

**POLICY DIALOGUE ON AID FOR TRADE**

**TRADE FACILITATION INDICATORS:  
THE POTENTIAL IMPACT OF TRADE  
FACILITATION ON DEVELOPING  
COUNTRIES' TRADE - addendum**



TRADE AND AGRICULTURE DIRECTORATE  
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Working Party of the Trade Committee

TRADE FACILITATION INDICATORS : THE POTENTIAL IMPACT OF TRADE FACILITATION  
ON DEVELOPING COUNTRIES  
ADDENDUM – TRANSIT INDICATORS

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## OECD TRADE FACILITATION INDICATORS (TFIS) – TRANSIT INDICATORS

### Summary of findings

The addendum presents findings from the OECD analysis of transit trade indicators and complements the analysis undertaken for the import/export TFIs. It provides preliminary results for the impact of transit trade measures and identifies the challenges implied by further research in this area. Transit trade was recognized as a significant issue for developing landlocked and transit countries and separate transit indicators were developed within the current phase of work. Available public data in the area of transit measures are very limited. Data were thus collected for twenty seven African and Asian countries through a direct collaboration with the USAID Trade Hubs for West Africa and Southern Africa and the United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP).

The quantitative analysis focuses on developing landlocked and transit countries and provides important insights with respect to the status of implementation of different transit measures, as well as first potential impacts of such identified measures on trade flows patterns. Preliminary estimations point to a rather important impact of transit formalities and transit agreements and cooperation. Results are rather similar and robust at the manufacturing sector level, but much less so at the agricultural level. The import/export TFIs also have a significant impact on landlocked countries' trade, including here the Formalities and the Information availability dimensions. More precise results would be subject to the improvement of the information available in the database for transit measures and to addressing remaining methodological challenges.

### I. Introduction

1. Geography can add considerably to the challenges faced by landlocked developing countries in the cross-border movement of goods (World Bank, 2008). Landlocked countries present a special case for their dependence on transit trade, since it is likely that a majority of their international trade must cross through a third country due to the lack of a sea port. Although GATT Article 5.2 institutes "*freedom of transit through the territory of each contracting party ... for traffic in transit to or from the territory of other contracting parties*", transit trade is often beset by a wide array of administrative, technical and logistical problems (UN-OHRLLS, 2007). In order for transit developing countries to address the transit trade issues concerning their landlocked neighbours, they need to equally understand the benefits to their own economies for doing so. Advantages can be obtained through the transit transport provided and the associated services, as well as from capturing economies of scale in the port, maritime, rail and road services that serve their own trade (World Bank, 2008). This Addendum aims to offer first insights into the potential impact of transit facilitation measures on trade flows patterns for a set of selected developing landlocked and transit African and Asian countries for which the Secretariat was able to obtain data on such measures.

2. The first phase of the OECD trade facilitation indicators work refrained from establishing a separate transit indicator, because the estimation of a statistically robust indicator for transit within the OECD country sample, which included only four landlocked countries and did not identify the countries of transit, would have been difficult, if at all possible (Moise *et al.*, 2011). However, transit trade was recognized as a significant issue for developing landlocked and transit countries and separate transit indicators are developed within the current phase of work.

## II. Structure and data

3. The transit indicators are built along the same lines as the twelve TFIs on import/export trade presented in the main body of this document. They specifically draw on the different transit measures covered by Article 11 in the WTO DCNT Rev. 13 and cover four main areas: (m) *Transit fees and charges*, (n) *Transit formalities*, (o) *Transit guarantees*, and (p) *Transit agreements and cooperation*. The structure of the indicators is provided in Annex 1.

4. Article 11 of the DCNT on *Freedom of Transit* includes provisions on non-discrimination with respect to fees, formalities, and trade, transport, traffic, safety and environmental regulations; disciplines on fees and charges; exemption from customs duties; avoidance of unnecessary restrictiveness and adaptation to changing circumstances; provision of specific transit infrastructure; prohibition of quality controls; pre-arrival processing; prompt termination of transit procedures; disciplines on guarantees; avoidance of convoys; and cooperation provisions. Among these provisions several components can be described as unique and significant to transit trade, including the provision on special border-crossing facilities for transit trade, the explicit prohibition on standards and testing, or the disciplines on guarantees.

5. Publicly available data on the specific status of implementation of transit measures are very limited. Such transit information was thus collected through questionnaires. In the case of selected Sub-Saharan Africa countries, this was done through a direct collaboration with the USAID Trade Hubs for West Africa and Southern Africa, while for selected Asian countries data was drawn from the UNESCAP Asia-Pacific Trade Facilitation Forum 2012 Survey on Trade Facilitation and Paperless Trade<sup>1</sup>. Information on transit measures was collected for 27 countries in Africa and Asia, the list of which is given in Annex 2. As the information was only made available to the Secretariat shortly before the Working Party meeting, completed country datasheets still need to be fact checked directly with country authorities, as was done for the import and export indicators.

## III. Methodology challenges

6. Analysing the impact of transit measures on trade flows raises a series of methodological challenges. Such a transit indicator is most relevant for transit trade, which represents a fraction of total global trade. Transit trade introduces a host of unique problems in modelling. As in the case of the European Union and its major transshipment ports, developing countries also ship goods via large transit hubs for efficiency. However, no publicly available databases exist to identify accurate transit trade data for a wide range of developing countries. It is thus difficult to include in any estimation method transshipment data that could lead to reliable estimations.

7. In order to offer some preliminary insights into the impact of transit trade measures on landlocked countries trade, we employ a quantitative approach based on the gravity trade specifications tested by Limao and Venables (1999). Their analysis focused on explaining bilateral trade costs and trade flows in terms of geography and a measure of the infrastructure of the trading countries, as well as of any countries through which their trade passes. We thus introduce the transit trade facilitation dimension within a gravity framework in a similar way to Limao and Venables' (1999) transit country (or average, when there is more than one transit country) infrastructure variable. The quality of bilateral trade data for landlocked

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<sup>1</sup> 30-31 October 2012, Colombo, Sri Lanka. The survey sought to establish the readiness and progress made in implementing trade facilitation in countries of Asia and the Pacific, in particular with regard to single window, paperless trading and transit facilitation. Respondents included government ministries/agencies, private sector and other entities (e.g. research institutes in the concerned countries). The questionnaire form is available at <http://www.unescap.org/tid/projects/tfforum12.asp>.

developing countries remains nevertheless an important concern. Details on the methodology are provided in Annex 4.

#### **IV. The potential impact of transit TFIs**

8. Preliminary results are given in Appendix 1. The specification is tested on the overall landlocked countries sample available in our database (i.e. Sub-Saharan Africa and Asia regions altogether), in order to increase the number of observations and take advantage of a higher data variability (the country sample is listed in Table 1 of Annex 2). Regressions are run for the total goods trade for different sectors at aggregated levels, but also separately for the manufacturing and agricultural goods. The differentiated impact of transit measures on imports and exports of landlocked developing countries is tested<sup>2</sup>, as in the case of the import/export TFIs.

9. When running the regressions at the overall goods trade level, the most statistically significant results are obtained for indicators (n) Transit formalities and (p) Transit agreements and cooperation (see Tables 4 and 5 in Appendix 1). Results are rather similar and robust at the manufacturing sector level, but much less so at the agricultural level, which could largely be explained by the fact that we do not have a specific agriculture dimension to the transit indicators. Interesting results are worth noting for the differentiated impact on imports and exports. When landlocked countries are exporting, indicator (o) Transit guarantees yields statistically significant results. Some of the import/export TFIs equally seem to exert a strong impact on landlocked countries' trade, including the Formalities indicators (h) Procedures, (g) Automation, (f) Documents, and indicator (a) Information availability. Less statistically robust results for indicators (e) Transit fees and charges, (b) Involvement of the trade community, (c) Advance rulings, (d) Appeal procedures, (i) and (j) on Border agency cooperation at this stage do not imply that the indicators are not relevant for landlocked countries' trade, but that data shortcomings do not allow firm conclusions to be drawn yet.

#### **V. Reflections on the transit indicators**

##### ***(m) Transit fees and charges***

10. As in the case of import-export fees and charges, information on transit fees and charges is scarce. The available data indicates that only half of the surveyed countries publish information on fees and charges, either in paper publications or on the Customs website. Data on prior publication of fees and charges are not available for Asian countries. In the case of African countries, four countries in southern Africa seem to publish such information in advance, either in paper publications or on the Internet. Escort fees have been identified as one of the most opaque areas among the many fees associated with cross-border movement of goods (WATH, 2010). Escort fees were introduced to cover the costs of an official vehicle escorting individual trucks through the country of transit in order to ensure that goods in transit from the port are not off-loaded before reaching the border, without payment of duties, and diverted to internal commerce.

11. Ten countries (four African and six Asian) indicate that they provide (annually or more frequently) a periodic review of the applied transit fees and charges. No information is available on the method of evaluation of transit fees and charges for countries in Asia, while for the Africa region the majority of countries seem to be calculating such fees and charges *ad-valorem*.

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<sup>2</sup> This is done by taking alternatively the landlocked sample as importers and exporters, respectively.

**(n) Transit formalities**

12. In the case of African countries, there seems to be sufficient information published on procedures, required forms and documents; such documents and procedures are reviewed periodically, but in contrast to transit fees and charges, their review seems to take place less frequently (every two years at best). At this stage, no information is available on the publication and periodic review of required transit documentation for the selected Asian countries.

13. West African countries seem to have physically separate transit facilities at all entry points where trade can transit. The situation is rather different in the southern Africa sub-region where there are either no physically separate border crossing facilities at all, or such facilities exist only at large transit entry points. The situation is very similar in Asian countries, as close to half of the surveyed countries state that they do not have at all separate border-crossing facilities/infrastructure for transit.

14. Most of the surveyed countries in Asia indicate that physical inspections are limited through risk assessment. The majority of Asian countries for which we have information specify that transit trade goods are usually evaluated using a risk assessment in order to reduce physical inspection of goods; a small share states that such goods are rarely inspected due to a risk assessment model in place. Data indicates that in most of the surveyed African countries, transit trade goods are subject to highly frequent physical inspections, as a risk-based system is not used at all or used on an extremely limited basis. Meanwhile, the situation seems to be very different in the case of quality controls or technical standards being applied; almost all of the African countries state that quality controls and technical standards are not being applied to transit trade. However, the picture is slightly less conclusive in the case of Asian countries with respect to quality controls. One third of Asian countries seem not to treat transit movement of goods differently than imports in terms of quality controls and technical standards and another third of countries apply them only to hazardous materials and high risk cargos.

15. Despite the advances in information technology observed in the case of the import-export procedures, electronic data submission does not seem widely used in the case of transit trade. Indeed, the use of modern information and communication technology for goods inspection, data collection and data processing is still limited or subject to technical problems that reduce its efficiency (UN-OHRLLS, 2007). Pre-arrival processing for transit trade is supported in 13 countries (9 in Asia and 4 in Africa), with the large majority stating to only partially apply it (i.e. only for selected importers/goods/entry points/modes of transport). 15 countries (of which only one in Africa) seem to have at least partially established a Single window for transit trade (i.e. some entry points are providing a Single window for transit trade).

**(o) Transit guarantees**

16. Guarantee requirements can be defined by the national regulations of the transit country or alternatively, within the framework of regional or international agreements. These regulations should clarify in principle the amount and form of the guarantee required, as well as the bodies responsible for providing it (UNCTAD, 2011). In some developing countries, only cash deposits are accepted, although this form of guarantee is not practical. In the case of cash deposits, the transit operator is the directly liable debtor of the Customs authorities. Otherwise, guarantees can take various forms. In the context of multilateral transit schemes the transit guarantee is often purchased in advance of the transit operation, although it will only be activated once the transit operation is commenced (UNCTAD, 2011). From our available data, it appears that half of the African countries do not accept any form of guarantees, while the rest accepts at least one or more forms of non-monetary guarantee. In the case of the Asian countries for which we have available information, it seems like the majority accepts at least one or more forms of non-monetary guarantee for transit trade.

17. The posting of a financial guarantee often remains a challenge in terms of implementation. It supposes a relatively well-established banking infrastructure and financial market that are able to support the issuance of such guarantees. The lack of the former often leads transit countries to require the deposit of full duties and taxes to cover the transit operation (UNCTAD, 2011). Meanwhile, data collected seems to indicate that the majority of African and Asian countries analysed limits the guarantees to the amount of duties and charges. No information is available on the timeframe for the release of guarantees (i.e. the average number of days for full release of guarantees) for the surveyed Asian countries. Such information remains limited for Sub-Saharan Africa countries as well.

18. For several of the surveyed countries, the guarantee system seems to be covered by different regional agreements implementing systems similar to the TIR guarantee concept (*Transports Internationaux Routiers*) system<sup>3</sup>: Economic Cooperation Organization Transit Framework Agreement, Association of Southeast Asian Nations Framework Agreement on the Facilitation of Goods in Transit, Greater Mekong Sub-region<sup>4</sup> Agreement for Facilitation of Cross-border movement of goods and people (OSCE, 2011).

**(p) Transit agreements and cooperation**

19. Close regional cooperation in transit transport and trade promotion between landlocked countries and transit countries is very important. This can ensure an unencumbered and cost-effective access to sea ports for landlocked countries. Examples of regional agreements providing for sea port access and Customs transit and covering our selected countries include the ASEAN Framework Agreement on the Facilitation of Goods in Transit; the TRIE transit system developed in West Africa by ECOWAS; ECOWAS Convention relating to Inter-State Road Transit of Goods; or the transit systems that have been developed by members of the Southern African Customs Union (SACU) and the Southern African Development Community (SADC). Meanwhile, some countries are often parties to more than one agreement at the same time, leading to a lack of enforcement in regional agreements due to overlap and multiple memberships (UNCTAD, 2011). Sometimes, regional legal instruments are not considered because national regulations take precedence in practice (UN-OHRLLS, 2007). Not enough information is available to firmly conclude what percentage of transit trade for our selected countries is under bilateral or regional agreements.

20. There is a need for further simplification of documentation requirements. Simplifying such documentation can be achieved through a greater commitment to international, regional, sub-regional and bilateral agreements. There seems to be a stronger cooperation in this area in the Southern Africa region, but a much weaker one in the West Africa region. No sufficient information is available for the Asia region.

21. For most of the Asian countries in our sample there seems to be cooperation between the agencies involved in transit, although the extent of this cooperation differs, from limited cooperation on formalities and legal requirements (around half of the Asian countries) to almost full cooperation on formalities, legal requirements and the practical operation of transit regimes. The situation is relatively similar in Africa. For

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<sup>3</sup> The TIR Convention is administered by the United Nations Commission for Europe (UNECE) and it currently has 68 contracting parties. The TIR Convention provides for an internationally recognized procedure to facilitate the cross-border movement of goods in transit, through the use of a standard, internationally recognized customs document – the TIR Carnet – which also serves as proof of an internationally valid guarantee (OSCE, 2011).

<sup>4</sup> GMS countries are Cambodia, the People's Republic of China (PRC, specifically Yunnan Province and Guangxi Zhuang Autonomous Region), Lao People's Democratic Republic (Lao PDR), Myanmar, Thailand, and Viet Nam.

Western Africa countries, there seems to be limited cooperation, while such cooperation seems to cover more procedural and legal dimensions for the majority of Southern Africa countries.

## **VI. Conclusions**

22. The analysis undertaken on the transit indicators provides important insights with respect to the status of implementation of different transit measures and first potential impacts of such identified measures on trade flows patterns. Preliminary estimations point to a rather important impact of the different transit trade facilitation dimensions. In particular, most statistically significant results are obtained for indicators (n) Transit formalities and (p) Transit agreements and cooperation. Results are rather similar and robust at the manufacturing sector level, but much less so at the agricultural level. When landlocked countries are exporting, indicator (o) Transit guarantees yields statistically significant results. The twelve import/export TFIs also have a significant impact on landlocked countries' trade, including the Formalities (h, g, f) and the Information availability (a) indicators. Less statistically robust results were obtained at this stage for the remaining indicators.

23. Available public data in the area of transit measures is very limited and much more remains to be done with respect to improving the quality of the data already collected, going through the stage of verification, as well as extending the geographic coverage for landlocked and transit countries, where possible.

24. Further work could aim at improving the quality of the right-hand side variables (i.e. trade flows for landlocked developing countries) not only by trying to fill some of the gaps in bilateral flows missing data, but also by trying to find proxy estimates for transit trade data. This could lead to more meaningful regression estimations. Once having improved trade data availability, further work can be concentrated on the form of the specification. A linear form of the specification was used by adding the facilitation measures characterizing the different parts of the cross-border shipment, from the exporter (importer) through the transit country (countries) until reaching the importer (exporter). It is possible there are more synergies between the indicators characterising the importer, exporter and transit countries. These could be explored through interactions between the import/export TFIs, the transit TFIs, and infrastructure indices. Second, the impact on trade costs needs to be tested as well. Obtaining robust results for the impacts of the import/export TFIs on bilateral trade costs already proved highly challenging and improvements in the calculation of such trade costs could lead to more statistically significant results. The same challenges apply to trade costs specific to landlocked countries, where it is necessary to increase the number of observations by obtaining better quality background data that would allow having sufficient data variability in order to provide meaningful results.

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## ANNEX 1. STRUCTURE OF THE VARIABLES

### INDICATOR (M) – TRANSIT FEES AND CHARGES

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**Variable 79.** Information availability on transit fees and charges \*

DCNT	Definition
1.1.1(c) and 6.1.4	(0) Information on transit fees and charges is not published (1) Information is available in paper publications (2) Information is displayed on the customs website

\* Information about transit fees and charges, the reason thereof, the responsible authority and when and how to make the payment

**Variable 80.** Prior publication of transit fees and charges

DCNT	Definition
6.1.5	(0) There is no prior publication of changes to fees and charges (1) Information on changes is published in advance (2) Information on changes is published in advance on customs website

**Variable 81.** Periodic review of fees and charges and adaptation to changed circumstances

DCNT	Definition
6.1.6 and 11.7(b)	(0) There is no periodic review of fees and charges (1) Fees and charges are reviewed periodically (at least biennial) (2) Fees and charges are reviewed periodically (annually or more frequently)

**Variable 82.** Evaluation of transit fees and charges

DCNT	Definition
6.1.3 and 11.7(c)	(0) Transit fees and charges are calculated on an <i>ad-valorem</i> basis (2) Transit fees and charges are not calculated on an <i>ad-valorem</i> basis

### INDICATOR (N) – TRANSIT FORMALITIES

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**Variable 83.** Information on transit formalities and documentation

DCNT	Definition
1.1(a)	(0) There is insufficient information published on procedures, required forms and documents to make a shipment (1) There is sufficient information published (2) There are summary guides and/or specific highlights on these topics

**Variable 84.** Periodic review and adaptation to changed circumstances

DCNT	Definition
10.1.1 and 11.3(b)	(0) There are no periodic reviews of documents and procedures (1) Documents and procedures are reviewed periodically (at least biennial) (2) Documents and procedures are reviewed and adapted to changed circumstances (annually or more frequently)

**Variable 85.** There are physically separate border-crossing facilities/infrastructure for transit

DCNT	Definition
<b>11.8</b>	(0) There are no physically separate border crossing facilities (1) There are physically separate border crossing facilities at large transit entry points (2) There are physically separate transit facilities at all entry points where trade transits

**Variable 86.** Limited physical inspections of goods and use of risk assessment

DCNT	Definition
<b>11.9</b>	(0) Transit trade goods are subject to frequent (>10%) physical inspections, risk based system is not used or used on a limited basis (1) Transit trade goods are evaluated using a risk assessment to reduce physical inspections of goods (2) Transit trade goods are rarely inspected due to a risk assessment model

**Variable 87.** Quality controls or technical standards applied

DCNT	Definition
<b>11.10</b>	(0) Quality controls and technical standards are applied as for entry into the domestic economy (i.e. transit not treated differently than imports) (1) Quality controls and technical standards are applied only to hazardous materials and high risk cargos (2) Quality controls and technical standards are not applied to transit trade

**Variable 88.** Pre-arrival processing for transit trade

DCNT	Definition
<b>11.11</b>	(0) Pre-arrival processing of documents for transit trade is not supported (1) Pre-arrival processing for transit is supported for some importers\ goods\ entry points\ modes of transport (2) Pre-arrival processing is supported for all transit goods and entry points

**Variable 89.** Establishment of single window for transit trade

DCNT	Definition
<b>10.4.1</b>	(0) There is no single window for transit trade (1) Some points of entry provide a single window for transit trade (2) All transit trade can be submitted to a single window

#### INDICATOR (O) – TRANSIT GUARANTEES

**Variable 90.** Multiple forms of guarantees accepted (bonds, refund, and guarantee)

Definition
(0) No guarantees or bonds are accepted (only payments of charges with refund) (1) At least one form of non-monetary guarantee is accepted (bonds, guarantee, suspension) (2) More than one form of guarantee is accepted

**Variable 91.** Guarantees are limited to the value of duties and charges

DCNT	Definition
11.14	(0) Guarantees are not limited to the amount of duties and charges (2) Guarantees are limited to the amount of duties and charges <sup>5</sup>

**Variable 92.** Guarantees supported by regional or international agreements

DCNT	Definition
	(0) Transit guarantees are not supported by regional or international agreements (2) Transit guarantees are supported by regional or international agreements

**Variable 93.** Prompt and full release of the guarantee

DCNT	Definition
11.13 and 11.15	Average number of days required for full release of guarantees

**Variable 94.** Use of Customs convoys

DCNT	Definition
11.17	(0) Convoys are used without limits (1) Convoys are only employed for high risk goods (2) Convoys are seldom employed

#### INDICATOR (P) – TRANSIT AGREEMENTS AND COOPERATION

**Variable 95.** Bilateral or regional agreements

DCNT	Definition
11.18	(0) No bilateral or regional transit agreements (1) At least one bilateral or regional agreement (2) More than half of transit trade is under bilateral or regional agreements

**Variable 96.** Agreements on common simplified documents

DCNT	Definition
	(0) No agreements on common or simplified documents (2) At least one agreement on common or simplified documents

**Variable 97.** Transit Cooperation

DCNT	Definition
11.18	(0) There is no cooperation between the agencies of countries involved in transit (1) Limited cooperation on formalities and legal requirements (2) Cooperation on formalities, legal requirements and the practical operation of transit regimes

<sup>5</sup> Limits may be set at the highest duties and fees.

## ANNEX 2. COUNTRY LISTS

### *Sub-Saharan Africa region (countries with transit indicators available)*

Benin, Burkina Faso, Cote d'Ivoire, Ghana, Mozambique, Namibia, Senegal, South Africa, Tanzania, Togo

### *Asia region (countries with transit indicators available)*

Azerbaijan, Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Kyrgyz Republic, Malaysia, Nepal, Russian Federation<sup>6</sup>, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Viet Nam

### *Landlocked and transit countries in the analysis*

**Table 1. Landlocked and transit countries in the analysis**

Landlocked country	Region	Transit countries
Azerbaijan	Asia	Russian Federation
Bhutan	Asia	India
Botswana	Sub-Saharan Africa	South Africa, Namibia
Burkina Faso	Sub-Saharan Africa	Cote d'Ivoire, Togo, Ghana
Burundi	Sub-Saharan Africa	Tanzania
Kazakhstan	Asia	Russian Federation
Kyrgyz Republic	Asia	Russian Federation
Lesotho	Sub-Saharan Africa	South Africa
Malawi	Sub-Saharan Africa	South Africa, Mozambique
Mali	Sub-Saharan Africa	Cote d'Ivoire, Togo, Ghana, Senegal
Mongolia	Asia	China, Russian Federation
Nepal	Asia	Bangladesh, India
Rwanda	Sub-Saharan Africa	Tanzania
Swaziland	Sub-Saharan Africa	South Africa, Mozambique
Zambia	Sub-Saharan Africa	South Africa, Mozambique, Tanzania
Zimbabwe	Sub-Saharan Africa	South Africa, Mozambique

*Note:* The table list only the landlocked and transit countries for which we have information in the TFIs database (i.e. data for the twelve import/export TFIs for both the landlocked and transit country, and transit indicators data for the selected transit countries).

<sup>6</sup> As the Russian Federation is a transit country for landlocked countries in Central Asia (Table 1), for the simplification of country grouping, we include it in the Asia geographic region.

### ANNEX 3. RELEVANCE OF THE VARIABLES

Since the quality of data collected represents a major issue in the case of transit facilitation measures, we could face the problem that some of the variables might not vary a lot within the sample and could lead to irrelevant categories when the transit indicators are tested. Due to insufficient data in the sample, Variable O93 (Prompt and full release of the guarantee) is dropped from the construction of indicator (o) at this stage. As shown in Table 2 and 3, there seems to be sufficient variation within each of the transit indicators.

**Table 2. Standard deviation among transit indicators variables**

ID	Std dev						
Var_M79	0.953463	Var_N84	0.849837	Var_N89	0.697982	Var_O94	1.032796
Var_M80	0.843274	Var_N85	0.863802	Var_O90	0.76742	Var_P95	0.358569
Var_M81	0.813575	Var_N86	0.858673	Var_O91	0.857864	Var_P96	0.966092
Var_M82	0.982365	Var_N87	0.803837	Var_O92	0.601585	Var_P97	0.506623
Var_N83	0.699206	Var_N88	0.666125	Var_O93			

**Table 3. Variation for each transit indicator**

Overall		Sub-Saharan Africa		Asia	
ID	Std dev	ID	Std dev	ID	Std dev
TFI_M	0.725201	TFI_M	0.644061	TFI_M	0.794901
TFI_N	0.479608	TFI_N	0.287692	TFI_N	0.564015
TFI_O	0.518802	TFI_O	0.506211	TFI_O	0.521638
TFI_P	0.512452	TFI_P	0.644061	TFI_P	0.3966

#### ANNEX 4. GRAVITY TRADE SPECIFICATION

Limao and Venables (1999) use a gravity equation framework for testing the impact of transit countries infrastructure on the landlocked countries trade. They construct a transit infrastructure variable. Authors consider  $L$  to be a given landlocked country and  $L_t$  the set of transit countries  $L$  uses to reach the sea. Ideally, a set of weights that reflect the probability that the infrastructure of each country in  $L_t$  is used by  $L$  should be considered, but such an information is difficult, if not impossible, to find for a wide range of countries. The available data reports solely if a country is used for transit or not, thus authors assign an equal probability of infrastructure use to each transit country in  $L_t$ . So, if country  $L$  uses  $n$  transit countries the transit infrastructure variable for that country gives an equal weight of  $1/n$  to each of those countries' measure of their considered infrastructure index. Authors note two caveats. First, they assume that no trade (or the same share of trade for all countries) goes by air. Airborne trade is still small enough for landlocked countries to justify this assumption. Second, trade flows or trade costs between landlocked countries and their neighbours should not include the cost of going through the transit infrastructure. As such, when considering trade with neighbouring countries  $i$  and  $j$ , the transit infrastructure variable is adjusted: if  $i$  and  $j$  are neighbours and  $j$  ( $i$ ) is landlocked the transit country infrastructure variable is set to zero since no transit country must be used (i.e. the transit country infrastructure index is multiplied by  $1 - \text{contiguity}_{ij}$ , where  $\text{contiguity}_{ij}$  is a dummy variable equal to 1 if countries  $i$  and  $j$  share a border).

In a similar way, we build the transit trade facilitation indicator for a landlocked country  $L$ . In the case of the import/export TFIs, we have tested specifications that took into account the twelve TFIs characteristic to the importer country ( $\text{TFI}_i^c$ ), both the importer and exporter country TFIs ( $\text{TFI}_i^c$  and  $\text{TFI}_j^c$ ), as well as an interacted measure of the two (the geometric average of the importer and exporter TFIs,  $\sqrt{\text{TFI}_i^c * \text{TFI}_j^c}$ ). In the case of transit trade, the specifications are similar, but a third facilitation dimension needs to be accounted for – transit measures for the transit country (shipping  $k$  from  $i$  to  $j$  via  $T_k$ ). The gravity specification is adjusted to take into account the fact that transit facilitation measures in country (countries)  $T_k$  can have an impact on trade between the landlocked country  $j$  and its trading partner  $i$ .

$$\ln(x_{ijt}^k) = \beta_0 + \beta_1^k \ln(\text{distance}_{ij})_{\text{MR}} + \beta_2^k \text{contiguity}_{ij}_{\text{MR}} + \beta_3^k \text{language}_{ij}_{\text{MR}} + \beta_4^k \text{colony}_{ij}_{\text{MR}} \\ + \beta_5^k \text{rta}_{ij}_{\text{MR}} + \beta_6^k \text{GDP}_{it} + \beta_7^k \text{GDP}_{jt} + \text{TFI}_j^c + \beta_8^k \text{TFI}_j^{\text{transit}} * (1 - \text{contiguity}_{ij}) \\ + D_t + D_k + \varepsilon_{ijt}^k$$

where:

$x_{ij}$  represents trade from  $i$  to  $j$  ( $j$  is a landlocked country and  $i$  its trading partner)

in  $\text{TFI}_j^c$  -  $c$  accounts for each of the import/export TFIs

$\text{TFI}_j^{\text{transit}}$  is the transit indicator for the transit country (or average, when there is more than one transit country) of landlocked country  $j$  (when  $i$  is a landlocked country as well, we consider  $\text{TFI}_i^{\text{transit}}$ ); Table 1 in Annex 2 lists the transit countries for each of the landlocked countries considered.

Three specifications are tested: first, we include each of the importer-side import/export TFIs<sup>7</sup> and the transit indicators (reg1p); then, we include each of the importer-side and exporter-side first

<sup>7</sup> This refers to all the import/export TFIs, with the exception of TFI (k) on Consularization for which we did not have sufficient reliable data to test the impact.

TFIs, as well as the transit indicators (reg2p); lastly, we include the geometric average of the TFIs and the transit indicators (plus an additional specification where the geometric average is adjusted for multilateral resistance) (reg3p and reg3bisp).

As in the case of the specifications run for the twelve import/export TFIs, in order to enlarge the number of observations, take into account multilateral resistance and price variation, we run a panel covering the period 2002-10. A cross-section is run for 2009 and results are consistent with the panel. The specification takes into account multilateral resistance according to the Baier and Bergstrand (2009) approach. Poisson estimations are reported. The sample includes the landlocked and transit countries for which we have data for both the twelve import/export and for the transit indicators (i.e. data for the twelve import/export TFIs for both the landlocked and transit country, and transit indicators data for the selected transit countries).

### ***Infrastructure and transit measures***

The effectiveness of trade facilitation for transit countries can be highly dependent on infrastructure, and vice versa, suggesting the indicators could be modelled as multiplicative (interactive) terms with infrastructure. We adjust thus the specification by introducing a measure of trade and transport-related infrastructure (e.g. ports, railroads, roads, information technology) drawn from the World Bank Logistics performance index (LPI)<sup>8</sup> (the index ranges from 1=low quality to 5=high quality). The LPI is available for three years: 2007, 2010 and 2012. Since we run a panel for the period 2002-10, we consider the 2007 value as the average value of the index valid for the sub-period 2002-06 and the 2010 value as the average value valid for the sub-period 2007-10.

The same specifications, augmented with the interaction between the infrastructure quality index and the transit indicators, were tested. At this stage, very few robust results across the different specifications were obtained. This suggests that further work needs to focus on two directions: on the one hand, the form of the specification and the way interactions are accounted for; on the other hand, testing the impact of alternative infrastructure-related available measures.

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<sup>8</sup> Data is available at <http://data.worldbank.org/indicator/LP.LPI.INFR.XQ>.

## APPENDIX 1. GRAVITY REGRESSIONS

The following tables provide the respective coefficients of every TFI depending on the specification and the sector.

Table 4. Overall sample – total trade and individual import/export TFIs

Sector	Total				Total			
	Landlocked				All			
	All				Landlocked			
Importer sample								
Exporter sample	reg1p	reg2p	reg3p	reg3bis p	reg1p	reg2p	reg3p	reg3bis p
TFI (a)	0.4182*** (-0.2652)	0.3267** (-1.1762) 0.4457*** (-1.1245)	0.5224** (-0.3499)	0.7623* (-1.888)	0.4004*** (-1.0085)	0.5291* (-0.3299) 0.6125** (-0.9926)	0.6288*** (-1.3375)	0.5428* (-1.0632)
TFI (m)	0.0976 (-2.9823)	-0.2654 (-1.0023)	0.0982 (-2.9581)	0.0981 (-2.0234)	0.1254 (-3.8723)	0.0345 (-2.5344)	-0.4455 (-2.9187)	0.1288 (-3.8725)
TFI (n)	0.1947*** (-0.8651)	0.2576** (-1.3261)	0.5545*** (-1.4231)	0.981** (-0.5241)	0.2981* (-1.2561)	0.3956** (-1.7038)	0.4532** (-0.9182)	1.2345* (-1.7652)
TFI (o)	0.1234 (-3.7219)	0.3261 (-1.9872)	0.3548* (-1.1567)	0.2576* (-1.0027)	0.3543* (-0.5671)	0.4115* (-1.2291)	0.4581*** (-1.0182)	0.5921** (-1.2827)
TFI (p)	0.1762*** (-0.0214)	0.2041** (-0.0981)	0.1095*** (-1.4031)	0.1734* (-0.0617)	0.2671** (-0.0429)	0.1982** (-1.0573)	0.3256* (-0.4456)	0.4047** (-1.5291)
TFI (b)	0.3107 (-2.9821)	0.2194 (-1.8561) 0.1145** (-1.8016)	0.4592 (-1.9327)	0.5561* (-0.3357)	0.1127 (-1.6245)	0.0982 (-2.2555) 0.0852 (-2.0043)	0.5429 (-2.0021)	0.4125* (-0.2954)
TFI (m)	0.1005 (-4.6782)	-0.1562 (-3.8762)	-0.1123 (-2.9927)	0.1245 (-2.3789)	-0.2361 (-3.6721)	-0.1981 (-1.9982)	0.2905 (-1.8927)	0.2512 (-3.5561)
TFI (n)	0.1940*** (-1.5278)	0.1988** (-1.0054)	0.2235** (-0.2781)	0.2783* (-1.6254)	0.2884** (-1.5629)	0.3482** (-0.4023)	0.2167*** (-0.9276)	0.3327* (-1.4027)
TFI (o)	-0.1976 (-2.5428)	-0.2056 (-2.0043)	0.1987* (-1.2563)	0.1576 (-4.5578)	0.1492** (-0.5021)	0.1234* (-1.1256)	-0.334 (-2.9825)	0.1152*** (-1.9982)
TFI (p)	0.1887** (-1.1729)	0.1145** (-1.4338)	0.2543* (-2.5423)	0.1988*** (-0.8723)	0.1834*** (-1.1234)	0.1933* (-2.0982)	0.2523** (-0.4389)	0.2312*** (-0.2045)
TFI (c)	0.1005* (-1.7234)	0.1123* (-1.2509)	0.2387** (-1.5628)	0.3256** (-0.9824)	0.2314** (-1.8916)	0.1987** (-1.1894) 0.1283* (-2.0052)	0.2891 (-2.5219)	0.4357** (-1.9963)
TFI (m)	0.2166 (-4.7819)	0.1982 (-3.8819)	-0.1457 (-2.7781)	0.2671 (-4.1192)	-0.1891 (-3.6571)	0.251 (-2.113)	0.1005* (-1.0081)	0.1229 (-2.569)
TFI (n)	0.5127** (-1.6791)	0.2871*** (-1.9824)	0.3576*** (-1.1282)	0.3482** (-1.2781)	0.5528** (-1.5243)	0.3823** (-0.0081)	0.3982*** (-1.5312)	0.4459* (-0.5872)
TFI (o)	-0.1046 (-5.6723)	0.2561 (-1.4589)	0.1588* (-1.0028)	0.2055 (-2.3457)	0.0918** (-0.4338)	0.1182*** (-1.087)	0.2209 (-2.7432)	0.1537** (-0.6734)
TFI (p)	0.4867*** (-0.0238)	0.3178*** (-0.1681)	0.3516** (-2.2291)	0.3115** (-1.4389)	0.4119** (-1.0981)	0.3826* (-1.156)	0.2489** (-0.7251)	0.3937*** (-0.5812)
TFI (d)	0.0981 (-0.5231)	0.1675* (-1.4012)	0.3345 (-0.1429)	0.4451 (-0.8723)	0.2345** (-2.6529)	0.2019* (-2.1006) 0.1892 (-2.768)	0.4891* (-2.5231)	0.5021* (-0.7732)
TFI (m)	0.1561 (-2.9961)	0.195* (-1.061)	0.2071 (-2.9971)	0.1971 (-3.5568)	0.1813 (-2.1567)	-0.2182 (-3.0067)	0.2567 (-2.8891)	-0.1091 (-1.9982)
TFI (n)	0.6781*** (-0.6791)	0.2871*** (-0.9824)	0.3576*** (-1.1282)	0.3482*** (-0.2781)	0.8128** (-0.5243)	0.3823*** (-1.0081)	0.3982*** (-1.5312)	0.4459* (-0.9872)
TFI (o)	0.2488 (-5.1823)	0.1976 (-1.9557)	0.0982 (-1.5567)	0.2154 (-2.9946)	0.1692* (-0.9948)	0.1218 (-2.8734)	0.2598** (-1.0092)	0.1155* (-0.0337)
TFI (p)	0.5385*** (-0.0062)	0.4892** (-0.2281)	0.5138** (-1.1467)	0.3761*** (-0.5671)	0.6721*** (-0.1819)	0.3529*** (-1.2812)	0.5125** (-1.1782)	0.4481*** (-1.637)
TFI (e)	0.0886 (-2.8725)	0.1267 (-2.0026)	-0.2256 (-3.5237)	0.4821* (-0.0215)	0.2387* (-0.9815)	-0.2219* (-0.4115)	0.1984** (-1.5745)	-0.3381* (-1.1286)
TFI (m)	0.1591 (-2.7718)	-0.278 (-3.5591)	-0.1972** (-0.9438)	0.2118 (-5.1927)	0.108 (-4.2761)	-0.195 (-3.7912)	-0.1567 (-2.8872)	0.0876* (-0.9382)
TFI (n)	0.3891** (-0.5231)	0.434*** (-1.0003)	0.3128** (-1.0256)	0.4017* (-1.211)	0.3011** (-1.0135)	0.3538* (-1.1029)	0.2423*** (-0.0051)	0.1870 (-1.4517)
TFI (o)	0.0884 (-3.5682)	0.1123 (-2.9887)	0.1544 (-1.9984)	0.192* (-1.1127)	0.0785 (-2.3673)	0.1762** (-1.0437)	0.1208** (-1.0329)	0.1045* (-0.5567)
TFI (p)	0.1153*** (-0.8832)	0.2533** (-1.2188)	0.1098** (-1.1154)	0.1483** (-2.3218)	0.1874*** (-0.3347)	0.2118*** (-0.5671)	0.098** (-0.1897)	0.097** (-0.2256)
TFI (f)	0.4981*** (-1.1124)	0.4864** (-0.8217)	0.5528** (-0.6742)	0.6719*** (-0.0817)	0.5002** (-1.0891)	0.3856** (-0.4591)	0.6019** (-0.039)	0.5583*** (-1.8762)
TFI (m)	0.2532 (-4.2812)	0.1973 (-3.2783)	-0.1448 (-3.7683)	-0.1982 (-2.7785)	0.0875* (-1.0082)	0.2118 (-3.2897)	0.1763 (-3.0082)	-0.421 (-4.9965)
TFI (n)	0.3129* (-1.3812)	0.2297*** (-1.1184)	0.2183 (-2.5672)	0.2567** (-1.3451)	0.671** (-0.0278)	0.5328* (-0.1121)	0.3543*** (-0.0895)	0.4381* (-1.0772)
TFI (o)	0.0955 (-3.8876)	0.128 (-2.5983)	0.0843 (-3.6529)	0.0877 (-2.729)	0.1023** (-0.0346)	0.1529** (-1.1821)	0.1125** (-0.0378)	0.1533* (-0.2268)
TFI (p)	0.1185** (-2.1147)	0.1583** (-0.0743)	0.1072** (-0.1764)	0.0962** (-1.0056)	0.1543*** (-1.1821)	0.2845 (-4.6721)	0.2189** (-0.0876)	0.2567*** (-0.637)

Table 4. Overall sample – total trade and individual import/export TFIs (cont.)

Sector	Total				Total			
	Landlocked				All			
Importer sample	Landlocked				All			
Exporter sample	All				Landlocked			
	reg1p	reg2p	reg3p	reg3bisp	reg1p	reg2p	reg3p	reg3bisp
<b>TFI (g)</b>	0.5129*** (-1.0985)	0.3982** (-1.0219)	0.7782** (-0.4319)	0.8823** (-0.0091)	0.4976*** (-0.5419)	0.5092** (-0.8761)	0.6293** (-0.4378)	0.5983*** (-0.4256)
<b>TFI (m)</b>	0.1713 (-3.471)	0.0753 (-2.5578)	-0.0982 (-3.5234)	0.1143 (-5.117)	0.2153 (-2.1478)	-0.0918* (-1.2067)	-0.1913 (-2.8876)	-0.2931 (-4.762)
<b>TFI (n)</b>	0.4482*** -1.5028	0.5128** -0.6783	0.4583* -0.5678	0.3289* -0.4321	0.5754** -0.8799	0.4388*** -0.4211	0.4182*** -1.5671	0.4563* -0.5911
<b>TFI (o)</b>	0.2088 (-4.3377)	0.2133 (-2.9833)	0.0587* (-2.006)	0.1043 (-2.9532)	0.2051** (-0.2647)	0.1016* (-1.177)	0.1282** (-0.1397)	0.1826* (-0.4235)
<b>TFI (p)</b>	0.2284*** (-0.8836)	0.1985** (-0.5693)	0.2573** (-0.6298)	0.1763** (-0.0989)	0.2784*** (-0.2983)	0.1568*** (-0.7835)	0.1937** (-0.0789)	0.2471*** (-0.423)
<b>TFI (h)</b>	0.6423*** (-0.9872)	0.5582*** (-0.4561)	0.8876*** (-1.4513)	0.9137** (-0.7649)	0.5098*** (-1.5278)	0.6439*** (-0.8337)	0.7992*** (-1.0045)	0.9587** (-0.9826)
<b>TFI (m)</b>	0.1325 (-3.9871)	-0.1671 (-3.827)	-0.2342 (-4.5128)	-0.1924 (-3.9826)	-0.2119 (-3.5562)	-0.0927 (-2.826)	0.1017 (-1.8824)	-0.1114 (-1.1876)
<b>TFI (n)</b>	0.3891*** -0.5231	0.434*** -1.0003	0.3128** -1.0256	0.4017* -1.211	0.3011*** -1.0135	0.3538* -2.1029	0.2423*** -1.0051	0.1870 -3.4517
<b>TFI (o)</b>	0.0651* (-1.0432)	0.1067 (-0.6752)	0.0982* (-0.7632)	0.0911 (-1.5562)	0.1136 (-2.7629)	0.1146* (-0.6548)	0.0572** (-1.3662)	0.0533 (-2.8156)
<b>TFI (p)</b>	0.1153*** (-0.8832)	0.2533** (-1.2188)	0.1098** (-1.1154)	0.1483** (-0.3218)	0.1874*** (-0.3347)	0.2118*** (-0.5671)	0.098** (-0.1897)	0.097*** (-0.2256)
<b>TFI (i)</b>	0.0456 (-0.9476)	0.1982 (-0.8873)	0.2567 (-2.2056)	-0.297 (-0.5582)	0.3289 (-1.0482)	0.1050* (-1.2542)	0.3546* (-1.5641)	-0.2985 (-2.5673)
<b>TFI (m)</b>	0.1128** (-0.5423)	0.2176 (-3.6628)	0.1814 (-2.5612)	-0.1914 (-2.3492)	0.1083 (-2.0018)	-0.0914* (-1.0021)	0.224 (-3.1892)	-0.1176 (-2.8825)
<b>TFI (n)</b>	0.5891*** -0.0432	0.5083*** -0.4512	0.528** -0.9256	0.4962* -1.2356	0.4582** -0.0128	0.4872* -0.1224	0.3977*** -1.1981	0.4071* -1.0765
<b>TFI (o)</b>	0.1874 (-2.7829)	0.1523 (-2.5871)	0.1677* (-1.8524)	0.1067* (-1.2381)	0.0972 (-3.1171)	0.1672** (-0.4487)	0.1276** (-0.4481)	0.1195 (-1.8772)
<b>TFI (p)</b>	0.2267*** (-0.7562)	0.2581** (-1.9823)	0.2965** (-0.1172)	0.2392** (-1.3182)	0.1972*** (-0.3582)	0.2567*** (-0.4821)	0.2861** (-0.5562)	0.2763*** (-1.3328)
<b>TFI (j)</b>	0.1982 (-2.429)	0.2573 (-0.9943)	0.3381 (-1.7392)	-0.2943** (-1.3429)	0.2563* (-1.4752)	-0.1985** (-1.3871)	0.4056* (-1.8279)	-0.3567*** (-0.5142)
<b>TFI (m)</b>	-0.2781 (-4.8991)	-0.235 (-2.1891)	0.162 (-1.8724)	-0.0918 (-2.1876)	0.1183*** (-1.209)	0.1428 (-1.5567)	0.1981* (-1.5429)	-0.2187 (-3.9981)
<b>TFI (n)</b>	0.6712*** -0.5612	0.5911** -1.3278	0.5071** -1.0082	0.4915* -0.5561	0.5117*** -0.5641	0.4532* -2.1126	0.4182** -1.1165	0.4852* -2.2245
<b>TFI (o)</b>	0.0862** (-1.4392)	0.1233* (-0.9972)	0.0927 (-2.4533)	0.1077 (-1.9982)	0.1213 (-2.1772)	0.1583** (-0.5392)	0.1813* (-1.5237)	0.1492** (-1.2921)
<b>TFI (p)</b>	0.1814** (-0.1452)	0.2167** (-1.008)	0.1942** (-4.2822)	0.1518* (-0.8712)	0.1913*** (-0.5623)	0.2283** (-0.7761)	0.2119** (-0.0562)	0.1782*** (-1.2237)
<b>TFI (l)</b>	0.2543*** (-1.5619)	0.3128* (-1.4032)	0.3956** (-2.6578)	0.4386*** (-3.5610)	0.2931** (-0.9826)	0.2561*** (-0.8723)	0.4341*** (-1.6729)	0.4582*** (-2.040)
<b>TFI (m)</b>	0.1467 (-2.6511)	-0.0826 (-1.9943)	0.1573 (-2.1176)	0.2853 (-1.0082)	-0.1107* (-0.0562)	-0.0987 (-1.5563)	0.1903 (-3.5561)	-0.1033 (-2.7655)
<b>TFI (n)</b>	0.3188*** -0.7894	0.3961*** -0.0783	0.4567** -1.008	0.4483* -0.632	0.3565** -1.2354	0.317* -0.0843	0.2963*** -1.2251	0.3946* -2.5321
<b>TFI (o)</b>	0.0915** (-1.6513)	0.1129* (-1.182)	0.1045 (-2.299)	0.1475* (-0.9251)	0.1565 (-1.9981)	0.0896** (-0.6239)	0.1582** (-1.328)	0.1025** (-1.3187)
<b>TFI (p)</b>	0.1915*** (-0.7352)	0.234** (-1.1563)	0.2467** (-2.0023)	0.2198** (-0.1125)	0.2376*** (-0.3372)	0.1762*** (-0.2087)	0.2109** (-0.0065)	0.0843** (-0.4278)

Note: Robust standard errors clustered by country pair. Fixed effects for time and sector are used but not reported for brevity. p stands for Poisson. R-squared ranges between 45-59%.

Table 5. Overall sample – total trade and all import/export TFIs

Sector	Total				Total			
Importer sample	Landlocked				All			
Exporter sample	All				Landlocked			
	reg1p	reg2p	reg3p	reg3bisp	reg1p	reg2p	reg3p	reg3bisp
TFI (a)	0.3261***	0.2112***	0.2905***	0.3553*	0.2793***	0.0178	0.5487***	1.2282***
	-1.543	-2.5455	-2.3977	-1.7338	-1.2765	-1.4737	(-1.7234)	-1.5332
TFI (b)	0.2591	0.0120**	0.3218***	0.4296***	0.0752*	0.0521***	0.0941***	-0.4091***
	-9.8213	-5.6804	-1.6248	(-4.3282)	-3.2544	-1.4445	-5.221	(-5.1139)
TFI (c)	0.3962	0.3574	0.2181***	0.2671***	0.2669***	0.1763***	0.3675**	0.2592***
	-10.411	-8.2677	-4.1681	(-4.1479)	-2.2651	-2.2109	-2.7423	(-2.1272)
TFI (d)	0.1055	0.1035***	0.1824***	-0.3581	-0.0178	-0.1125	0.2035	0.6572
	-7.9567	-5.1812	-4.0627	(-7.1133)	(-0.7531)	(-0.7322)	-11.1192	-10.1157
TFI (e)	0.1282	0.1704	0.2345	0.915	0.0365	0.0234	0.0567	0.3174
	-1.9199	-1.5532	-4.2591	-1.1923	-1.4823	-1.3472	-2.8213	-1.0756
TFI (f)	0.4002***	0.2213***	0.3089***	1.1131***	0.3195**	0.3275	0.3170***	1.0733***
	-1.8212	-1.0072	-0.9121	-0.9544	-0.9715	-1.7761	-6.0248	-5.4118
TFI (g)	0.5032***	0.3158***	0.3474***	0.8147**	0.3485**	0.1112*	0.2756***	0.6599***
	-1.5243	-4.1245	-3.8376	-3.2123	-1.6257	-0.6342	-3.329	-1.8923
TFI (h)	0.7441***	0.8411**	1.1126***	1.7937***	0.5281***	0.1325**	0.4482***	1.1240***
	(-1.4523)	-0.6521	-6.6321	-4.5123	-4.9959	-0.9423	-2.4365	-1.9642
TFI (i)	0.1232	0.1093*	0.0911	0.9952	0.0225	0.0212	0.0673*	0.1522
	(-1.7506)	(-2.6281)	(-2.1565)	-3.8241	-0.8401	-0.7641	(-1.5273)	-1.0834
TFI (j)	0.0253	-0.1542	0.0525	0.2192	-0.0392	0.0326	0.0315**	-0.0965
	-1.2312	(-0.0438)	-0.3882	-1.8576	(-1.4562)	(-1.7991)	(-2.1941)	(-1.4972)
TFI (l)	0.1421***	0.0125***	0.3398***	0.2192**	0.0956**	0.0721**	0.0323	0.5529
	-0.3278	-2.1493	-4.2345	(-1.8562)	-1.8518	-1.9333	-0.8471	-3.2268
TFI (m)	0.1733	-0.1271	0.4526	0.3768	0.2875	0.1239	-0.9502	0.4876
TFI (n)	(-2.1589)	(-1.0685)	(-0.2588)	(-2.1322)	(-1.6218)	(-1.5137)	(-3.4421)	-3.1332
TFI (o)	0.4754***	0.3087***	0.5185***	0.6098**	0.4380**	0.4132**	0.7271***	0.8527*
TFI (p)	-0.4154	-2.1751	-1.5969	-1.1743	-1.2398	-0.9927	-0.4182	-1.4625
TFI (q)	0.0715	0.4105	0.2158*	0.1511*	0.3284**	0.3005*	0.3394***	0.2738**
TFI (r)	-0.8521	-1.4832	-1.6599	-1.2058	-3.092	-4.121	-3.792	(-3.832)
TFI (s)	0.2782***	0.1948**	0.2567***	0.2017*	0.3185***	0.2983***	0.4531***	0.3893**
TFI (t)	-1.7685	-0.3397	-0.965	-0.1982	-1.2951	-1.2792	-1.4386	-0.4285

Note: Robust standard errors clustered by country pair. Fixed effects for time and sector are used but not reported for brevity. p stands for Poisson. R-squared ranges between 55-65%.

Table 6. Overall sample – manufacture and agriculture and all import/export TFIs

Sector	Manufacture				Manufacture				Agriculture				Agriculture			
	Landlocked				All				Landlocked				All			
	All				Landlocked				All				Landlocked			
Importer sample	reg1p	reg2p	reg3p	reg3bis	reg1p	reg2p	reg3p	reg3bis	reg1p	reg2p	reg3p	reg3bis	reg1p	reg2p	reg3p	reg3bis
TFI (a)	0.4423***	0.4567***	0.6687***	0.2863	0.4743*	0.1825	0.3251***	0.5644*	0.0771	-0.0532	0.4532**	1.1592*	0.1206**	0.1142**	0.1002*	1.4920**
	-1.7432	-2.8532	-3.8763	(-0.4125)	(-3.7412)	(-0.9563)	-2.4876	(-0.8574)	(-12.334)	(-7.1155)	-1.7261	(-1.9042)	(-0.5423)	(-1.0018)	-1.6823	-2.4126
TFI (b)	0.4236**	(-1.2256)	0.1171**	-0.6716**	0.1983	0.2134	0.3146***	-0.1832	0.0985	0.1112	0.2150***	-0.1365**	0.1735***	0.1183	0.4284**	-0.5853
	-0.6887	-0.6554	-1.7551	(-2.671)	-0.5581	-1.3379	-3.9331	(-0.8151)	-8.7023	-9.7041	-1.3459	(-1.9241)	-3.9627	-5.4912	-3.3281	(-6.9412)
TFI (c)	0.3341***	-2.7711	0.0158	0.2190***	0.2556	0.1243**	0.0168	0.2056*	0.3619	0.1455*	0.1074	0.3392***	-0.0982	0.4815***	0.5124***	0.2505***
	(-1.0246)	(-0.9453)	-3.6271	-1.6609	-1.1641	(-0.0712)	(-1.871)	-2.6178	-1.9267	-5.7778	-8.1051	-4.3189	-3.2143	-5.9118	-2.8711	-0.5912
TFI (d)	0.2787	0.1128	0.4861***	-0.5312	0.1866	0.1561	0.1115	-0.3981	-0.1235	-0.0412	-0.6193	0.4486	-0.1459	-0.1527	-0.3471	0.9120***
	-0.9449	-0.8466	-4.1965	-0.9872	(-0.9688)	(-1.0081)	(-0.0948)	-1.7532	(-6.4492)	(-0.1289)	(-0.7243)	-0.7993	(-1.1812)	(-0.4237)	(-1.5512)	-5.7092
TFI (e)	0.2318***	-4.7821	0.2325	-0.3384	0.1175**	0.2117	0.1556**	0.1152	-0.2981	-0.3158	0.1261	-0.5291	0.2951	0.4472	0.0739	-1.1578
	-0.0585	-0.9288	-1.0054	-0.0075	-2.1372	-0.0943	-0.4123	-1.7747	(-0.1234)	(-0.1075)	-0.8523	(-0.9254)	-0.9012	-2.5561	-0.4512	(-0.1183)
TFI (f)	0.7007***	0.4443***	0.5623***	2.0337***	0.5428*	0.1241	0.9051***	0.8556***	0.4175*	0.2275*	0.6891***	0.7952**	0.5256*	0.1452	0.6760***	0.4552
	-2.2023	-8.7532	-6.3121	-10.6966	-1.9233	-0.0483	-6.5423	-5.1008	-1.6543	-1.6348	-3.2245	-1.2143	-1.7933	-1.5082	-2.9981	-1.2366
TFI (g)	0.8114***	0.6225***	0.7711***	0.8761***	0.4128**	0.1144**	0.8113***	0.8762***	0.4484*	0.1563	0.5883***	0.9542	1.1056	0.1552	0.2718**	0.4517**
	-2.1925	-5.1825	-4.8217	-2.1021	-1.4593	-0.2463	-1.5691	-3.6447	(-1.4862)	(-1.4267)	-1.4298	(-4.5921)	(-10.7631)	(-5.4312)	(-2.6403)	-1.8287
TFI (h)	0.9155***	0.9153***	1.2639***	0.9403***	0.7423**	0.5174**	1.3001***	1.1142***	0.6523**	0.2459	1.1823***	1.4072**	0.5327***	0.5084*	1.4328***	1.5432**
	-1.4031	-7.9341	-5.4134	-1.2196	-3.5091	-2.5591	-9.4032	-3.7452	-1.2289	-1.1128	-2.0018	-2.7239	-1.6586	-1.3942	-1.1556	-2.1829
TFI (i)	0.1172***	-0.0221**	-0.0860***	0.1415	0.1450*	-0.2013**	0.4421***	-0.2231	0.1452	0.2519	-0.1651**	-0.4570***	0.0259	0.1455	-0.1778**	0.3398
	(-0.8556)	(-8.4821)	(-2.4812)	-0.9828	(-1.9712)	(-2.1612)	(-3.1121)	-0.5423	-0.1446	-6.4932	(-1.5543)	(-0.7643)	-0.3255	-0.5584	(-2.0098)	-0.7721
TFI (j)	-0.0013**	0.2184***	0.0892**	0.0704	0.1973	0.2251*	0.1333	-0.2445	0.1172	0.1286	-0.0672	-0.2721	-0.1452	-0.3611	0.0629	-0.1164
	(-0.9588)	(-3.8512)	(-2.654)	(-10.2188)	-1.5616	-1.0651	(-0.3891)	(-0.7911)	-1.6189	-1.2503	(-0.3842)	(-0.5688)	(-0.7122)	(-0.9712)	-0.7612	(-0.3945)
TFI (l)	0.2291**	0.2116*	0.3474***	0.4865**	0.1617*	0.2452*	1.009**	-0.2562	0.3456**	0.3154**	0.7211***	0.6741	0.6191***	0.4158***	0.5788***	1.5436***
	-1.7532	-1.4888	-0.9872	-3.1668	-1.7231	-1.9872	-7.5542	(-0.1049)	(-1.1081)	(-0.9581)	-3.3871	(-0.7629)	-4.1278	-4.6628	-2.9972	-1.8525
TFI (m)	0.1016	0.1428	0.0815	0.1003	0.1472	0.1501	0.1042	0.2093	0.1827	0.0326	0.1128**	-0.0921	-0.1261	0.0221	-0.0872	0.0455
	(-2.4231)	(-2.2714)	-1.652	-2.5682	(-2.9011)	(-2.8723)	-2.1516	-1.418	-1.2005	-11.5632	(-3.4231)	(-3.1335)	-3.5292	-3.4827	(-1.832)	-3.4002
TFI (n)	0.4115***	0.3512***	0.5234***	0.4792***	0.356**	0.6768*	0.5782***	0.4921***	0.0725*	0.0673**	0.0367***	0.6831**	0.2431**	0.2133**	0.1016***	0.4029***
	-0.2891	-1.5811	-1.0719	-0.8162	-1.1463	-0.1982	-0.1721	-1.3106	-1.523	-0.9933	-1.721	-1.2998	-0.2284	-3.1592	-4.533	-1.7345
TFI (o)	0.0104	0.1243	0.3145**	-0.1261	0.1751**	0.2741***	0.1833***	0.3418**	-0.1152	-0.1172	0.0541***	-0.1184	0.2941**	0.3123*	-0.4772	0.1735
	-2.2256	-1.2992	-5.2114	(-0.0732)	-2.6423	-4.339	-4.5857	-3.1561	-2.307	-2.8105	-1.6823	(-0.8884)	-3.231	-3.1182	-6.8212	(-1.005)
TFI (p)	0.2511***	0.2273***	0.2709**	0.5116*	0.1128**	0.3872**	0.5341**	0.5682***	0.1159	0.1552	0.1145***	0.0693**	0.1846**	0.1745**	0.2592**	0.1296
	-0.6177	-1.2228	-2.782	-1.8971	(-1.0831)	(-0.1162)	-1.7451	-1.2812	(-2.5449)	(-2.6211)	-1.2134	-1.5518	-1.9238	-0.9224	-0.8251	(-1.2405)

Note: Robust standard errors clustered by country pair. Fixed effects for time are used but not reported for brevity. p stands for Poisson. R-squared ranges between 48-62%.