

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

STEP 1: Please select a preferred dataset below:

<input type="radio"/> Basic Gravity Model of Trade (limited variables) This limited dataset is designed for policymakers and trade researchers to jumpstart into using the gravity model of trade and do their impact analysis on overall trade flows as a result of the change in policy implications. This dataset provides classic bilateral trade and policy indicators including tariff and RTA from 1995-2016 on 200+ economies.	
<input type="radio"/> Comprehensive Gravity Model of Trade This dataset is designed for policymakers and trade researchers to do their impact analysis on overall trade flows as a result of the change in policy implications. This comprehensive dataset provides additional bilateral trade and policy indicators such as behind-the-border infrastructure, including various Doing Business index components from the World Bank, from 1995-2016 on 200+ economies.	
<input type="radio"/> Trade Cost Model As a variation of the traditional gravity model of trade, this dataset incorporates ESCAP-World Bank trade cost estimates as dependent variable instead of trade flows, from 1995-2016 on 200+ economies.	
<input type="radio"/> Augmented Gravity Model of Trade with NTMs and segregated sector As an extension of the Gravity Model of Trade dataset, this dataset expands policy scope to cover non-tariff measures in impact analysis on imports. Add-on coverage of this database allows policymakers and trade researchers to conduct an analysis at sectoral level, including agriculture, manufacturing and overall goods sector. Data available from 2012-2016 on 200+ economies.	
<input type="radio"/> Trade Cost Model with NTMs and segregated sector As an extension of the Trade Cost Model dataset, this dataset expands policy scope to cover non-tariff measures in impact analysis on imports. Add-on coverage of this database allows policymakers and trade researchers to conduct an analysis at sectoral level, including agriculture, manufacturing and overall goods sector. Data available from 2012-2016 on 200+ economies.	

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)”

Dependent variables	Classic gravity-related independent variables
<ul style="list-style-type: none"> • Bilateral imports • Bilateral exports • Bilateral trade 	<ul style="list-style-type: none"> • GDP of reporting countries and trading partners • 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
	<ul style="list-style-type: none"> • Bilateral tariffs • Bilateral RTA

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

Classic gravity-related independent variables	Other policy-related and behind-the-border independent variables
<ul style="list-style-type: none"> • GDP of reporting countries and trading partners and other GDP-related indicators e.g. real GDP, GDP growth, per capita GDP (both real and nominal figure) 	<ul style="list-style-type: none"> • Behind-the-border trade facilitation e.g., Ease of doing business indicator / ease of trading across border / logistics 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.

Screen 2: Selecting reporter economies

The screenshot displays the 'Reporters' selection interface. At the top, a navigation bar includes 'Information', 'Reporters' (highlighted), 'Partners', 'Variables', and 'Years & Effects'. Below this, a 'STEP 2: Please select one or multiple reporters below:' instruction is shown with 'Go back' and 'Continue' buttons. The main area contains a grid of selection options:

- Regional Groups:
 - Select Asia-Pacific (ESCAP)
 - Select Latin America & Caribbean
 - Select Least Developed Economies
 - Select Africa & Middle East
 - Select North America
 - Select Landlocked Developing Economies
 - Select Europe
 - Select Advanced Economies
 - Select Small Island Developing States
- Individual Countries (each with a checkbox and flag):
 - Afghanistan, Albania, Algeria, American Samoa, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, Bahamas, The, Bahrain, French Guiana, French Polynesia, Gabon, Gambia, The, Georgia, Germany, Ghana, Gibraltar, Greece, Greenland, Grenada, Guadeloupe, Guam, Guatemala, Guinea, Nigeria, Niue, Northern Mariana Islands, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar.

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

Information Reporters **Partners** Variables Years & Effects

STEP 3: Please select one or multiple partners below: Go back Continue

Select Asia-Pacific (ESCAP) Select Latin America & Caribbean Select Least Developed Economies

Select Africa & Middle East Select North America Select Landlocked Developing Economies

Select Europe Select Advanced Economies Select Small Island Developing States

Would you like to select the same economies as partners that you selected as reporters in the previous step? Select reporters from the previous step

<input checked="" type="checkbox"/> Afghanistan	<input type="checkbox"/> French Guiana	<input type="checkbox"/> Nigeria
<input type="checkbox"/> Albania	<input checked="" type="checkbox"/> French Polynesia	<input checked="" type="checkbox"/> Niue
<input type="checkbox"/> Algeria	<input type="checkbox"/> Gabon	<input checked="" type="checkbox"/> Northern Mariana Islands
<input checked="" type="checkbox"/> American Samoa	<input type="checkbox"/> Gambia, The	<input type="checkbox"/> Norway
<input type="checkbox"/> Andorra	<input checked="" type="checkbox"/> Georgia	<input type="checkbox"/> Oman
<input type="checkbox"/> Angola	<input type="checkbox"/> Germany	<input checked="" type="checkbox"/> Pakistan
<input type="checkbox"/> Antigua and Barbuda	<input type="checkbox"/> Ghana	<input checked="" type="checkbox"/> Palau
<input type="checkbox"/> Argentina	<input type="checkbox"/> Gibraltar	<input type="checkbox"/> Panama
<input checked="" type="checkbox"/> Armenia	<input type="checkbox"/> Greece	<input checked="" type="checkbox"/> Papua New Guinea
<input type="checkbox"/> Aruba	<input type="checkbox"/> Greenland	<input type="checkbox"/> Paraguay
<input checked="" type="checkbox"/> Australia	<input type="checkbox"/> Grenada	<input type="checkbox"/> Peru
<input type="checkbox"/> Austria	<input type="checkbox"/> Guadeloupe	<input checked="" type="checkbox"/> Philippines

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

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

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

Information Reporters Partners **Variables** Years & Effects

STEP 4: Please select dependent and independent variables below: Go back Continue

SELECT ONE DEPENDENT VARIABLE:

Net exports of i to j [ln_export_]]

Net imports of i to j [ln_import_]]

Net export and import (X+M) of i to j [ln_trade_]]

ln(export_{it}) comlang_{it}

ln(import_{it}) colony

ln(trade_{it}) comcol

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

SELECT UP TO 30 INDEPENDENT VARIABLES:

<input type="checkbox"/> $\ln(\text{export}_{ij})$	<input type="checkbox"/> comlang_{etho}
<input type="checkbox"/> $\ln(\text{import}_{ij})$	<input type="checkbox"/> colony
<input type="checkbox"/> $\ln(\text{trade}_{ij})$	<input checked="" type="checkbox"/> comcol
<input type="checkbox"/> $\ln(1 + (\text{tariff}_{ij}/100)^S)$	<input type="checkbox"/> curcol
<input checked="" type="checkbox"/> $\ln(1 + (\text{tariff}_{ij}/100)^W)$	<input type="checkbox"/> col45
<input type="checkbox"/> $\ln(1 + (\text{tariff}_{ji}/100)^S)$	<input type="checkbox"/> smctry
<input checked="" type="checkbox"/> $\ln(1 + (\text{tariff}_{ji}/100)^W)$	<input type="checkbox"/> landlocked_i
<input type="checkbox"/> $\ln(\text{GM}(\text{tariff}^S))$	<input type="checkbox"/> landlocked_j
<input type="checkbox"/> $\ln(\text{GM}(\text{tariff}^W))$	<input type="checkbox"/> landlocked_{ij}
<input checked="" type="checkbox"/> $\ln(\text{dist})$	<input type="checkbox"/> RTA
<input type="checkbox"/> contig	<input checked="" type="checkbox"/> $\ln(\text{GDP}_i)$
<input type="checkbox"/> comlang_{ofj}	<input checked="" type="checkbox"/> $\ln(\text{GDP}_j)$

You have selected 6 independent variables (maximum 30)

[Go Back](#) [Continue](#)

Screen 6: Selecting years and optionally fixed effects

Information > Reporters > Partners > Variables > **Years & Effects**

STEP 5: Please select a period and possibly fixed effects below:

SELECT YEARS OF INTEREST:

1995 1996 1997 1998 1999 2000 2001

2002 2003 2004 2005 2006 2007 2008 2009

2010 2011 2012 2013 2014 2015 2016

OPTIONALLY SELECT FIXED EFFECTS:

Add year dummies
 Add reporter dummies
 Add partner dummies

[Go Back](#) [RUN REGRESSION →](#)

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

Regression results for dependent variable \ln_export_{ij} and 6 independent variables are available. Modify parameters

Data of 43 reporters, 46 partners, and 22 years has been included and fixed effects were set for years, reporters and partners.

Regression results of $\ln(export_{ij})$

Data of 43 reporters, 46 partners, and 22 years has been included and fixed effects were set for years, reporters and partners.

Regression parameters

Variable	Coefficient	Std. error	t-statistic	p-value
$comcol$	1.228	0.0555	22.132	<0.001 ***
$\ln(dist)$	-2.335	0.0225	-103.650	<0.001 ***
$\ln(GDP_i)$	0.747	0.0697	10.716	<0.001 ***
$\ln(GDP_j)$	0.570	0.0658	8.659	<0.001 ***
$\ln(1 + (tariff_{ij}/100)^W)$	-0.833	0.218	-3.830	<0.001 ***
$\ln(1 + (tariff_{ji}/100)^W)$	-1.524	0.225	-6.783	<0.001 ***

Significance codes: * <0.1; ** <0.05; *** <0.001

Regression statistics

Dependent variable	$\ln(export_{ij})$
R-squared	0.795
Number of observations	17,041
Degrees of freedom	16,926

Settings & data included

These regression results are obtained on the following criteria:

Dataset: Basic Gravity Model of Trade (limited variables).

These regression results are based on available data:

Reporters: Afghanistan; Armenia; Australia; Azerbaijan; Bangladesh; Bhutan; Brunei; Cambodia; China; Fiji; Georgia; Hong Kong; India; Indonesia; Iran, Islamic Rep.; Japan; Kazakhstan; Korea, Rep.; Kyrgyz Republic; Lao PDR; Macao, China; Malaysia; Maldives; Mongolia; Myanmar; Nepal; New Zealand; Pakistan; Palau; Papua New Guinea; Philippines; Russian Federation; Samoa; Singapore; Solomon Islands; Sri Lanka; Thailand; Timor-Leste; Tonga; Turkey; Turkmenistan; Vanuatu; Vietnam.

Partners: Afghanistan; Armenia; Australia; Azerbaijan; Bangladesh; Bhutan; Brunei; Cambodia; China; Fiji; Georgia; Hong Kong; India; Indonesia; Iran, Islamic Rep.; Japan; Kazakhstan; Korea, Rep.; Kyrgyz Republic; Lao PDR; Macao, China; Malaysia; Maldives; Mongolia; Myanmar; Nepal; New Zealand; Pakistan; Palau; Papua New Guinea; Philippines; Russian Federation; Samoa; Singapore; Solomon Islands; Sri Lanka; Tajikistan; Thailand; Timor-Leste; Tonga; Turkey; Turkmenistan; Tuvalu; Uzbekistan; Vanuatu; Vietnam.

Years: 1995; 1996; 1997; 1998; 1999; 2000; 2001; 2002; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010; 2011; 2012; 2013; 2014; 2015; 2016.

Fixed effects were set for years, reporters and partners.

Missing data: based on your selection of parameters, it appears there is missing data for reporters: American Samoa; Cook Islands; French Polynesia; Guam; Kiribati; Korea, Dem. Rep.; Marshall Islands; Micronesia, Fed. Sts.; Nauru; New Caledonia; Niue; Northern Mariana Islands; Palau; Samoa; Singapore; Solomon Islands; Sri Lanka; Tajikistan; Tuvalu; Uzbekistan, and partners: American Samoa; Cook Islands; French Polynesia; Guam; Kiribati; Korea, Dem. Rep.; Marshall Islands; Micronesia, Fed. Sts.; Nauru; New Caledonia; Niue; Northern Mariana Islands.

Export results to Excel (CSV)

Save visualization (JPEG)

Copy results table to clipboard

Print page or save as PDF

Determine trade potential

Based on the above results, you may now wish to determine the trade potential. This enables you to compare actual figures with predicted figures and get an estimated to actual trade ratio.

Determine trade potential

Generate a trade simulation

Based on the above results, you may now wish to generate a trade simulation. Such simulation enables you to assess the effect of, for example, a 1% higher $comcol$ on $\ln(export_{ij})$.

Generate trade simulation

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

$$TP_{ij} = \frac{\text{estimated trade}_{ij}}{\text{actual trade}_{ij}} \quad \text{where } TP_{ij} > 1 : \text{potential for trade expansion}$$

$$TP_{ij} < 1 : \text{exceeding trade potential}$$

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

In order to determine the trade potential, please fill out the form below.
You can select the reporter, year, as well as multiple partners.

Determine trade potential

Dependent variable: $\ln(\text{export}_{ij})$

[← Back to regression results](#)

Step 1) please select one reporter of interest:

Lao PDR

Step 2) please select one year of interest:

2015

Step 3) please select one or multiple partners of interest: [Deselect all](#)

- Afghanistan
- Armenia
- Australia
- Azerbaijan
- Bangladesh
- Bhutan
- Brunei
- Cambodia
- Mongolia
- Myanmar
- Nepal
- New Zealand
- Pakistan
- Palau
- Papua New Guinea
- Philippines

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

Trade potential results for dependent variable $\ln(\text{export}_{ij})$ of Lao PDR are available.
Data of reporter Lao PDR and 45 partners over the year 2015 has been included.

[Regression results](#) [New regression](#)

Trade potential results

[← Back to the form](#)

The following was set:

- Dependent variable: $\ln(\text{export}_{ij})$
- Reporter: **Lao PDR**
- Year of reference: **2015**

[Modify settings](#)

The aforementioned settings resulted in:

Partner	$\ln(\text{export}_{ij})$	$\ln(\widehat{\text{export}}_{ij})$	Estimated to actual trade ratio
Afghanistan	N/A	10.713	N/A
Armenia	N/A	7.846	N/A
Australia	15.029	14.397	0.958
Azerbaijan	N/A	9.740	N/A
Bangladesh	10.503	13.831	1.317
Bhutan	N/A	8.415	N/A
Brunei	10.669	9.900	0.928
Cambodia	16.669	15.231	0.914
China	20.762	17.309	0.834
Fiji	N/A	8.701	N/A
Georgia	N/A	9.688	N/A
Hong Kong, China	14.973	16.511	1.103
India	17.313	14.993	0.866
Indonesia	12.351	14.833	1.201
Iran, Islamic Rep.	N/A	12.661	N/A
Japan	17.720	15.786	0.891
Kazakhstan	N/A	11.207	N/A
Korea, Rep.	15.667	15.298	0.976
Kyrgyz Republic	N/A	8.960	N/A
Macao, China	N/A	10.978	N/A
Malaysia	15.621	15.219	0.974

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

In order to generate a trade simulation, please fill out the form below.
You can set one or multiple conditions and select a reporter, year and partner(s).

Generate trade simulation

Dependent variable: $\ln(\widehat{export}_{ij})$

Step 1) please set the conditions for the trade simulation below:

comcol	No condition set	- 0 +	<input checked="" type="checkbox"/> % value
$\ln(dist)$	No condition set	- 0 +	<input checked="" type="checkbox"/> % value
$\ln(GDP_i)$	No condition set	- 0 +	<input checked="" type="checkbox"/> % value
$\ln(GDP_j)$	No condition set	- 0 +	<input checked="" type="checkbox"/> % value
$\ln(1 + (\widehat{tariff}_{ji}/100)^W)$	No condition set	- 0 +	<input checked="" type="checkbox"/> % value
$\ln(1 + (\widehat{tariff}_{ji}/100)^W)$	decrease by 5%	- -5 +	<input checked="" type="checkbox"/> % value

Step 2) please select one reporter of interest: Lao PDR

Step 3) please select one year of interest: 2015

Step 4) please select one or multiple partners of interest: [Deselect all](#)

- Afghanistan
- Mongolia
- Armenia
- Myanmar
- Australia
- Nepal
- Azerbaijan
- New Zealand
- Bangladesh
- Pakistan
- Bhutan
- Palau
- Brunei
- Papua New Guinea
- Cambodia
- Philippines
- China
- Russian Federation

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

Trade simulation results for dependent variable $\ln(\widehat{export}_{ij})$ and 1 set condition are available.
Data of reporter Lao PDR and 45 partners over the year 2015 has been included.

[Regression results](#) [New regression](#)

Trade simulation results

Back to the form

The following conditions were set:

- Dependent variable: $\ln(\widehat{export}_{ij})$
- ⊗ $\ln(1 + (\widehat{tariff}_{ji}/100)^W)$: decrease by 5%
- Reporter: Lao PDR
- Year of reference: 2015

[Modify conditions](#)

The aforementioned conditions resulted in:

Partner	$\ln(\widehat{export}_{ij})$	$\ln(\widehat{export}_{ij})_{\text{projected}}$	$\Delta \ln(\widehat{export}_{ij})$
Afghanistan	10.713	10.713	0.000
Armenia	7.846	7.853	0.007
Australia	14.397	14.397	0.000
Azerbaijan	9.740	9.750	0.011
Bangladesh	13.831	13.837	0.006
Bhutan	8.415	8.415	0.000
Brunei	9.900	9.900	0.000
Cambodia	15.231	15.233	0.001
China	17.309	17.311	0.002
Fiji	8.701	8.722	0.021

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 variables	NTM-related variables
<ul style="list-style-type: none"> • GDP of reporting countries and trading partners (with lagged term) • 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 	<ul style="list-style-type: none"> • Average non-tariff measures imposed • Other NTM measures such as coverage ratio, frequency index, prevalence score and regulatory distance • Factor endowment: land, capital, and labor
Classic policy-related independent variables	Other policy-related and behind-the-border independent variables
<ul style="list-style-type: none"> • Bilateral tariffs (with lagged term) • Bilateral RTA (with lagged term) 	<ul style="list-style-type: none"> • Behind-the-border trade facilitation e.g., Ease of doing business indicator / ease of trading across border / logistics performance index • Quality of cross-border infrastructure e.g., 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

Information
Reporters
Partners
Variables
Years & Effects

STEP 4: Please select **dependent** and **independent variables** below: Go back Continue

SELECT ONE DEPENDENT VARIABLE:

Net imports of i to j [ln_import_ij]

SELECT UP TO 30 INDEPENDENT VARIABLES:

<input type="checkbox"/> $\ln(\text{import}_{ij})$ i	<input type="checkbox"/> $\ln(\overline{\text{NTM}_{ntechij}^s})^*$ i
<input type="checkbox"/> $\ln(\text{import}_t)$ i	<input type="checkbox"/> $\ln(\overline{\text{NTM}_{exportij}^s})^*$ i
<input type="checkbox"/> $\ln(\text{import}_t)$ i	<input type="checkbox"/> $\ln(\overline{\text{NTM}_{ij}^s})^*$ i
<input type="checkbox"/> $\ln(\overline{\text{tariff}_{ij}^s})$ i	<input type="checkbox"/> $\ln(\overline{\text{NTM}_{techij}^s})_{t-1}^*$ i
<input type="checkbox"/> $\ln(\overline{\text{tariff}_{ij}^w})$ i	<input type="checkbox"/> $\ln(\overline{\text{NTM}_{ntechij}^s})_{t-1}^*$ i
<input type="checkbox"/> $\ln(1 + (\overline{\text{tariff}_{ij}/100})^s)$ i	<input type="checkbox"/> $\ln(\overline{\text{NTM}_{exportij}^s})_{t-1}^*$ i
<input type="checkbox"/> $\ln(1 + (\overline{\text{tariff}_{ij}/100})^w)$ i	<input type="checkbox"/> $\ln(\overline{\text{NTM}_{ij}^s})_{t-1}^*$ i
<input type="checkbox"/> $\ln(\overline{\text{tariff}_{ij}^s})$ i	<input type="checkbox"/> $\ln(\overline{\text{NTM}_{techij}^w})^*$ i
<input type="checkbox"/> $\ln(\overline{\text{tariff}_{ij}^w})$ i	<input type="checkbox"/> $\ln(\overline{\text{NTM}_{ntechij}^w})^*$ i

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

Information
Reporters
Partners
Variables
Years & Effects

STEP 5: Please select a **period** and possibly **fixed effects** below:

SELECT YEARS OF INTEREST:

2012
 2013

2014

2015
 2016

SELECT A SECTOR OF INTEREST:

Overall Goods

Agriculture

Manufacturing

OPTIONALLY SELECT FIXED EFFECTS:

Add year dummies
 Add reporter dummies
 Add partner dummies

Go Back
RUN REGRESSION →

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 “ln_” have taken natural log function on their original values.**

Dataset 1 - 3

Variable name	Description	Source	Coverage
ln_export_ij	Net exports of i to j	WITS: COMTRADE	1995-2016
ln_import_ij	Net imports of i to j	WITS: COMTRADE	1995-2016
ln_trade_ij	Net export and import (X+M) of i to j	WITS: COMTRADE	1995-2016
ln_export_i	Net exports of i to world	WITS: COMTRADE	1995-2016
ln_import_i	Net imports of i to world	WITS: COMTRADE	1995-2016
ln_trade_i	Net export and import (X+M) of i to world	WITS: COMTRADE	1995-2016
ln_export_j	Net exports of j to world	WITS: COMTRADE	1995-2016
ln_import_j	Net imports of j to world	WITS: COMTRADE	1995-2016
ln_trade_j	Net export and import (X+M) of j to world	WITS: COMTRADE	1995-2016
ln_ctcij	Bi-directional trade costs of i and j (ad-valorem equivalent: %)	ESCAP-WB Trade Costs Dataset	1995-2016
ln_ntcij	Bi-directional trade costs of i and j, excl tariff (ad-valorem equivalent:%)	ESCAP-WB Trade Costs Dataset	1995-2016
ln_tariffateij_sa	Simple average tariff in % of i charging j	WITS: TRAINS	1995-2016
ln_tariffateij_wa	Weighted average tariff in % of i charging j	WITS: TRAINS	1995-2016
ln_tariff_ij_sa	Simple average tariff (1+(%/100)) of i charging partner j	WITS: TRAINS	1995-2016
ln_tariff_ij_wa	Weighted average tariff (1+(%/100)) of i charging partner j	WITS: TRAINS	1995-2016
ln_tariffateji_sa	Simple average tariff in % of j charging i	WITS: TRAINS	1995-2016
ln_tariffateji_wa	Weighted average tariff in % of j charging i	WITS: TRAINS	1995-2016
ln_tariff_ji_sa	Simple average tariff (1+(%/100)) of j charging partner i	WITS: TRAINS	1995-2016
ln_tariff_ji_wa	Weighted average tariff (1+(%/100)) of j charging partner i	WITS: TRAINS	1995-2016
ln_ga_tariff_ijji_sa	Geometric average of tariff_ij_sa and tariff_ji_sa	Author's calculation based on WITS: TRAINS	1995-2016
ln_ga_tariff_ijji_wa	Geometric average of tariff_ij_wa and tariff_ji_wa	Author's calculation based on WITS: TRAINS	1995-2016
ln_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	CEPII	Time invariant variable
comlang_ethno	1 if a language is spoken by at least 9% of the population in 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
landlocked_ij	1 if i or j is landlocked	Author's calculation based on CEPII	Time invariant variable
rta	1 if regional trade agreement in force	De Sousa (2012)	1995-2015
ln_gdp_i	GDP (current USD) of i	WB: WDI	1995-2016

In_gdpgrowth_i	GDP growth (annual %: 1+ (percent/100)) of i	WB: WDI	1995-2016
In_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
In_rgdp_i	GDP (constant 2010 USD) of i	WB: WDI	1995-2016
In_rgdpcc_i	GDP per capita (constant 2010 USD) of i	WB: WDI	1995-2016
In_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
In_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
In_rgdp_j	GDP (constant 2010 USD) of j	WB: WDI	1995-2016
In_rgdpcc_j	GDP per capita (constant 2010 USD) of j	WB: WDI	1995-2016
In_dtf_i	Overall ease of doing business score (0-100: 0 = worst, 100 = best) of i	Doing Business	2004-2016
In_tab_i	Trading across border score (0-100: 0 = worst, 100 = best) of i	Doing Business	2004-2016
In_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
In_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
In_dtf_j	Overall ease of doing business score (0-100: 0 = worst, 100 = best) of j	Doing Business	2004-2016
In_tab_j	Trading across border score (0-100: 0 = worst, 100 = best) of j	Doing Business	2004-2016
In_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
In_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
In_lsci_i	Liner shipping connectivity index of i	UNCTAD	2004-2016
In_lsci_j	Liner shipping connectivity index of j	UNCTAD	2004-2016
In_lpi_i	Logistics performance index of i	World Bank	2010, 2012, 2014, 2016
In_lpi_j	Logistics performance index of j	World Bank	2010, 2012, 2014, 2016

Dataset 4 - 5

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
In_ctcij	Trade costs: Ad-valorem equivalent (%)	ESCAP-WB Trade Costs Dataset	2012-2016
In_ntcij	Trade costs, excluding tariff: Ad-valorem equivalent (%)	ESCAP-WB Trade Costs Dataset	2012-2016
In_tariff_rateij_sa	Simple average tariff in % of i charging j	WITS: TRAINS	2012-2016
In_tariff_rateij_wa	Weighted average tariff in % of i charging j	WITS: TRAINS	2012-2016
In_tariff_ij_sa	Simple average tariff (1+(%/100))of i charging partner j	WITS: TRAINS	2012-2016
In_tariff_ij_wa	Weighted average tariff (1+(%/100))of i charging partner j	WITS: TRAINS	2012-2016
In_tariff_rateji_sa	Simple average tariff in % of j charging i	WITS: TRAINS	2012-2016
In_tariff_rateji_wa	Weighted average tariff in % of j charging i	WITS: TRAINS	2012-2016
In_tariff_ji_sa	Simple average tariff (1+(%/100))of j charging partner i	WITS: TRAINS	2012-2016
In_tariff_ji_wa	Weighted average tariff (1+(%/100))of j charging partner i	WITS: TRAINS	2012-2016
In_ga_tariff_ijji_sa	Geometric average of tariff_ij_sa and tariff_ji_sa	Author's calculation based on WITS: TRAINS	2012-2016
In_ga_tariff_ijji_wa	Geometric average of tariff_ij_wa and tariff_ji_wa	Author's calculation based on WITS: TRAINS	2012-2016
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	CEPII	Time invariant variable
comlang_ethno	1 if a language is spoken by at least 9% of the population in 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
landlocked_ij	1 if i or j is landlocked	Author's calculation based on CEPII	Time invariant variable
rta	1 if regional trade agreement in force	De Sousa (2012)	2012-2016
cr_ij_modif	Coverage ratio of importer i from partner j	Author's calculation based on I-TIP: TRAINS	2012-2016
secdum_ij_modif	6-digit sector count of importer i and partner j	Author's calculation based on I-TIP: TRAINS	2012-2016
fi_ij_modif	Frequency index of importer i from partner j	Author's calculation based on I-TIP: TRAINS	2012-2016
ps_ij_modif	Prevalence score of importer i from partner j	Author's calculation based on I-TIP: TRAINS	2012-2016
rd_A_ij	Regulatory distance of i and j, measured by NTM type A	Author's calculation based on I-TIP: TRAINS	2012-2016
rd_B_ij	Regulatory distance of i and j, measured by NTM type B	Author's calculation based on I-TIP: TRAINS	2012-2016
rd_C_ij	Regulatory distance of i and j, measured by NTM type C	Author's calculation based on I-TIP: TRAINS	2012-2016
rd_D_ij	Regulatory distance of i and j, measured by NTM type D	Author's calculation based on I-TIP: TRAINS	2012-2016
rd_E_ij	Regulatory distance of i and j, measured by NTM type E	Author's calculation based on I-TIP: TRAINS	2012-2016
rd_F_ij	Regulatory distance of i and j, measured by NTM type F	Author's calculation based on I-TIP: TRAINS	2012-2016
rd_G_ij	Regulatory distance of i and j, measured by NTM type G	Author's calculation based on I-TIP: TRAINS	2012-2016
rd_H_ij	Regulatory distance of i and j, measured by NTM type H	Author's calculation based on I-TIP: TRAINS	2012-2016
rd_I_ij	Regulatory distance of i and j, measured by NTM type I	Author's calculation based on I-TIP: TRAINS	2012-2016
rd_J_ij	Regulatory distance of i and j, measured by NTM type J	Author's calculation based on I-TIP: TRAINS	2012-2016
rd_L_ij	Regulatory distance of i and j, measured by NTM type L	Author's calculation based on I-TIP: TRAINS	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 based on I-TIP:	
rd_P_ij	Regulatory distance of i and j, measured by NTM type P	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
rd_Tech_ij	Regulatory distance of i and j, measured by NTM type Tech	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
rd_NTech_ij	Regulatory distance of i and j, measured by NTM type NTech	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
rd_Export_ij	Regulatory distance of i and j, measured by NTM type Export	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
rd_total_ij	Regulatory distance of i and j, measured by NTM type total	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
ln_sa_ntm_tech_ij	Simple average technical NTMs measures of importer i imposing to partner j (full set)	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
ln_sa_ntm_ntech_ij	Simple average non-technical NTMs measures of importer i imposing to partner j (full set)	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
ln_sa_ntm_export_ij	Simple average NTMs measures of importer i imposing to partner j (full set)	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
ln_sa_ntm_ij	Simple average NTMs measures of importer i imposing to partner j (full set)	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
ln_sa_ntm_tech_ij_modif	Simple average technical NTMs measures of importer i imposing to partner j (avg if there is trade data)	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
ln_sa_ntm_ntech_ij_modif	Simple average non-technical NTMs measures of importer i imposing to partner j (avg if there is trade data)	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
ln_sa_ntm_export_ij_modif	Simple average NTMs measures of importer i imposing to partner j (avg if there is trade data)	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
ln_sa_ntm_ij_modif	Simple average NTMs measures of importer i imposing to partner j (avg if there is trade data)	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
ln_wa_ntm_tech_ij_modif	Weighted average technical NTMs measures of importer i imposing to partner j (avg if there is trade data)	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
ln_wa_ntm_ntech_ij_modif	Weighted average NTMs measures of importer i imposing to partner j (avg if there is trade data)	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
ln_wa_ntm_export_ij_modif	Weighted average NTMs measures of importer i imposing to partner j (avg if there is trade data)	TRAINS	2012-2016
		Author's calculation based on I-TIP:	
ln_wa_ntm_ij_modif	Weighted average NTMs measures of importer i imposing to partner j (avg if there is trade data)	TRAINS	2012-2016
ln_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
ln_agriland_i	Agricultural land of i in sq.km.	WB: WDI	2012-2016
ln_capital_i	Gross capital formation of i in current USD	WB: WDI	2012-2016
ln_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

In_agriland_j	Agricultural land of j in sq.km.	WB: WDI	2012-2016
In_capital_j	Gross capital formation of j in current USD	WB: WDI	2012-2016
In_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
In_dtf_i	Overall ease of doing business score (0-100: 0 = worst, 100 = best) of i	Doing Business	2012-2016
In_tab_i	Trading across border score (0-100: 0 = worst, 100 = best) 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
In_invest_i	Protecting investors score (0-100: 0 = worst, 100 = best) of 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
In_dtf_j	Overall ease of doing business score (0-100: 0 = worst, 100 = best) of j	Doing Business	2012-2016
In_tab_j	Trading across border score (0-100: 0 = worst, 100 = best) 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
In_invest_j	Protecting investors score (0-100: 0 = worst, 100 = best) of j	Doing Business	2012-2016
In_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
In_lpi_i	Logistics performance index of i	World Bank	2010, 2012, 2014, 2016
In_lpi_j	Logistics performance index of j	World Bank	2010, 2012, 2014, 2016

Notes:

- 1) 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.

Sources:

- **WITS: COMTRADE:** COMTRADE data through WITS. Online available at <https://wits.worldbank.org>
- **WITS: TRAINS:** TRAINS data through WITS. Online available at <https://wits.worldbank.org>
- **CEPII:** Online available at <http://cepii.fr/CEPII/en/welcome.asp>
- **De Sousa (2012):** "The currency union effect on trade is decreasing over time", Economics Letters, 117(3), 917-920. Online available at <http://jdesousa.univ.free.fr/data.htm>
- **WB: WDI:** World Bank's World Development Indicators. Online available at <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators>
- **Doing Business:** <http://www.doingbusiness.org>
- **LSCI:** Online available at <http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=92>
- **LPI:** Online available at <https://lpi.worldbank.org>