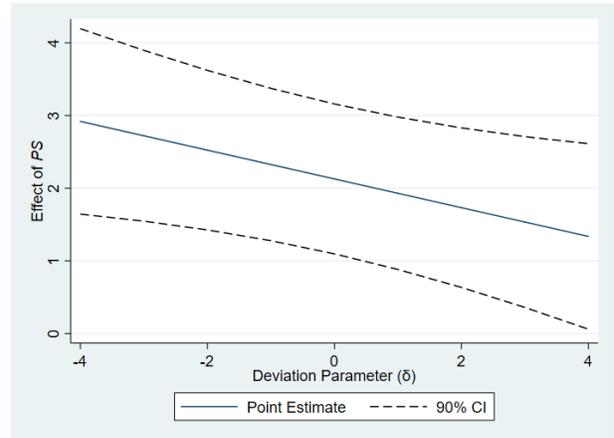
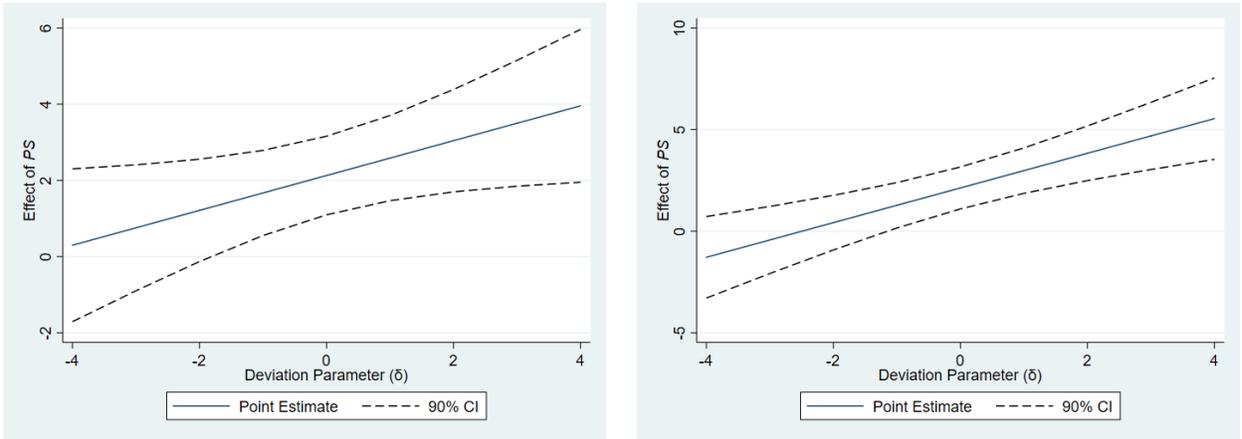


Figure D.1: (Continued from previous page)

(e) deviation w.r.t all IVs in the same direction (f) deviation w.r.t all IVs ( $LeaderVisitII_{ijt}$  in the opposite direction)



Note: Refer to Table 7, Columns 10–11, for the corresponding baseline specification and estimation results. Deviations from the assumption of exogenous IVs are parameterized by the parameter  $\delta$  on the horizontal axis. In particular, the direct effect of an instrument on trade flows is assumed to be normally distributed with mean  $\delta/2$  and variance  $\delta^2/12$ . For ease of comparison, a uniform distribution with the same mean and variance has a support of  $[\delta, 0]$  for  $\delta \leq 0$  (and a support of  $[0, \delta]$  for  $\delta \geq 0$ , alternatively). The vertical axis reports the effect estimates of  $PS_{ijt}$  on bilateral trade flows. In plot (e), the deviations from exclusion restriction for all four IVs are parameterized by  $\delta$ . In plot (f), the deviations from exclusion restriction for the first three IVs are parameterized by  $\delta$ , while those for  $LeaderVisitII_{ijt}$  are parameterized by  $-\delta$ .

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