User Guide and Explanatory Note for the ESCAP Trade Analytics Portal

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INTRODUCTION

The purpose of this explanatory note is to narrate how to use the ESCAP Trade Analytics Portal and corresponding datasets by researchers and practitioners. While this note mainly discusses the datasets, its sources of data, how to use the database properly, and how to interpret results for policy analyses, kindly refer to Shepherd (2016), "The Gravity Model of International Trade: A User Guide (An updated version)" for a detailed theoretical explanation and other technical detail and application of the gravity model of trade. ¹

ACCESSING THE PORTAL

To access the ESCAP Trade Analytics Portal, please type the following link into a modern web browser's (such as Firefox, Chrome or Safari) address bar:

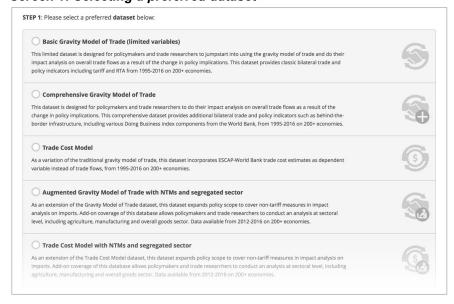
https://trade.unescap.org/analytics

OVERVIEW OF DATASETS AND THEORY

Screen 1 shows five available datasets that gravity models can be applied to answer policy questions based on policymakers' interests. The following datasets are currently available:

- 1. Basic Gravity Model of Trade (limited variables)
- 2. Comprehensive Gravity Model of Trade
- 3. Trade Cost Model
- 4. Augmented Gravity Model of Trade with NTMs and segregated sector
- 5. Trade Cost Model with NTMs and segregated sector

Screen 1: Selecting a preferred dataset



¹ Online available at https://artnet.unescap.org/publications/books-reports/gravity-model-international-trade-user-guide-updated-version

Basic gravity model of trade, comprehensive gravity model of trade, and trade cost model

Basic gravity model of trade gives an introduction what the gravity model is. In brief, gravity model is the application of Newton's theory in gravitation: bilateral trade flows are determined by the size of economic mass, measured by GDP of 2 countries; and distance between 2 countries. The model is widely used to quantify impacts mainly from trade-related policies. This database introduces a limited set of independent variables (i.e., gravity-related variables) and limited number of traditional policy variables (such as tariffs and RTA).

Comprehensive gravity model of trade provides an exhaustive list of independent variables, especially policy-related and behind-the-border trade facilitation variables for gravity models. *Table 1* classifies types of dependent and independent variables in this dataset, while *Table 2* categorizes additional types of independent variables in this dataset.

Table 1: dependent and independent variables in "Basic Gravity Model of Trade (limited variables)"

(Illinited Valiables)		
Dependent variables	Classic gravity-related independent	
	variables	
Bilateral imports	GDP of reporting countries and trading	
Bilateral exports	partners	
Bilateral trade	 Geographical distance between reporting countries and trading partners Other geographical aspects between 2 countries e.g., contiguity, landlockedness Cultural distance between 2 countries e.g., sharing common language, historically being the same country in the past, 	
	sharing colonial tie Classic policy-related independent	
	variables	
	Bilateral tariffs	
	Bilateral RTA	
	2 Diatoral IVII	

Table 2: additional independent variables in "Comprehensive Gravity Model of Trade"

Classic gravity-related independent	Other policy-related and behind-the-	
variables	border independent variables	
GDP of reporting countries and trading	• Behind-the-border trade facilitation e.g.,	
partners and other GDP-related indicators e.g. real GDP, GDP growth, per capita GDP (both real and nominal figure)	 Benind-the-border trade facilitation e.g Ease of doing business indicator / ease of trading across border / logistic performance index Quality of cross-border infrastructure e.g Liner shipping connectivity 	

Policymakers may examine their research questions from another perspective: policy questions may change from how to increase trade flows to how to reduce trade costs between countries and which policy factors or infrastructural-related issues significantly affect

trade costs. Trade costs from Arvis et al. (2013)², which is derived from the gravity equation of Anderson and van Wincoop (2004), is the measure of trade hurdles in **Trade Costs Model**. With a similar econometric setup, the difference between **Comprehensive Gravity Model of Trade** and **Trade Costs Model** is a set of dependent variables. While the Gravity Model of Trade uses trade flows (either export, import or trade) as dependent variable, the Trade Cost Model uses comprehensive trade costs (either include or exclude tariff costs) as dependent variables.

SETTING YOUR PREFERENCES

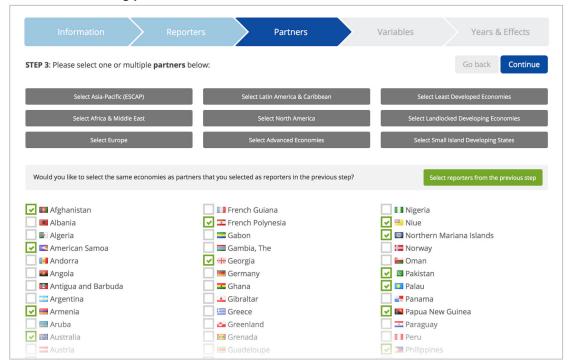
To illustrate how to use these three databases, the **Basic Gravity Model of Trade Database** is used as an illustrative example on how to use the ESCAP Trade Analytics Portal. *Screen 2* and 3 shows the list of reporting and trading partner economies, respectively, available in the dataset. A user can manually click on the box in front of an economy's name or click once on pre-defined groups of economies (e.g., Asia-Pacific (ESCAP)) in grey boxes to set their preferences. To de-select the pre-defined set of countries, click once again on grey box of corresponding pre-defined group. Once the user has finished choosing reporting economies, clicking "continue" will move the page from *Screen 2* to *Screen 3* to choose trading partners. *Screen 3* offers an additional choice if users would like to apply the same set of reporting economies as trading partners. This facilitates the study of policy effect within a group of economies a user is interested in. The database limits the selection up to 100 countries for both reporters and partners. Asia-Pacific (ESCAP) as reporting economies as well as trading partners are used in this example.

Reporters Partners Years & Effects Continue STEP 2: Please select one or multiple reporters below: Afghanistan French Guiana ■ Nigeria Albania 💶 French Polynesia Niue Algeria Gabon Northern Mariana Islands American Samoa Gambia, The **Norway** Mandorra Andorra 🔠 🚻 Georgia i Oman Germany C Pakistan Angola Marbuda and Barbuda **S**Ghana Palau Panama 🚨 Gibraltar Argentina Armenia Greece Papua New Guinea Aruba Greenland Paraguay Australia ■ Grenada ■ Peru Guadeloupe Austria Philippines Azerbaijan Guam Poland Bahamas, The Portugal

Screen 2: Selecting reporter economies

² The measure suggests that the more the trade between two countries are, the lower the trade frictions, and as a result, the lower the measure is. As trade cost measure are all inclusive i.e. it covers all factors that affect differences between domestic and international prices such as geographical, quality of connectivity, behind-the-border trade facilitation factors, decomposition of trade costs is needed to identify which factors affecting trade costs most.

Screen 3: Selecting partner economies



Screen 4 and 5 shows the list of dependent and independent variables as described in *Table* 1. The ESCAP Trade Analytics Portal allows one dependent variable and up to 30 independent variables for the model of interest. In this example, the gravity model is checking on the effect of economic size, distance, common colonizer and tariff on trade with control on reporter, partner and year fixed effects.

Equation 1: Basic setup of the gravity model

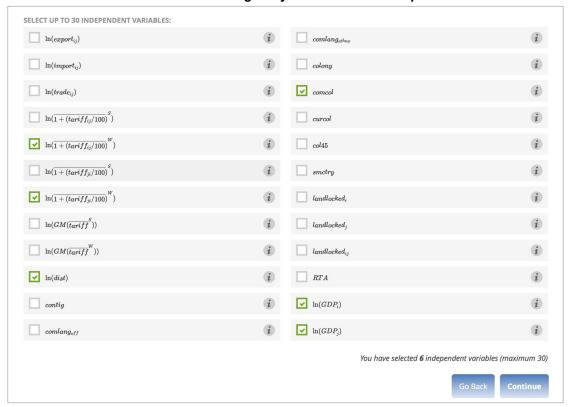
$$\log(x_{ijt}) = \beta_0 + \beta_1 \log(GDP_{it}) + \beta_2 \log(GDP_{jt}) + \beta_3 \log(dist_{ij}) + \beta_4(comcol_{ij}) + \beta_5 \log(tariff_{ijt}) + \beta_6 \log(tariff_{jit}) + \gamma_i + \gamma_j + \gamma_t + \varepsilon_{ijt}$$

Screen 5 also shows the selection of all variables in the model based on the basic setup above. Clicking the information icon behind a variable will open a modal window explaining the respective variable and listing its source. After clicking the "Continue" button and arriving on the last selection page (see Screen 6), the user has the option to choose years as well as fixed effects (reporter, partner and year) in their model. In this example, all years and all control on all types of fixed effects are chosen. Then the user can click the blue "Run regression" button to obtain the empirical results.

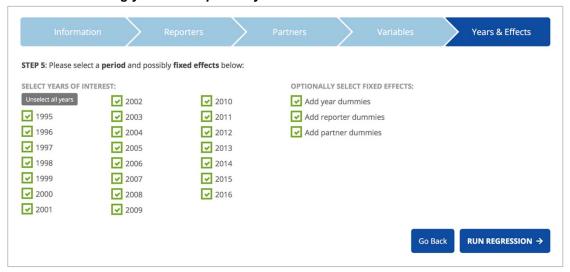
Screen 4: Selecting a dependent variable



Screen 5: Selection of all variables in gravity model's basic setup



Screen 6: Selecting years and optionally fixed effects



INTERPRETING RESULTS

Screen 7 shows the results based on the gravity model's basic setup as shown in *Equation 1*. The number that is adjacent to each bar represents the beta coefficient of the model. At a glance, the model concludes that geographical distance and weighted average tariffs have negative effects to exports. Looking into details, all coefficients are significant. Basic interpretation based on coefficients in the regression parameter table is as follows:

Distance:

1% change in distance in km leads to 2.34% reduction in exports

Common colonizer:

when two economies used to be under the same colonial power (e.g., Malaysia and India under British colonization), it leads to $(e^{\beta}-1)*100\%=(e^{1.228}-1)*100\%=(3.3381-1)*100\%=233.81\%$ increase in exports

Tariff(ji): Trade-weighted average tariff of country j charging to export of i 1% change in tariff (ji) leads to 1.52% reduction in exports

Tariff(ij): Trade-weighted average tariff of country i charging to export of j 1% change in tariff (ij) leads to 0.83% reduction in exports

Screen 7: Sample empirical results



The regression statistics table, containing R-squared, number of observation as well as degree of freedom of the model, is presented on the right side of regression parameter table. The dataset name, available reporters and trading partners that are included in the selection in the models are also displayed below regression statistics table, along with years, fixed effects, and missing countries (due to missing values).

The ESCAP Trade Analytics Portal also offers several options to save the result of the model, including: (1) exporting the results to excel (CSV), (2) copying the results table to clipboard, (3) saving the visualization (JPEG) and, (4) printing the page or saving it as PDF. Buttons for these options are positioned below the regression parameters table. Users can change the setup of the model by clicking "Modify parameters" at the top right on *Screen 7*.

TRADE POTENTIAL & TRADE SIMULATION

Two important features of the ESCAP Trade Analytics Portal are the post-estimation options on trade potential and trade simulation. Recall that trade potential determines how much the estimated trade is more or less than the actual one, which determines which trading partners an economy may have room for trade improvement/growth.

Equation 2: Trade potential

$$TP_{ij} = \frac{estimated\ trade_{ij}}{actual\ trade_{ij}}$$
 where $TP_{ij} > 1$: potential for trade expansion $TP_{ij} < 1$: exceeding trade potential

Users can generate trade potentials based on their setup by clicking "Generate trade potential" below the regression parameters table. *Screen 8* and 9 illustrate how to find trade potential of Lao PDR with all trading partners in 2015. Results in *Screen 9* show that while exports of Lao PDR to Australia, China, and India have exceeded its potentials, there is lots of room for improvement for exports to Hong Kong and Indonesia.

Users can obtain trade potentials of other economies in other years by clicking the "back to the form" or "modify conditions" buttons to go back to *Screen 8* to choose the other economies and years of interest.

Apart from trade potentials, users can also generate a trade simulation, using the same regression result, by clicking on the "Generate trade simulation" button next to "Generate trade potential" button, as displayed on *Screen 7*.

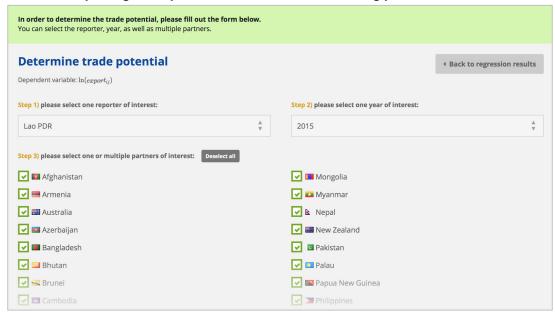
Screen 10 and 11 illustrate a trade simulation or "what if" scenario to the trade model. Suppose *tariff(ji)*, which represent tariffs of Lao PDR's trading partners, was reduced by 5%, what would happen to exports of Lao PDR in 2015?

Recall:

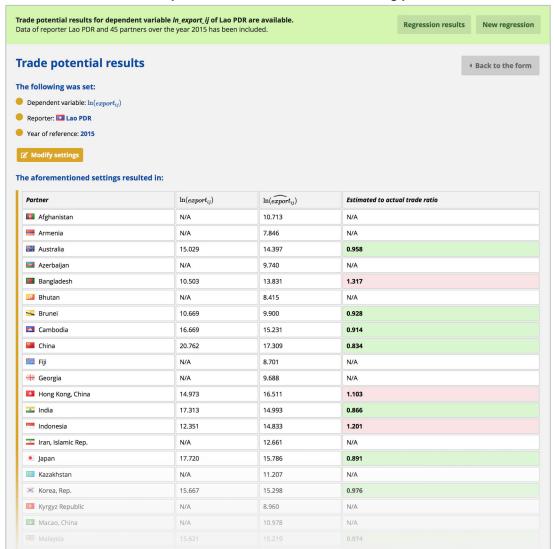
$$\log(x_2) - \log(x_1) = \log\left(\frac{x_2}{x_1}\right) \approx \left(\frac{x_2}{x_1}\right) - 1$$

From the example we can see that the reduction in weighted average tariff of Cambodia and China increases Lao PDR's exports by 0.1% and 0.2%, respectively. Again, users have three options to save the results: (1) exporting the results to excel (CSV), (2) copying the results table to clipboard, and (3) printing page or saving the page as PDF. Users can obtain simulation of other economies and/or in other years by clicking "back to the form" or "modify conditions" to go back to *Screen 10* to choose the other economies and years of their interest

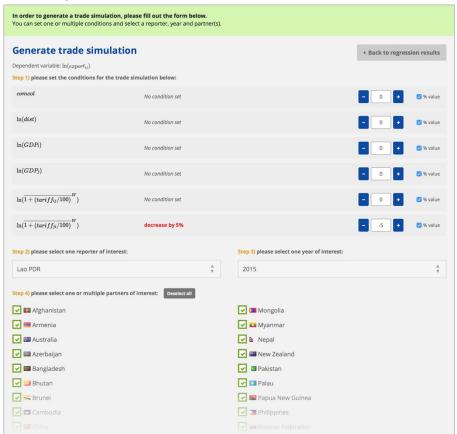
Screen 8: Exploring trade potential of Lao PDR with trading partners in 2015



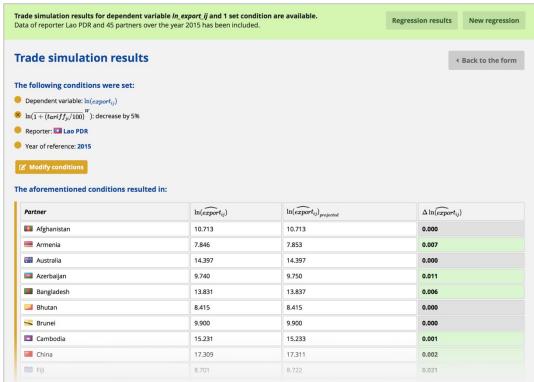
Screen 9: Results of trade potential of Lao PDR and its trading partners in 2015



Screen 10: Trade simulation: what if tariff of Lao PDR's trading partners' tariff were reduced by 5%



Screen 11: Trade Simulation results when trading partners of Lao PDR reduced tariffs by 5% in 2015



Augmented Gravity Model of Trade with NTMs and segregated sector and Trade Cost Model with NTMs and segregated sector

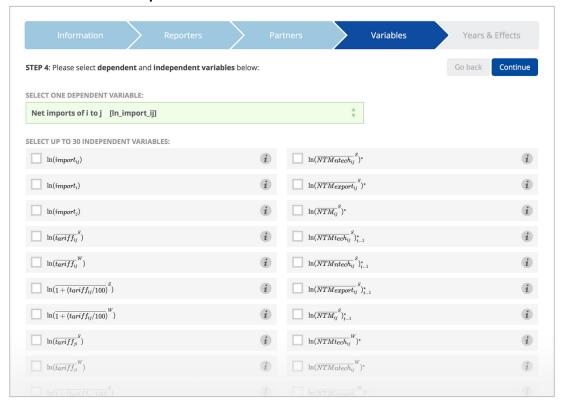
The ESCAP Trade Analytics Portal provides additional datasets with regard to NTMs: Augmented Gravity Model of Trade with NTMs and segregated sector and Trade Cost Model with NTMs and segregated sector. As described in previous section, both models provide the same set of independent variables; however, imports and trade costs are provided in augmented gravity model and trade costs model, respectively. Note that data on NTMs are based on 6-digit HS2012 i.e., corresponding trade data associated with NTMs are available from 2012 onward. Therefore, scope of studies regarding to NTMs is currently limited to only 2012-2016. *Table 3* shows variables available in the model with NTMs.

Table 3: dependent and independent variables in models with NTMs (4) and (5)

Dependent variable: imports/trade costs		
Classic gravity-related independent	NTM-related variables	
variables		
GDP of reporting countries and trading	Average non-tariff measures imposed	
partners (with lagged term)	Other NTM measures such as coverage	
Geographical distance between reporting	ratio, frequency index, prevalence score	
countries and trading partners	and regulatory distance	
Other geographical aspects between 2	Factor endowment: land, capital, and labor	
countries e.g., contiguity, landlockedness		
Cultural distance between 2 countries		
e.g., sharing common language,		
historically being the same country in the		
past, sharing colonial tie		
Classic policy-related independent	Other policy-related and behind-the-	
variables	border independent variables	
Bilateral tariffs (with lagged term)	Behind-the-border trade facilitation e.g.,	
Bilateral RTA (with lagged term)	Ease of doing business indicator / ease of	
	trading across border / logistics	
	performance index	
Quality of cross-border infrastructure e.		
	Liner shipping connectivity	

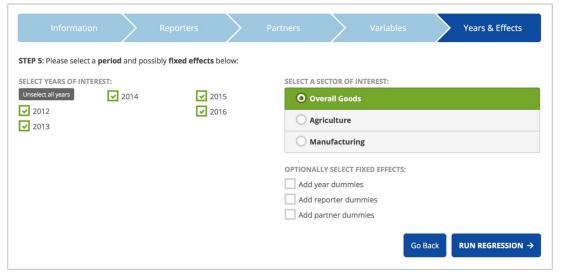
To choose the dataset, again, go back to the homepage of the ESCAP Trade Analytics Portal and on the homepage select either database (4) for augmented gravity model or database (5) for trade costs model with NTMs. Follow *Screen 2* to 3 to select reporting countries, and partner countries of interests. *Screen 12* shows the list of dependent and independent variables, including NTMs.

Screen 12: List of independent variables in models with NTMs



The additional feature in the model with NTMs is the 'sector' option, enabling sectoral specification in the model. However, only one sector can be chosen at a time (i.e., overall goods, agriculture or manufacturing). Once the user has chosen their variables for their model specification, clicking the blue "Continue" button at the bottom will lead to the step where year, sector and fixed effects can be set, as displayed in *Screen 13*. Finally, clicking the "Run regression" button will calculate results. The instructions in *Screen 7* to *11* for result interpretation, post-estimation on trade potentials and trade simulation are then applicable.

Screen 13: Selecting years, sector and fixed effects in models with NTMs



APPENDIX 1: VARIABLES AND METADATA

The following contains data available in the respective datasets, along with their description and data sources. Please note that all variables with tag "In_" have taken natural log function on their original values.

Dataset 1 - 3

Variable name	Description	Source	Coverage
	No.	WITS:	1005 0010
In_export_ij	Net exports of i to j	COMTRADE WITS:	1995-2016
In_import_ij	Net imports of i to j	COMTRADE WITS:	1995-2016
In_trade_ij	Net export and import (X+M) of i to j	COMTRADE WITS:	1995-2016
In_export_i	Net exports of i to world	COMTRADE WITS:	1995-2016
In_import_i	Net imports of i to world	COMTRADE WITS:	1995-2016
In_trade_i	Net export and import (X+M) of i to world	COMTRADE WITS:	1995-2016
In_export_j	Net exports of j to world	COMTRADE WITS:	1995-2016
In_import_j	Net imports of j to world	COMTRADE WITS:	1995-2016
In_trade_j	Net export and import (X+M) of j to world	COMTRADE ESCAP-WB	1995-2016
	Bi-directional trade costs of i and j (ad-valorem equivalent:	Trade Costs	
In_ctcij	%)	Dataset	1995-2016
	District the selection of the district terms of the selection of the selec	ESCAP-WB	
In_ntcij	Bi-directional trade costs of i and j, excl tariff (ad-valorem equivalent:%)	Trade Costs Dataset	1995-2016
In_tariffrateij_sa	Simple average tariff in % of i charging j	WITS: TRAINS	1995-2016
In_tariffrateij_sa	Weighted average tariff in % of i charging j	WITS: TRAINS	1995-2016
In_tariff_ij_sa	Simple average tariff (1+(%/100)) of i charging partner j	WITS: TRAINS	1995-2016
In_tariff_ij_sa In_tariff_ij_wa	Weighted average tariff (1+(%/100)) of i charging partner j	WITS: TRAINS	1995-2016
In_tariffrateji_sa	Simple average tariff in % of j charging i	WITS: TRAINS	1995-2016
In tariffrateji wa	Weighted average tariff in % of j charging i	WITS: TRAINS	1995-2016
In_tariff_ji_sa	Simple average tariff (1+(%/100)) of j charging partner i	WITS: TRAINS	1995-2016
In_tariff_ji_wa	Weighted average tariff (1+(%/100)) of j charging partner i	WITS: TRAINS Author's	1995-2016
ln ga tariff ijji sa	Geometric average of tariff_ij_sa and tariff_ji_sa	calculation based on WITS: TRAINS	1995-2016
	5 -2- 3-	Author's calculation based	
In ga tariff ijji wa	Geometric average of tariff_ij_wa and tariff_ji_wa	on WITS: TRAINS	1995-2016
In_dist	simple distance (most populated cities, km)	CEPII	Time invariant variable
contig	1 for contiguity	CEPII	Time invariant variable
comlang_off	1 for common official of primary language 1 if a language is spoken by at least 9% of the population in	CEPII	Time invariant variable
comlang ethno	both countries	CEPII	Time invariant variable
colony	1 for pairs ever in colonial relationship	CEPII	Time invariant variable
comcol	1 for common colonizer post 1945	CEPII	Time invariant variable
curcol	1 for pairs currently in colonial relationship	CEPII	Time invariant variable
col45	1 for pairs in colonial relationship post 1945	CEPII	Time invariant variable
smctry	1 if countries were or are the same country	CEPII	Time invariant variable
landlocked_i	1 if i is landlocked	CEPII	Time invariant variable
landlocked_j	1 if j is landlocked	CEPII	Time invariant variable
		Author's	
landlooked ii	1 if i ar i is landlaskad	calculation based on CEPII	Time invariant variable
landlocked_ij	1 if i or j is landlocked		Time invariant variable 1995-2015
rta ln_gdp_i	1 if regional trade agreement in force GDP (current USD) of i	De Sousa (2012) WB: WDI	1995-2016
"'_9up_i	ODI (GUITGITE GOD) OF I	VVD. VVDI	1000-2010

In_gdpgrowth_i	GDP growth (annual %: 1+ (percent/100)) of i	WB: WDI	1995-2016
ln_gdppc_i	GDP per capita (current USD) of i	WB: WDI	1995-2016
In_gdppcgrowth_i	GDP per capita growth (annual %: 1+ (percent/100)) of i	WB: WDI	1995-2016
ln_rgdp_i	GDP (constant 2010 USD) of i	WB: WDI	1995-2016
ln_rgdppc_i	GDP per capita (constant 2010 USD) of i	WB: WDI	1995-2016
ln_gdp_j	GDP (current USD) of j	WB: WDI	1995-2016
In_gdpgrowth_j	GDP growth (annual %: 1+ (percent/100)) of j	WB: WDI	1995-2016
ln_gdppc_j	GDP per capita (current USD) of j	WB: WDI	1995-2016
In gdppcgrowth j	GDP per capita growth (annual %: 1+ (percent/100)) of j	WB: WDI	1995-2016
ln_rgdp_j	GDP (constant 2010 USD) of j	WB: WDI	1995-2016
In_rgdppc_j	GDP per capita (constant 2010 USD) of j	WB: WDI	1995-2016
_ 0	Overall ease of doing business score (0-100: 0 = worst, 100		
ln_dtf_i	= best) of i	Doing Business	2004-2016
	Trading across border score (0-100: 0 = worst, 100 = best)		
ln_tab_i	of i	Doing Business	2004-2016
ln_startbiz_i	Starting business score (0-100: 0 = worst, 100 = best) of i	Doing Business	2004-2016
In_credit_i	Getting credit score (0-100: 0 = worst, 100 = best) of i	Doing Business	2004-2016
In_invest_i	Protecting investors score (0-100: 0 = worst, 100 = best) of i	Doing Business	2004-2016
ln_tax_i	Paying tax score (0-100: 0 = worst, 100 = best) of i	Doing Business	2004-2016
In_contract_i	Enforcing contract score (0-100: 0 = worst, 100 = best) of i	Doing Business	2004-2016
	Overall ease of doing business score (0-100: 0 = worst, 100		
ln_dtf_j	= best) of j	Doing Business	2004-2016
	Trading across border score (0-100: 0 = worst, 100 = best)		
ln_tab_j	of j	Doing Business	2004-2016
ln_startbiz_j	Starting business score (0-100: 0 = worst, 100 = best) of j	Doing Business	2004-2016
In_credit_j	Getting credit score (0-100: 0 = worst, 100 = best) of j	Doing Business	2004-2016
In_invest_j	Protecting investors score (0-100: 0 = worst, 100 = best) of j	Doing Business	2004-2016
ln_tax_j	Paying tax score (0-100: 0 = worst, 100 = best) of j	Doing Business	2004-2016
In_contract_j	Enforcing contract score (0-100: 0 = worst, 100 = best) of j	Doing Business	2004-2016
ln_lsci_i	Liner shipping connectivity index of i	UNCTAD	2004-2016
ln_lsci_j	Liner shipping connectivity index of j	UNCTAD	2004-2016
			2010, 2012, 2014,
ln_lpi_i	Logistics performance index of i	World Bank	2016
		W 115 1	2010, 2012, 2014,
ln_lpi_j	Logistics performance index of j	World Bank	2016

Dataset 4 - 5

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Variable name	Description	Source	Coverage
In_import_ij	Net imports of i to j	WITS: COMTRADE	2012-2016
In_import_i	Net imports of i to world	WITS: COMTRADE	2012-2016
In_import_j	Net imports of j to world	WITS: COMTRADE	2012-2016
		ESCAP-WB Trade	
In_ctcij	Trade costs: Ad-valorem equivalent (%)	Costs Dataset	2012-2016
		ESCAP-WB Trade	
In_ntcij	Trade costs, excluding tariff: Ad-valorem equivalent (%)	Costs Dataset	2012-2016
ln_tariffrateij_sa	Simple average tariff in % of i charging j	WITS: TRAINS	2012-2016
ln_tariffrateij_wa	Weighted average tariff in % of i charging j	WITS: TRAINS	2012-2016
ln_tariff_ij_sa	Simple average tariff (1+(%/100))of i charging partner j	WITS: TRAINS	2012-2016
ln_tariff_ij_wa	Weighted average tariff (1+(%/100))of i charging partner j	WITS: TRAINS	2012-2016
ln_tariffrateji_sa	Simple average tariff in % of j charging i	WITS: TRAINS	2012-2016
In_tariffrateji_wa	Weighted average tariff in % of j charging i	WITS: TRAINS	2012-2016
ln_tariff_ji_sa	Simple average tariff (1+(%/100))of j charging partner i	WITS: TRAINS	2012-2016
ln_tariff_ji_wa	Weighted average tariff (1+(%/100))of j charging partner i	WITS: TRAINS	2012-2016
		Author's calculation	
		based on WITS:	
ln_ga_tariff_ijji_sa	Geometric average of tariff_ij_sa and tariff_ji_sa	TRAINS	2012-2016
		Author's calculation	
		based on WITS:	
ln_ga_tariff_ijji_wa	Geometric average of tariff_ij_wa and tariff_ji_wa	TRAINS	2012-2016
			Time invariant
In_dist	simple distance (most populated cities, km)	CEPII	variable
			Time invariant
contig	1 for contiguity	CEPII	variable

			Time invariant
comlang_off	1 for common official of primary language 1 if a language is spoken by at least 9% of the population	CEPII	variable Time invariant
comlang_ethno	in both countries	CEPII	variable Time invariant
colony	1 for pairs ever in colonial relationship	CEPII	variable
comcol	1 for common colonizer post 1945	CEPII	Time invariant variable
curcol	1 for pairs currently in colonial relationship	CEPII	Time invariant variable
col45	1 for pairs in colonial relationship post 1945	CEPII	Time invariant variable
smctry	1 if countries were or are the same country	CEPII	Time invariant variable
landlocked_i	1 if i is landlocked	CEPII	Time invariant variable
landlocked_j	1 if j is landlocked	CEPII	Time invariant variable
		Author's calculation	Time invariant
landlocked_ij	1 if i or j is landlocked	based on CEPII	variable
rta	1 if regional trade agreement in force	De Sousa (2012) Author's calculation	2012-2016
:: dif		based on I-TIP:	2042 2046
cr_ij_modif	Coverage ratio of importer i from partner j	TRAINS Author's calculation based on I-TIP:	2012-2016
secdum_ij_modif	6-digit sector count of importer i and partner j	TRAINS	2012-2016
300ddin_ij_modii	o digit sestor count of importer rand partitle j	Author's calculation	2012 2010
		based on I-TIP:	
fi_ij_modif	Frequency index of importer i from partner j	TRAINS	2012-2016
<u>,_</u> ea	Troquency made of importer Firem partier ;	Author's calculation	2012 2010
		based on I-TIP:	
ps_ij_modif	Prevalence score of importer i from partner j	TRAINS	2012-2016
P-0_1	,	Author's calculation	
		based on I-TIP:	
rd_A_ij	Regulatory distance of i and j, measured by NTM type A	TRAINS	2012-2016
	, , , , , , , , , , , , , , , , , , ,	Author's calculation	
		based on I-TIP:	
rd_B_ij	Regulatory distance of i and j, measured by NTM type B	TRAINS	2012-2016
		Author's calculation	
		based on I-TIP:	
rd_C_ij	Regulatory distance of i and j, measured by NTM type C	TRAINS	2012-2016
		Author's calculation	
		based on I-TIP:	
rd_D_ij	Regulatory distance of i and j, measured by NTM type D	TRAINS	2012-2016
		Author's calculation	
		based on I-TIP:	
rd_E_ij	Regulatory distance of i and j, measured by NTM type E	TRAINS	2012-2016
		Author's calculation	
		based on I-TIP:	0010 0010
rd_F_ij	Regulatory distance of i and j, measured by NTM type F	TRAINS	2012-2016
		Author's calculation	
-d C ::	Deculatory distance of i and i massured by NTM type C	based on I-TIP:	2012 2016
rd_G_ij	Regulatory distance of i and j, measured by NTM type G	TRAINS Author's calculation	2012-2016
		based on I-TIP:	
rd_H_ij	Regulatory distance of i and j, measured by NTM type H	TRAINS	2012-2016
· ~_· ·_·y		Author's calculation	2012 2010
		based on I-TIP:	
rd_l_ij	Regulatory distance of i and j, measured by NTM type I	TRAINS	2012-2016
;	5 y <u>p</u>	Author's calculation	
		based on I-TIP:	
rd_J_ij	Regulatory distance of i and j, measured by NTM type J	TRAINS	2012-2016
 -		Author's calculation	
rd_L_ij	Regulatory distance of i and j, measured by NTM type L	based on I-TIP:	2012-2016

		TRAINS	
		Author's calculation	
		based on I-TIP:	
rd_M_ij	Regulatory distance of i and j, measured by NTM type M	TRAINS	2012-2016
,		Author's calculation	
		based on I-TIP:	
rd_O_ij	Regulatory distance of i and j, measured by NTM type O	TRAINS	2012-2016
		Author's calculation	
	Decision distance of early access with NTM to a D	based on I-TIP:	0040 0040
rd_P_ij	Regulatory distance of i and j, measured by NTM type P	TRAINS Author's calculation	2012-2016
	Regulatory distance of i and j, measured by NTM type	based on I-TIP:	
rd_Tech_ij	Tech	TRAINS	2012-2016
.as,		Author's calculation	_00.0
	Regulatory distance of i and j, measured by NTM type	based on I-TIP:	
rd_NTech_ij	NTech	TRAINS	2012-2016
		Author's calculation	
	Regulatory distance of i and j, measured by NTM type	based on I-TIP:	
rd_Export_ij	Export	TRAINS	2012-2016
		Author's calculation	
ud total ::	Descriptions distance of i and i management by NTM type total	based on I-TIP:	2012 2016
rd_total_ij	Regulatory distance of i and j, measured by NTM type total	TRAINS Author's calculation	2012-2016
	Simple average technical NTMs measures of importer i	based on I-TIP:	
ln_sa_ntm_tech_ij	imposing to partner j (full set)	TRAINS	2012-2016
,	pooning to paramet J (term 200)	Author's calculation	
	Simple average non-technical NTMs measures of importer	based on I-TIP:	
In_sa_ntm_ntech_ij	i imposing to partner j (full set)	TRAINS	2012-2016
		Author's calculation	
	Simple average NTMs measures of importer i imposing to	based on I-TIP:	
In_sa_ntm_export_ij	partner j (full set)	TRAINS	2012-2016
	Circula access NTMs are access of improved a improved as	Author's calculation	
In_sa_ntm_ij	Simple average NTMs measures of importer i imposing to partner j (full set)	based on I-TIP: TRAINS	2012-2016
III_Sa_IIIIII_IJ	partilei j (iuli set)	Author's calculation	2012-2010
	Simple average technical NTMs measures of importer i	based on I-TIP:	
In sa ntm tech ij modif	imposing to partner j (avg if there is trade data)	TRAINS	2012-2016
	, , , , ,	Author's calculation	
	Simple average non-technical NTMs measures of importer	based on I-TIP:	
In_sa_ntm_ntech_ij_modif	i imposing to partner j (avg if there is trade data)	TRAINS	2012-2016
		Author's calculation	
la a atau a atau ii aa dif	Simple average NTMs measures of importer i imposing to	based on I-TIP:	2042 2046
In_sa_ntm_export_ij_modif	partner j (avg if there is trade data)	TRAINS Author's calculation	2012-2016
	Simple average NTMs measures of importer i imposing to	based on I-TIP:	
In sa ntm ij modif	partner j (avg if there is trade data)	TRAINS	2012-2016
	, , , , , , , , , , , , , , , , , , , ,	Author's calculation	
	Weighted average technical NTMs measures of importer i	based on I-TIP:	
In_wa_ntm_tech_ij_modif	imposing to partner j (avg if there is trade data)	TRAINS	2012-2016
		Author's calculation	
	Weighted average NTMs measures of importer i imposing	based on I-TIP:	
In_wa_ntm_ntech_ij_modif	to partner j (avg if there is trade data)	TRAINS	2012-2016
	Weighted average NTMs measures of importer i imposing	Author's calculation based on I-TIP:	
In wa ntm export ij modif	to partner j (avg if there is trade data)	TRAINS	2012-2016
III_wa_IIIIII_export_ij_IIIodii	to partitor j (avg ir there is trade data)	Author's calculation	2012-2010
	Weighted average NTMs measures of importer i imposing	based on I-TIP:	
In_wa_ntm_ij_modif	to partner j (avg if there is trade data)	TRAINS	2012-2016
In_gdp_i	GDP (current US\$) of i	WB: WDI	2012-2016
ln_gdppc_i	GDP per capita (current US\$) of i	WB: WDI	2012-2016
In_agriland_i	Agricultural land of i in sq.km.	WB: WDI	2012-2016
In_capital_i	Gross capital formation of i in current USD	WB: WDI	2012-2016
In_labor_i	Labor force of i	WB: WDI	2012-2016
ln_gdp_j	GDP (current US\$) of j	WB: WDI	2012-2016
ln_gdppc_j	GDP per capita (current US\$) of j	WB: WDI	2012-2016

ln_agriland_j	Agricultural land of j in sq.km.	WB: WDI	2012-2016
ln_capital_j	Gross capital formation of j in current USD	WB: WDI	2012-2016
ln_labor_j	Labor force of j	WB: WDI	2012-2016
In_lsci_i	Liner shipping connectivity index of i	UNCTAD	2012-2016
In_lsci_j	Liner shipping connectivity index of j	UNCTAD	2012-2016
	Overall ease of doing business score (0-100: 0 = worst,		
ln_dtf_i	100 = best) of i	Doing Business	2012-2016
	Trading across border score (0-100: 0 = worst, 100 = best)		
ln_tab_i	of i	Doing Business	2012-2016
In_startbiz_i	Starting business score (0-100: 0 = worst, 100 = best) of i	Doing Business	2012-2016
In_credit_i	Getting credit score (0-100: 0 = worst, 100 = best) of i	Doing Business	2012-2016
	Protecting investors score (0-100: 0 = worst, 100 = best) of		
In_invest_i	i	Doing Business	2012-2016
In_tax_i	Paying tax score (0-100: 0 = worst, 100 = best) of i	Doing Business	2012-2016
In_contract_i	Enforcing contract score (0-100: 0 = worst, 100 = best) of i	Doing Business	2012-2016
	Overall ease of doing business score (0-100: 0 = worst,		
ln_dtf_j	100 = best) of j	Doing Business	2012-2016
	Trading across border score (0-100: 0 = worst, 100 = best)		
ln_tab_j	of j	Doing Business	2012-2016
In_startbiz_j	Starting business score (0-100: 0 = worst, 100 = best) of j	Doing Business	2012-2016
In_credit_j	Getting credit score (0-100: 0 = worst, 100 = best) of j	Doing Business	2012-2016
	Protecting investors score (0-100: 0 = worst, 100 = best) of		
In_invest_j	j	Doing Business	2012-2016
ln_tax_j	Paying tax score (0-100: 0 = worst, 100 = best) of j	Doing Business	2012-2016
In_contract_j	Enforcing contract score (0-100: 0 = worst, 100 = best) of j	Doing Business	2012-2016
			2010, 2012, 2014,
ln_lpi_i	Logistics performance index of i	World Bank	2016
			2010, 2012, 2014,
ln_lpi_j	Logistics performance index of j	World Bank	2016

Notes:

- All data from Doing Business is available from 2004 onward (DB2005). Nature of the data is 1-year lag i.e. data is mostly collected in the previous year.
- 2) LSCI data is available from 2004 onward. Original data of LSCI is available for non-landlocked countries only. To take landlocked countries into account, average of non-landlocked countries that are adjacent to those landlocked countries are used as proxy of quality of port connectivity.
- 3) See country coverage of the dataset in Appendix.

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