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Technical and statistical report

The Trade-and-Transport Dataset

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Acknowledgments

This technical report provides detailed documentation of the content, concepts, sources and methods for the Trade-and-Transport Dataset developed by UNCTAD and the World Bank.

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Glossary

GHG	greenhouse gas
GIS	geographic information systems
HS	Harmonized System
IMF	International Monetary Fund
ITIC	International Transport and Insurance Costs
LDCs	least developed countries
MoT	mode of transport
OLS	ordinary least squares
SIDS	small island developing States
T&T	Trade-and-Transport
UNSD	United Nations Statistics Division

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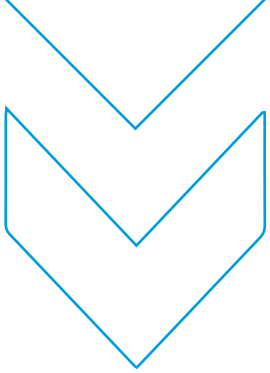


1.

Introduction

1. Introduction

The Trade-and-Transport Dataset provides rich new opportunities for analysis in the light of growing disruptions and fundamental longer-term changes in the global logistics system.

This technical paper presents the concepts, sources and methods behind the Trade-and-Transport (T&T) Dataset, an extended and enhanced version of the Global Transport Costs Dataset for International Trade (GTCDIT) (Hoffmeister *et al*., 2022), developed by UNCTAD and the World Bank. It is publicly available free of charge on UNCTAD's online database UNCTADstat (UNCTAD, 2024a), under the heading "Trade and Transport" in the folder "International Trade", under the URL:

https://unctadstat.unctad.org/datacentre/dataviewer/US.TransportCosts

By making available time series on transport expenditure and transport work, differentiated by mode of transport (MoT), alongside the volumes and value of the international trade flows enabled by that transport, the dataset addresses emerging information needs. Globalization and the rise of international merchandise trade over the last decades has made the global economy increasingly reliant on international freight transport. While the important role of international transport is widely recognized and transport costs constitute a key variable in standard models of international trade, data that allow analyzing effects of changes in international freight transport at a global scale are scarce. In recent years, the global economy has been affected by considerable disruptions in the global logistics system, caused by, for example, the COVID-19 pandemic (UNCTAD, 2021), the war in the Ukraine (UNCTAD, 2022), attacks on cargo vessels in the Red Sea, as well as the blockage of main chokepoints, such as the Suez and the Panama Canal, due to accidents or droughts (UNCTAD, 2024b). Important longer-term changes can be expected from the opening of new shipping routes in the face of ice melting in the Polar region (Wang *et al*., 2018) and the implementation of greenhouse gas (GHG) reduction measures for international transport, as foreseen in the GHG Strategy of the International Maritime Organization (IMO, 2023) which will likely impact maritime transport costs and shipping speed (UNCTAD, 2023; IMO and UNCTAD, 2024). Making available a data source for analyzing the effects of such changes has been a major aim behind the development of the T&T Dataset.

The construction of the dataset was guided by the idea of measuring international freight transport from the trade side and calculating transport expenditure as the difference between the CIF-type and the FOB-type value recorded in international merchandise trade statistics, as the CIF-type value represents the value of the traded goods including costs for insurance and freight and the FOB-type value the value without those costs.[1] The approach of using the CIF-FOB margin as a measure of transport costs is not new. Hummels (2001) and UN-ECLAC (Hoffmann *et al*., 2002) carried out pioneering work in constructing transport costs statistics from that type of data. Hummels compiles CIF-FOB differentials based on detailed data from the national

The T&T Dataset is available **online and free of charge** on UNCTADstat

The dataset addresses emerging information needs in the light of disruptions and longer-term changes in the global logistics system

1 Throughout the remainder of this report, for simplicity, the CIF-type value will be referred to more shortly as "CIF value" and the FOB-type value as "FOB value", although these do not precisely match the corresponding definitions in Incoterms (International Chamber of Commerce, 2019).

Measuring international freight transport from the trade side offers **new opportunities**

Combining official international trade data with model-based estimations enables constructing a **detailed information source with almost global coverage**

offices of the United States of America, New Zealand, Argentina, Brazil, Chile, Paraguay and Uruguay. The statistics from UN-ECLAC are derived from a database constructed from customs records on imports and exports from eleven Latin America countries. In an attempt to obtain global coverage Gaullier and Zignago (2010) derive transport costs from the difference between the CIF value reported by the importing country and the FOB value reported by the exporting country for the same flow in UN Comtrade, the world's largest database of bilateral international trade broken down by product groups. UNCTAD (2017) applies the same approach to bilateral trade data from the Internation Monetary Funds' (IMF) Direction of Trade Statistics, to assess broad trends and patterns in transport costs in developing and developed countries, small island developing States (SIDS), least developed countries (LDCs) and landlocked developing countries (LLDCs). The same method has been applied, though not publicly documented in detail, for the development of the World Input Output Database, where a CIF-FOB adjustment is needed for the conversion from basic to purchaser prices (Streicher and Stehrer, 2013). However, this "implicit" (Miao and Fortanier, 2017) approach to the calculation of transport costs is complicated by the fact that differences between reported CIF values and the mirrored FOB values are not caused by transport costs alone. They are largely a reflection of cross-country discrepancies in the measurement and recording of international trade. Gaullier and Zignago therefore use refined econometric modelling to adjust for that effect, but a certain estimation error cannot be avoided.

Miao and Fortanier (2017) developed an approach to compile international transport costs as "explicit" CIF-FOB differentials, calculated from CIF and FOB values jointly observed on the importers side, for the development of the International Transport and Insurance Costs (ITIC) of Merchandise Trade Dataset released as dashboard by the Organization for Economic Cooperation and Development (OECD, 2025). Over time, the ITIC Dataset has been developed further using UN Comtrade data in addition to data directly collected from national sources (Fiallos *et al.*, 2024). The methods behind the compilation of transport expenditure in the T&T Dataset have much in common with that approach, while the T&T Dataset also provides the breakdown by mode.

Despite considerable advancements in coverage over the last years, the source data used on international merchandise trade are far from having complete coverage. To address these shortcomings, large parts of the T&T Dataset had to be compiled based on limited information about the transport expenditure incurred and the mode by which goods arrived in the economy, using model-based estimation. The result is a relatively detailed information source for international trade and transport with almost global coverage that can be used for analysis in the various domains outlined above, while users should be conscious of the synthetic and experimental nature of the data.

The remainder of this paper is structured as follows. The next chapter provides an overview of the dataset, introducing the meanings of the different variables contained in it and presenting some global patterns and trends it reveals. Chapter III describes the data sources used. Chapter IV outlines the overall compilation process. Chapter V describes the pre-processing step applied to UN Comtrade data to prepare them for estimations and further processing. Chapter VI describes the econometric models; and Chapter VII describes how the final dataset is built; Chapter VIII provides final remarks.

2.

Overview of the dataset

2. Overview of the dataset

The T&T Dataset records main indicators of international merchandise trade and its transport, globally, broken down by origin, destination, commodity and transport mode.

The T&T Dataset records international merchandise trade flows, annually, in values and volumes, alongside the physical work and expenditures incurred for their transport, as well as several indicators derived on that basis. This information is provided as breakdowns by pair of trading partners, commodity group and MoT, from 2016 to 2021. The dataset displays the international merchandise trade and freight transport from 237 economies of origin to 170 economies of destination, broken down by 1,222 commodity groups and five modes of transport: air, sea, rail, road, and others. The basic observation unit is a bilateral trade flow in a specific commodity group transported by a specific mode in the reference year. The dataset covers around 85.2 million of these observation units. They refer to around 165 thousand observations of annual bilateral trade – between 26 and 29 thousand each year – which fan out to 21.3 million observations of bilateral trade detailed by commodity group. An incidence of bilateral trade detailed by commodity group will be referred to in the following as "bilateral commodity flows".

A. Included variables

A description of the variables included in the T&T Dataset is provided in Table 1, differentiating between dimensions, the variables that identify the observation units, and measures, the variables that record characteristics of those units.

The dataset displays international merchandise trade and its transport **from 237 origin to 170 destination economies, by 1,222 types of goods and 5 transport modes, over 6 years**

!
The dataset covers **85.2 million observation units**

Table 1
Variables of the dataset

a) Dimensions

Product	
Description	The traded commodity
Categories	Commodity groups as defined by the Headings (4-digit level) of the Harmonized System (HS) Nomenclature, 2017 edition (World Customs Organization, 2023; UNSD, 2023a).
Origin	
Description	The country of origin as reported by the importer. According to International Merchandise Trade Statistics Concepts and Definitions (UNSD, 2011), this refers to the country in which the traded goods have been produced or manufactured, in accordance with the Revised Kyoto Convention, Specific Annex K / Chapter 1/ E1.
Categories	Economies, as defined by the UNCTAD classification of economies, revision 2024 (UNCTAD, 2024c)
Destination	
Description	The country or territory that has reported an import in its international merchandise trade statistics submitted to the United Nations Statistics Division (UNSD) for release in UN Comtrade
Categories	Economies, as defined by the UNCTAD classification of economies, revision 2024 (UNCTAD, 2024c)

Transport mode	
Description	An MoT used for the shipment of the traded goods (UNSD, 2011)
Categories	00 – Total 99 - Other modes 0u - Non-identified mode 01 - Subtotal: air, sea, rail, road 10 - Air 21 - Sea 31 - Railway 32 - Road 80 – Multimodal
Reference year (Year)	
Description	Year in which the internationally traded goods enter the territory of the destination country, usually approximated by the year of the lodgement of the customs declaration (UNSD, 2011)
Categories	2016, 2017, …, 2021

b) Measures

FOB value (US$)	
Description	The FOB-type value of internationally traded goods, as defined in *"International Merchandise Trade. Concepts and Definitions"*, article 4.6 (UNSD, 2011). It includes the transaction value of the traded goods and the value of services performed for their delivery from the economy of origin to the border of the exporting economy. It is usually derived by customs administrations from the invoice price and the terms of delivery indicated in the contract of sale, as well as from other supporting documents.
Kilograms	
Description	The weight of the internationally traded goods net of packaging
Unit value (US$/kg)	
Description	The average FOB value per kilogram
Formula	[FOB Value] / [kilograms]
Transport expenditure (US$)	
Description	The expenditures invoiced for the services performed to deliver internationally traded goods from the border of the country of origin (*origin*) to the border of the importing country (*destination*), including the shipping the goods and the procurement of insurance against the risk of loss or damage during carriage. They have been calculated as the difference between the CIF value and the FOB value, as defined by International Merchandise Trade Statistics Concepts and Definitions, article 4.6 (UNSD, 2011), in accordance with the definitions in Incoterms (International Chamber of Commerce, 2019). The CIF and the FOB values are usually derived by customs administrations from the invoice price and the terms of delivery indicated in the contract of sale and supporting documents.
Transport work in 1000 $-km	
Description	The product of the distance over which traded goods are transported and their FOB value. Distance refers to the average dollar-weighted minimum distance needed to transport goods from main city centres of the origin to main city centres of the destination country.
Transport work in ton-km	
Description	The product of the distance over which traded goods are transported and their total weight in kilograms. Distance refers to the average kilogram-weighted minimum distance needed to transport goods from main city centres of the origin to main city centres of the destination country.

Ad-valorem freight rate	
Description	The ratio of transport expenditure to the FOB value of the transported goods
Formula	[transport expenditure] / [FOB value]
Per-unit freight rate (US$/kg)	
Description	Average transport expenditure per kilogram of the traded goods
Formula	[transport expenditure] / [kilograms]
Transport costs intensity in US$ per 1000 $-km	
Description	Average transport expenditure per 1000 kilometers as a ratio to their FOB value of the traded goods
Formula	([transport expenditure] / [transport work in terms of value]) · 1000
Transport costs intensity in US$ per ton-km	
Description	Average transport expenditure per ton of the traded goods and per kilometer
Formula	([transport expenditure] / [transport work in terms of volume]) · 1000

Source: UNCTAD.

To manage storage space, average transport distance per value or volume is not explicitly represented as individual variables in the dataset. They can be directly obtained by dividing the goods value or volume, respectively, by the corresponding transport work.

B. Recording of modal split

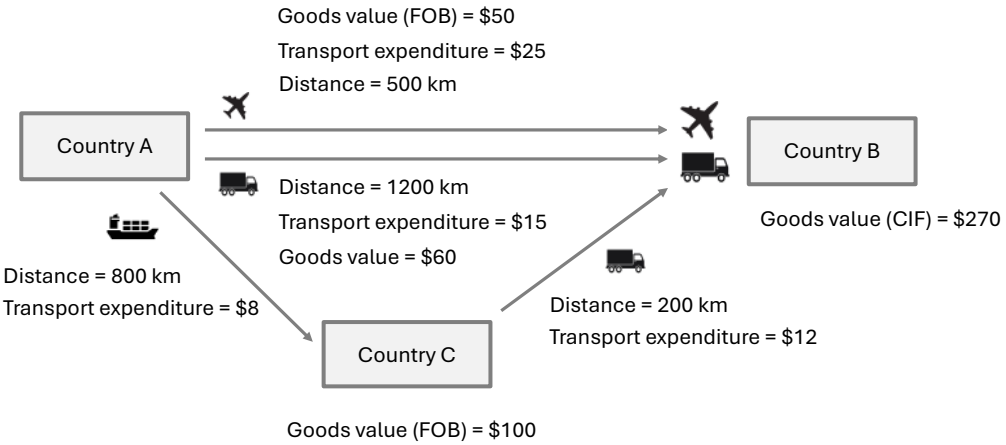
The allocation of international trade data by origin, destination, commodity group, and MoT aligns with standard global compilation methods (UNSD, 2011), as seen in resources like UN Comtrade (United Nations, 2025), the UNCTADstat Trade Matrix (UNCTAD, 2024a), and other datasets on bilateral trade by commodity compiled by the International Trade Center (ITC, 2025) and the World Trade Organization (WTO, 2025). However, the allocation by MoT is a novel approach that warrants further discussion, especially regarding the treatment of intermodal transshipment. Intermodal transshipment has the effect that goods are transported by more than one mode per bilateral import or export, so the value and volume of the goods transported by the various modes will exceed the recorded bilateral trade. To ensure exact adding-up across the modes air, sea, rail and road throughout the dataset, the excess amount is recorded with a negative sign in the residual category "multimodal" (code 80) of the variable "transport mode". This category is therefore an indicator of the amount of transloading of goods across the four modes on their way from the economy of origin to the economy of destination, with a negative sign.

Figure 1 illustrates the recording of intermodal transshipment based on a fictive example in which goods worth $210 are imported by country B from country A, of which goods worth $50 are transported by air, goods worth $60 by road only, and goods worth $100 are first transported to a third country, C, there transloaded on trucks, and then transported by road to country B, the final destination. As a result, goods worth $50 are transported by air, goods worth $100 by sea and goods worth $160 by road. The sum across the three modes is $310, while the value of the traded goods is $210. The difference between the latter and the former value, -$100, will be recorded in the category "multimodal".

The dataset is structured by **5 dimensions and 10 measures**

The recording of the breakdown by transport mode follows a **novel approach to accurately display intermodal transshipment**

Figure 1
Fictive example for the split of a bilateral import across transport routes and modes



Source: UNCTAD.

The recording of the bilateral trade flow above in the T&T Dataset is presented in Table 2. While goods can be transported by more than one mode, transport expenditure and transport work are specific to the individual mode. So, the expenditure for transport by air, sea, railway, road, and other modes always sum up to the transport expenditure of the corresponding bilateral trade in the T&T Dataset, and the multimodal category is always zero. The same applies to the corresponding transport work. As a consequence, the ad-valorem and per-unit freight rates of the multimodal component are also zero. Transport costs per ton-kilometer and the ad-valorem freight rate per 1000 km are not defined – if no transport work is performed, its costs cannot be reasonably determined.

Table 2
Recording of modal split in the fictive example above

Mode	FOB value ($)	Transport expenditure ($)	Distance (km)	Transport work (1000 $-km)
Air	50	25	500	25
Sea	100	8	800	80
Road	160	27	486	92
Rail	0	0	0	0
Multimodal	-100	0	0	/
Subtotal	*210*	*60*	*938*	*197*
Other	50	10	-	/
Total	**260**	**70**	**-**	**/**

Source: UNCTAD.

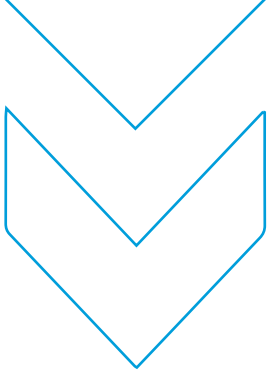
Notes: "-" means not known; "/" means not applicable.

C. Conceptual specificities

To avoid misinterpretation, some specificities concerning the variable definitions should be considered:

- Since transport expenditure is derived as the difference between the CIF and the FOB value, it represents the costs invoiced to traders or to be taken into consideration by them for accounting purposes. These may be slightly different from the operational and capital costs incurred by the carrier for the transport on specific routes. For example, they also include the costs of insurance for losses and damage, which are part of the trade bill and, under free competition, can be taken as a measure of the average expected costs caused by those losses and damage. The implicit costs caused by transit time, for example due to spoilage, falling market value during shipment, and lost investment and consumption opportunities, are not taken into account.
- Conceptually, transport expenditure recorded in the database is meant to refer to the transport between the borders of the origin and the destination economy, whereas transport work is measured as the work performed to transport goods between city centres within those territories. Therefore, the ad-valorem freight rate per km and the freight rate per ton-kilometer may be slightly underreported. In practice, however, the intra-country components of transport expenditure cannot always be distinguished from the total transport expenditure recorded in the invoice. They can therefore be assumed to be actually included in many cases.
- As the calculation of transport work is based on minimum distances over which traded goods need to be transported, derived from geographic information systems (GIS), rather than the distances over which they were actually carried, the transport work recorded in this dataset should be interpreted as the work that *usually needs to* be performed to bring the traded goods from the origin to the destination economy. Actual transport work may be higher for example due to logistic considerations or temporary unavailability of the usual route. If goods need to travel a longer route than usual, due to the temporary blockage of a chokepoint for example, this may show up in the data as higher than usual transport expenditure, not as higher than usual transport work.

Users should be aware of specificities in variable definitions regarding transport expenditure and distances



3.

Data sources

3. Data sources

The T&T dataset is built from international merchandise trade data from UN Comtrade, combined with GIS-based freight transport network models.

The T&T Dataset is built from two main sources: UN Comtrade and a Time Distance Matrix constructed from a freight transport network model based on GIS. As an auxiliary source, the IMF's Direction of Trade Statistics is used to fill gaps caused by non-reporting of individual economies in individual years (see Section VII.C).

A. UN Comtrade

UN Comtrade is a widely recognized global database on international trade, constructed from data submissions by national statistical agencies in a standardized format, mainly compiled from the customs records presented at the country borders, and publicly released by UNSD (United Nations, 2025). For many years, among other data, UN Comtrade has been recording the values and volumes of merchandise exports and imports, broken down by reporting country, trading partner and product group. The data obtained from countries are released in UN Comtrade almost in their raw form, after only basic editing and validation checks have been applied.

Since the 2010 revision of global reporting standards on international merchandise trade statistics (UNSD, 2011), countries have been encouraged to report their imports not only on a CIF base, the recommended way of reporting for imports, but also on a FOB base as supplementary information, and to report on the MoT by which goods enter or leave the territory of the country. These revisions have led to the inclusion of additional details in the countries' data submissions to UNSD, successively from 2012 onward. With the "Upgrade 2019", the new details have been added to UN Comtrade, opening new opportunities for the measurement of transport expenditure and trade detailed by mode (UNSD, 2023b). The combined reporting of CIF and FOB values allows calculating transport expenditure as the difference between the two (see Chapter II above). The information on the mode by which the goods entered the destination country, in the following referred to as the last MoT, provides us with valuable information about the distribution of international trade across modes.

Revisions in global reporting standards have led to the **inclusion of additional details in UN Comtrade**

In UN Comtrade, in principle, each trade flow is reported twice: by the importing economy and the exporting economy. The recording of international trade is usually more accurate for goods that arrive in an economy than for those which leave it. Therefore, and as the new recommendations for the combined reporting of CIF and FOB values apply only to imports, international trade and its associated transport are measured from the import side for the compilation of the T&T Dataset.

Countries' data submissions to UNDESA for UN Comtrade are partitioned by trade files, where a trade file should record the entirety of an economy's imports and exports in a specific year. The submitted trade files vary across countries and years in terms of the included variables and breakdowns, the applied vintage of the HS commodity classification and other features. Regarding the information content of trade files for imports relevant for the compilation of the T&T Dataset, five different situations can be distinguished:

- Situation A, in which a trade file is available, the CIF and FOB value of imports are jointly reported, and trade is broken down by last MoT.

International trade is **measured from the import side** in the T&T Dataset

After 2017 **less countries reported their imports each year**

From 2017 on, **breakdown by last transport mode** reported by almost **1/2 of reporting countries in UN Comtrade**

- Situation B, in which a trade file is available, the CIF and FOB value of imports are jointly reported, but the breakdown by last MoT is missing.
- Situation C, in which a trade file is available, the CIF but not the FOB value is reported, and the breakdown by last MoT is included.
- Situation D, in which a trade file is available, the CIF but not the FOB value is reported, and the breakdown by last MoT is missing.
- Situation E, in which no trade file has been reported by the country in a specific year, so no information about the imports in that year is available.

During the period from 2016 to 2021, the trade files on imports submitted by 170 countries could be extracted from the UN Comtrade database, in January 2022. Other countries are currently not represented in the T&T Dataset.

Table 3 shows how many of these 170 countries reported their imports in the different years, broken down by the information included in the submitted data files, differentiating between the situations A to E above. For the reference years from 2017 to 2021, in slightly less than half of the reported trade files, imports are broken down by last MoT. In around one tenth, pairs of CIF and FOB values are also available. That CIF and FOB value pairs are present without breakdown by last MoT is a relatively seldom case, occurring only in three to five of the 170 trade files retrieved. For the reference year 2016, only one third of the trade files include the breakdown by last MoT or pairs of CIF and FOB value. As a general pattern, less countries reported their imports for more recent years than for 2016 and 2017. Table A.1 in the Appendix shows the information available in each individual trade file.

In the remainder of this paper, the following terminology for the different levels of analysis will be used. The imports of a destination economy from an origin economy will be referred to as a "bilateral trade", and the portion of it accounted for by a specific commodity group as a "bilateral commodity flow".

Table 3
Availability of relevant variables and breakdowns in the extracted UN Comtrade data

Situation	Trade file	CIF and FOB value	Breakdown by last MoT	Reference year					
				2016	2017	2018	2019	2020	2021
A	yes	yes	yes	8	19	19	16	13	10
B	yes	yes	no	3	5	5	6	6	6
C	yes	no	yes	42	58	54	49	49	40
D	yes	no	no	113	84	85	85	81	79
E	no	no	no	4	4	7	14	21	35
Sum				**170**	**170**	**170**	**170**	**170**	**170**

Source: UNCTAD.

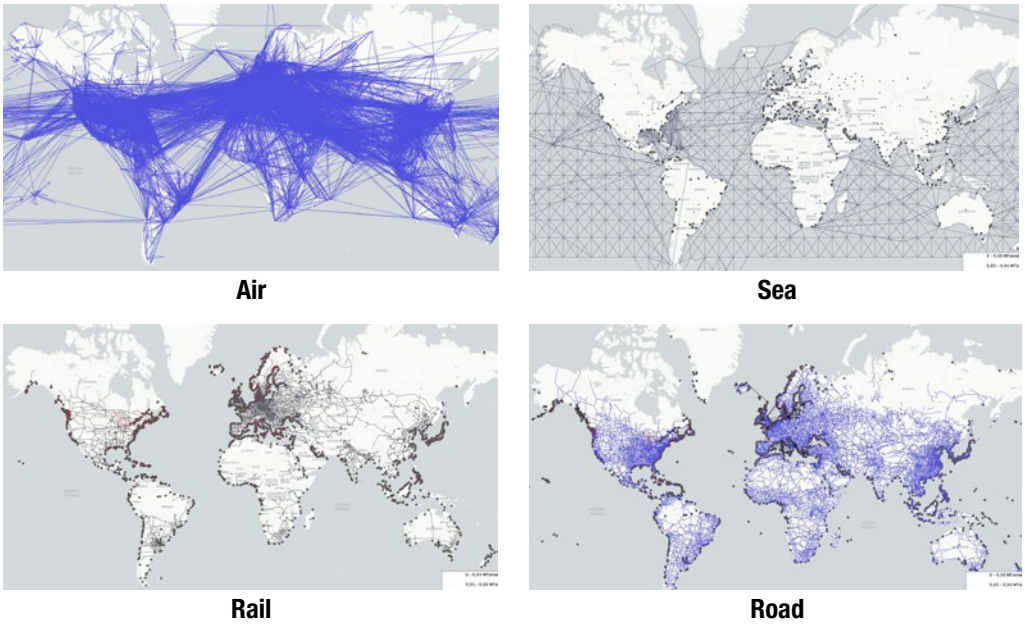
B. Time Distance Matrix

The other main data source used is a table, hereafter referred to as "Time Distance Matrix", that records the distance and time needed to transport goods from one economy to the other, differentiated by the MoT used. For each pair of origin and destination origin economy and destination economy, the table displays a set of optimal routes. Each route may involve several MoT, as goods can be transloaded from one mode to another. For simplicity, each MoT used on the route is represented in the matrix as one route segment. The distance over which the goods need to be transported in each segment and the time this takes, the transit time, are recorded in that matrix.

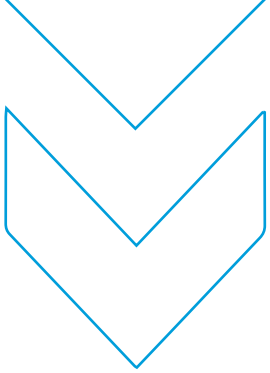
The Time Distance Matrix is compiled from freight transport networks of air, sea, rail and road transport, derived from publicly available GIS. Images of these networks are presented in Figure 2. They connect 333 main city centers within economies (centroids) as well as intermodal transloading points (nodes), such as ports and airports. The optimal routes throughout those four network layers are derived using a shortest-path model after endogenizing time by type of infrastructure, intermodal transport, dwelling times and mode specificities. For more information on the construction of the algorithm used and the underlying data, see Halim *et al*. (2018). For the construction of the final matrix, the distances and transit times between centroids and nodes are aggregated up to route segments connecting pairs of economies, using the median of the distances and times between corresponding centroids.

A Time Distance Matrix is constructed from **linked transport network models for air, sea, rail and road**

Figure 2
Freight transport networks used for the Time Distance Matrix



Source: EMC global freight transport networks.



4.

Overview of the compilation process

4. Overview of the compilation process

The compilation of the T&T Dataset involves: pre-processing of source data; data cleaning; econometric modelling; building of the output; and imputation for non-reported trade.

The compilation of the T&T Dataset involves a series of data processing, estimation and modelling steps, which can be summarized as follows:

Step 1: the UN Comtrade data are pre-processed to prepare them for econometric estimation and modelling. This involves:

- acquiring them, selecting the variables needed, and filtering unnecessary records out;
- harmonizing the data reported by different countries in different years with respect to the classification of commodities;
- converting import quantities recorded in other measurement units than weight into weight;
- reconciling totals, sub-totals and basic category values, so that the dataset includes only values of basic categories which exactly sum up to the corresponding subtotals and totals.

Step 2: the pre-processed UN Comtrade data are cleaned from invalid and implausible observations, by

- verifying the reasonability of the CIF value, FOB value, and weight of each observation, and their combination;
- verifying the plausibility of the last MoT using the information on feasible routes from the Time Distance Matrix;
- identifying abnormal cases by comparing all observations in ad-valorem freight rate, unit value and mode share with the predictions produced by the Transport Cost and the Route Split Model, taking into account the estimated prediction error.

Step 3: two econometric models, the Transport Costs and the Route Split Model, are run to compile model coefficients and their estimated prediction error.

Step 4: The output dataset is built, by

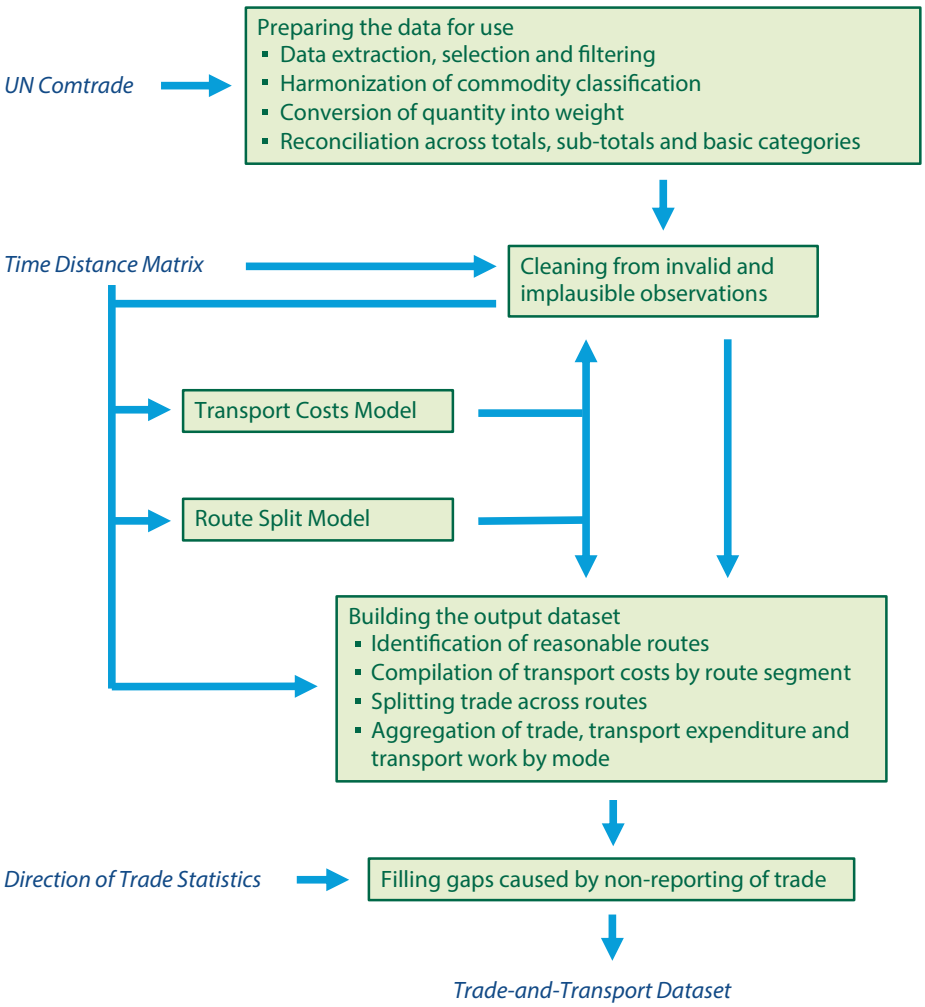
- identifying the main reasonable routes for each bilateral trade, based on the Time Distance Matrix;
- compiling or, if necessary, predicting, out of sample, based on the Transport Cost Model, the transport costs of each individual route segment and, on that basis, of the entire routes;
- splitting values and weight of the imported goods across routes, based on the Route Split Model;
- aggregating the value and weight of the imported goods across segments and routes by mode.

Step 5: gaps in the UN Comtrade data due to non-reporting of trade by individual economies in individual years are filled by extrapolation and interpolation, benchmarking the development of imports on the IMF's Direction of Trade Statistics and benchmarking the ad-valorem freight rate, the unit value and the mode share on their corresponding global medians observed in the data.

Some data processing steps are **repeated in several iterations**

Not all processing steps above are carried out sequentially. For example, once model-based predictions are available for each observation in the data set, at the end of Step 3, these are used for more refined data cleaning in Step 2. Steps 2 and 3 are repeated several times to make full use of this circularity. An overview of the compilation process is presented in Figure 3. In the next sections, the individual steps are described in more detail.

Figure 3
Flow chart of the compilation process



Source: UNCTAD.

5.

Preparing the UN Comtrade data for use

5. Preparing the UN Comtrade data for use

To prepare the UN Comtrade data for use, they are: acquired, filtered, harmonized, filled up with estimations, reformatted, and cleaned

To appropriately use the UN Comtrade data for econometric estimation and modelling in the context of the compilation of the T&T dataset, they need to be acquired, filtered, harmonized, filled up with estimated values in basic variables when needed, reformatted, and cleaned from invalid and implausible information. These steps are described in the next sections.

A. Acquisition, selection and filtering

The UN Comtrade data are retrieved through an API from the UN Comtrade Azure Cloud, trade file by trade file, where a trade file represents the data transmission on imports from one reporting economy for in a given reference year.

From each trade file, the following variables are kept:

- the reference year *(Year);*
- the flow type *(flowCode)* to distinguish between imports, exports, re-imports and re-exports;
- the code of the reporting economy *(reporterCode)*;
- the code of the partner economy *(partnerCode)*;
- the commodity code *(cmdCode)*;
- the product classification used and its version *(classificationCode);*
- the code that identifies the MoT by which goods entered or left the reporting economy *(motCode)*;
- the code that identifies the quantity unit used for the measurement of volumes *(qtyUnitCode)*;
- net weight *(netWgt);*
- the information whether net weight is estimated *(isnetWgtEstimated);*
- the CIF value of the trade goods in United States dollars *(CIFValue);*
- the FOB value of the trade goods in United States dollars *(FOBValue)*;
- the volume of the traded goods *(qty);*
- the country of consignment *(partner2Code);*
- the customs procedure code *(customsCode).*

The variables *flowCode*, *partner2Code* and *customsCode* are solely used to select the needed records. The other variables are used for further processing. For the variables *reporterCode* and *partnerCode*, a code conversion from M49, the classification of countries and areas used in UN Comtrade (UNSD, 2023c), to the corresponding codes used in UNCTADstat (UNCTAD, 2024c) at the time of the data extraction is applied.

Unfortunately, the extracted data in their raw form are not fully comparable across reporting economies, commodity groups, and over time, and the way they are formatted is not ideal for later analyses, especially if these involve aggregations. The comparability across reporting economies and time is limited firstly by the fact that commodities are coded in slightly different ways across trade files, as different vintages of the HS classification have been applied.

The UN Comtrade data are **retrieved through an API, trade file by trade file**

The UN Comtrade **data need to be harmonized** with respect to commodity classification and unit of measure for quantity

To rule out double-counting, the UN Comtrade data need to be **cleaned from totals and sub-totals**

Secondly, quantities of different groups of commodities are recorded in different units of measure. For some commodities it is recorded in kg, for others in number of items, liters, meters, carat and other units. This considerably limits the possibilities to sum volumes up over commodity groups. Furthermore, the classification of commodities and last MoT is more detailed than needed for the output dataset. With respect to the dimensions trading partner, commodity, and last MoT, the dataset includes group totals and subtotals as well as values of basic categories. Therefore, summing values up by groups can lead to double counting. This would render analyses involving aggregations difficult.

To address the shortcomings above, (1) the extracted UN Comtrade data are harmonized with reference to the classification of commodities, (2) quantities are converted from their original units of measure into kilograms, and (3) totals and sub-totals are dropped, and values of individual categories adjusted to avoid under-reporting.

B. Harmonization of commodity classification

For the harmonization of commodity classification, **all coding is converted into the 2017 Revision of HS**

To ensure that the data can be reasonably compared and combined with respect to commodity groups, the data from all trade files are converted into the 2017 Revision of the HS classification, unless they had already been coded in that version of the classification, using the correspondence tables available on the UNSD website (UNSD, 2023a). Depending on the way the categories are linked between different HS versions, different treatments are applied.

- If the HS code is identical in the original and the target classification (one-to-one match), no conversion is required, and the observation value is left as is.
- If a single code in the original classification is associated with multiple codes in the target classification (one-to-many match), the treatment depends on whether the reporting country has published data coded in HS 2017 in any other year or not. If it has, the single observation value from the original classification is split up to the codes of the target classification in the same proportions as observed in the country's HS 2017 data from the other years. If it has not, or the product code is not present in the country's HS-2017 data, equal allocation is applied.
- If multiple codes in the original classification are associated with a single code in the target classification (many-to-one match), the observation values of these multiple codes are summed up.
- If multiple codes in the source classification are associated with multiple different codes in the target classification (many-to-many match), again, the treatment depends on whether the reporting country has published data in HS 2017 in any other year or not. If it has, the observation values from the original classification are split up to the codes of the target classification in the same proportions as observed in the country's HS 2017 data from other years. If it has not, or the product code is not present in the country's HS 2017 data, equal allocation is applied.

C. Imputation for missing net-weight

All retrieved trade files include information on quantity expressed in the standard unit of measurement for the specific commodity, in line with the recommendations of the World Customs Organization (WCO, 2016). Although compiling countries are recommended by international merchandise trade compilation standards to also include information on the net weight in kilograms for all goods (UNSD, 2011), and despite efforts undertaken by UNSD to fill these gaps by estimation, the values of net weight have been found to

be missing in 19 per cent of the cases in the extracted UN Comtrade data.

To obtain full data coverage in the variable *QtyKg*, those missing values are estimated by calculating for each unit of measure (Φ) a standard conversion factor (ρ), differentiated by group of commodity (g) and, if data coverage allows, last MoT (m), based on the values observed in the data, and the quantities (q) reported in the original unit of measure are multiplied by those factors:

$$(1) \quad q^{kg}_{t,g,o,d,m} = \rho_{\Phi,g,m} q_{t,g,o,d,m}$$

where o is the economy of origin and d the economy of destination. To estimate the standard conversion factors, the median ratio of net weight in kilogram to the quantity expressed in the original unit of measure is taken among all observations found for a given combination of commodity group, original unit of measure, and last MoT:

$$(2) \quad \rho_{\Phi,g,m} = \text{median}\left(\frac{q^{kg}_{t,g,o,d,m}}{q_{\Phi,t,g,o,d,m}}\right)$$

D. Reconciliation of totals, subtotals and values of individual observation units

In UN Comtrade, the identification of commodity groups, trading partners and last MoT follows a nested structure, in the sense that it includes rows for totals and subtotals, in the case of the commodity breakdown, in addition to the values of the basic categories. For the further processing, a data structure is needed in which all values to observation units defined according to the lowest level of the classification hierarchy: HS Headings (identified by 4-digit codes) in the commodity dimension; individual partner economy in the partner dimension, as opposed to the total world; and individual last MoT (air, sea, rail, road) for the last MoT dimension, as opposed to the transport mode total. This will allow summing the data up in any possible way without risk of double-counting.

A complication arises from the fact that not all trade is classified by commodity group at the highest level of detail in UN Comtrade, for example for confidentiality reasons. Some trade may be considered in the aggregate for an HS Chapter (identified by 2-digit codes) but may not be separately recorded at the level of Headings. It may even be the case that this trade is considered in the commodity total but not separately reported at the level of Chapters or Headings. Likewise, the trading partner of some trade may not be separately reported but included in the aggregate of the trade with the whole world.

Therefore, before dropping totals and subtotals from the dataset, residual categories with respect to commodity or trading partner are calculated that cover the trade that is not separately reported in UN Comtrade or cannot be assigned to any target category for other reasons. Let Γ denote the set of the 96 HS Chapters, each identified by a 2-digit code, i, and Γi denote the set of Headings in that Chapter, each identified by a 4-digit code, j, within Chapter i, and let the subscripts "_" denote the overall total and "i,_" the subtotal of Chapter i. Let A be a placeholder for any variable that records a characteristic for which the total is defined as the sum of its components, such as FOB value, volume in kilogram, transport expenditure or transport work. The value of variable x in the corresponding residual categories is calculated as

$$(3) \quad A_{i,*} = A_{i,\_} - \sum_{j \in \Gamma_i} A_{i,j}$$

and

$$(4) \quad A_{*} = A_{\_} - \sum_{i \in \Gamma} A_{i}$$

These residual categories are marked in the output data by an "x" in the last digits of their code. That way, the totals $A\_$ and $Ai,\_$, which will be dropped from the data, can always be re-constructed by summing up all observations within Γ or Γi, respectively, including the residual categories A^* and $Ai,^*$.

Conversion of units of measure for quantity is needed, as not all UN Comtrade data include values on net-weight

Conversion factors are compiled as **median ratios** of quantities measured in different units

Totals and subtotals are dropped and residual categories calculated, to **ensure exact adding-up in aggregations**

Likewise, unidentified economies of origin, derived from the UN Comtrade variable *partnerCode*, are assigned to a residual category coded as "xxx", and last MoTs other than air ("10"), sea ("21"), rail ("31") and road ("32") are assigned to a residual category with code "99", using the same method.

After the processing steps above, the dataset has around 22.8 million records, each representing a bilateral commodity flow. Around 9.5 million of them are broken down by last MoT, the others are represented by a single mode set to "xx". At the level of last MoT (including the residual category "xx"), the international trade dataset includes 29.3 million observations of CIF value, FOB value and weight.

The **collection and compilation of data** for UN Comtrade by countries globally is **complex and therefore prone to errors**

E. Cleaning from invalid and implausible observations

The collection and compilation of the data for UN Comtrade by countries in the whole world is a complex process in which errors cannot be avoided. A single incorrect value can have considerable impact on the calculation of other values derived from it, including the compilation of aggregates. It is therefore recommendable to carry out routines to identify any invalid, incorrect or implausible values and replace them with valid and more plausible ones. Cleaning data from apparent errors, also known as data editing, can be differentiated into three steps: (i) examining the data and identifying potential problems (review step); (ii) selecting cases for specified further treatment (selection step); and (iii) changing the selected data in a way considered appropriate for improving the data quality (treatment step) (UNECE, 2019).

A single incorrect value can have considerable impact on others; therefore **data cleaning is important**

1. Review of the data

In the review step, observations are identified that are formally invalid, as they contradict with the values of other variables, or implausible considering geographic conditions and empirical relationships identified throughout the entire dataset.

To evaluate formal validity, it is tested

1) whether the CIF value, the FOB value or net weight are positive;
2) whether the CIF value is greater than the FOB value.

A negative CIF value has not been found in the data. Zero CIF values are not recorded either. If a reporting country has submitted a trade file for a given year, as a rule, this is meant to cover all positive bilateral commodity flows that.[2] A positive CIF value should be associated with a positive FOB value and positive volume. A zero volume or FOB value would mean that positive transport and insurance costs have been encountered for transporting nothing or goods that do not have any value, respectively. In around three thousand out of the 29.3 million observations, a zero FOB value has been found, and in around 143 thousand observations the volume in kilograms has been found to be zero, partly due to a zero information on quantity in the source data.

A CIF value smaller than the FOB value would mean negative transport costs. This contradicts with the way these costs are defined. Nevertheless, CIF values smaller than FOB values have been detected in around 345 thousand cases.

To evaluate plausibility, it is tested

3) whether the ad-valorem freight rate or the unit value significantly deviates from the value expected based on empirical relationships found throughout the entire dataset, as revealed by the Transport Cost Model;

2 Note that, in an earlier step, trade not separately reported by economies, for example for confidentiality reasons, have been assigned to the residual category. See Section V.D above.

4) whether the indicated last MoT is feasible considering the geographic location of the origin economy and the destination economy;

5) whether the pairwise ratio between the CIF value recorded for two last MoT, that can be assumed to be the only modes used on the corresponding routes according to the Time Distance Matrix, significantly deviate from the value expected based on empirical relationships found throughout the entire dataset, as modelled in the Route Split Model.

To verify the plausibility of the ad-valorem freight rate and the unit value (test 3 above), firstly, cases are identified in which the ad-valorem freight rate or the unit value, respectively, is by more than thousand times smaller or greater than their median, possibly due to a misplacement or omission of the decimal point at any stage in the data collection or data processing flow. Among the 29.3 million observations, in around 39 thousand cases the ad-valorem freight rate and in around 66 thousand cases the unit value did not pass this test.

Secondly, each observation in ad-valorem freight rate and unit value is compared with its predicted value derived from the Transport Cost Model, evaluating the deviation from the predicted value in proportion to the common prediction error. Previous analysis revealed that these variables approximately follow a log-normal distribution. This is taken into account in the evaluation of the deviation from the predicted value. Whenever the distance between the logarithm of the actual value and the logarithm of the predicted value is greater than five standard deviations of the prediction error, calculated from the logarithmic values, this case is flagged as implausible.

To verify plausibility based on geographic conditions (test 4 above), the indicated last MoT is cross-checked with the routes from the origin economy to the destination economy recorded in the Time Distance Matrix. For example, for imports to a landlocked country a route with the mode "sea" should not be found on the last segment of the journey; and for imports to an island economy, a route that has "rail" or "road" as MoT on the last segment should not be found neither. Throughout the dataset, in 1.2 million out of the 9.6 million bilateral commodity flows in the dataset with breakdown by last MoT, the plausibility of any of the last MoTs included in that breakdown has been rejected based on that check.

Finally, to verify the statistical plausibility of the proportion in which different modes are used, the calculated pairwise ratios in CIF value are compared with their predicted values, derived from the Route Split Model, where the deviation from the predicted value is evaluated in proportion to the usual prediction error, again assuming a log normal distribution after previous analysis of the data. Whenever the distance between the logarithm of the actual ratio and the logarithm of the predicted ratio is greater than six standard deviations of the prediction error, calculated from logarithms of the ratios, the actual ratio is flagged as implausible. In eight out of 1.2 million cases

After a first set of outliers has been identified that way, these are excluded from the estimation of the econometric models, in order to improve their accuracy and reduce the prediction error, and the models are run again. Based on those refined estimations, a further set of outliers can be identified. These steps are repeated several times until a model run does not lead to the identification of any new outliers. After ten runs, no further outlier is identified in any group of commodities. After the last iteration, in 1,587 out of 3.3 million cases in which a comparison of the ad-valorem freight rate with a predicted value from the Transport Cost Model was possible, the observed value of the ad-valorem freight rate was considered out of range and the FOB value flagged as implausible. In eight out of 1.2 million cases in which a comparison of the mode share

In the review step, formally invalid or (technically or empirically) implausible observations are identified

!

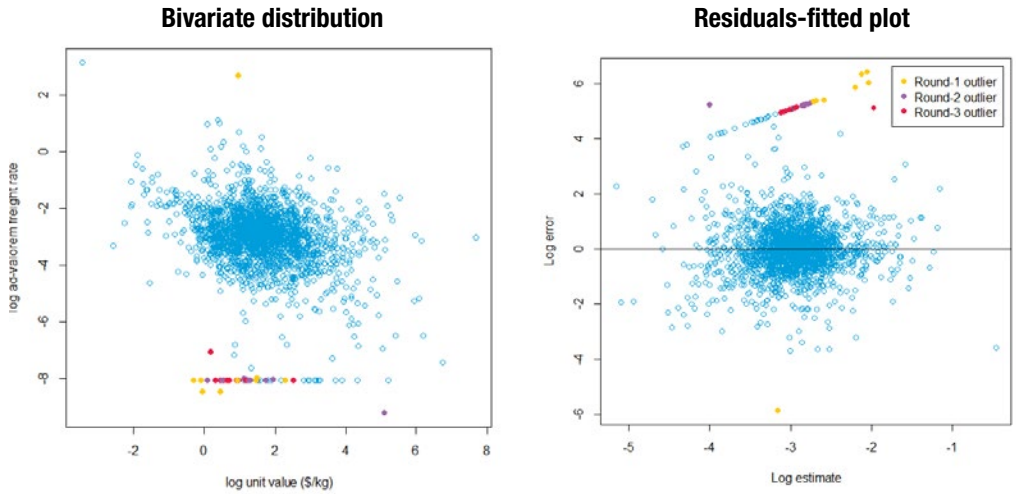
In **1,587 out of 3.3 million cases** in UN Comtrade source data, the ad-valorem freight rate and in **8 out of 1.2 million cases** the distribution by last MoT were **out of the empirically plausible range**

with a predicted value from the Route Split Model was possible, the observed breakdown by MoT was considered out of range and flagged as implausible.

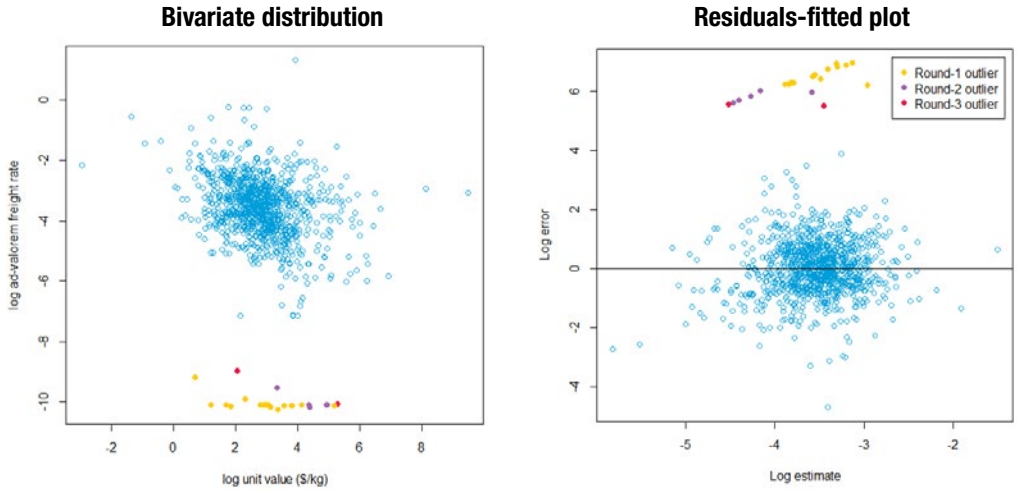
Figure 4 illustrates the identification of outliers based on empirical distributions throughout the dataset focusing on two randomly selected commodity groups: plastics and articles thereof, and tools, implements, cutlery, spoons and forks, of base metal including parts thereof. The figure shows on the left-hand side the bivariate distribution of the ad-valorem freight rate and the unit value, where the outliers identified after different iteration rounds are marked in yellow, purple or red. On the right-hand side, the same observations are shown in a residuals-fitted plot, a diagram that plots the residuals of the applied econometric model, the Transport Cost Model in that case, against the corresponding predicted values.

Figure 4
Outliers in ad-valorem freight rate among bilateral trade flows in selected commodity groups

Plastics and articles thereof (HS Chapter 39)



Tools, implements, cutlery, spoons and forks, of base metal; parts thereof (HS Chapter 82)



Source: UNCTAD calculations, based on UN Comtrade Database, data extraction from 2022.

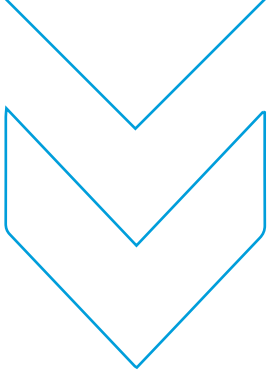
2. Treatment of invalid and implausible cases

In cases in which an invalid or implausible relationship between CIF value, FOB value and volume in kilogram has been identified by the methods above, the FOB value and volume in kilogram are replaced with predicted values derived from the Transport Cost Model. In the case of a suspect ad-valorem freight rate, the FOB value re-estimated by dividing the CIF value by the predicted ad-valorem freight rate plus one.

In the case of a suspect unit value, volume in kilogram is re-estimated by dividing the FOB value by the unit value predicted using the – inverted – Transport Cost Model.

In cases in which an implausible mode share has been identified, the full breakdown by mode of the affected bilateral commodity flow is flagged and will not be considered the compilation of the output dataset described in Chapter VII. Instead, the compilation will proceed as if the breakdown by last MoT had not been reported for that particular bilateral commodity flow.

Invalid or implausible values in the UN Comtrade source data are **overwritten** based on statistical predictions



6.

Econometric models

6. Econometric models

Data cleaning and compilation of the output data rely on two econometric models: the Transport Cost and the Route Split Model.

The cleaning of the converted and harmonized merchandise trade data from implausible cases, described in the previous chapter, and the building of the output dataset, described in the next chapter, rely on model-based predictions of the ad-valorem freight rate and the distribution of trade across routes as well as their estimated prediction errors. These predictions are produced by the Transport Cost Model and the Route Split Model which are presented in further detail below.

A. Transport Cost Model

The Transport Cost Model depicts the empirical relation between the ad-valorem freight rate and its determinants which comprise the type of traded and transported goods, the MoTs used, the goods' average unit value, the transport distance, as well as GDP per capita in the origin and destination economies, where GDP per capita is considered as a proxy of transport infrastructure quality, port performance and other factors raising the efficiency of transport services. It has the functional form:

$$(5) \quad r^{v}_{t,g,o,d,m} = e^{\alpha_t} e^{\alpha_g} a_{o,d,m}{}^{\beta_{g',m}} p_{t,g,o,d,m}{}^{\gamma_{g',m}} f_{t,o}{}^{\delta_{g',m}} f_{t,d}{}^{\varepsilon_{g',m}}$$

where a designates transit time, p the unit value and f GDP per capita in current United States dollars, according to UNCTADstat (UNCTAD, 2024a). While g refers to a commodity group defined at HS Heading level (represented by a 4-digit code), g' refers to the broader commodity group defined at HS Chapter level (represented by a 2-digit code). α_t is a year-specific fixed effect and α_g a commodity-specific effect at HS Heading level. β, γ, δ and ε designate the elasticities of the ad-valorem freight rate with respect to distance, the unit value and GDP per capita in the origin and destination economies, respectively. Trial regressions in which origin and destination fixed effects were added as additional determinants, their effects turned out insignificant once GDP per capita in the origin and destination economies was included. This confirms the validity of GDP per capita as an exhaustive proxy for economy-specific conditions shaping the ad-valorem freight rate.

The Transport Cost Model depicts the empirical **relation between the ad-valorem freight rate and its determinants**

1. Estimation

For estimation with ordinary least squares (OLS), Equation 5 is transformed into its logarithmic form and a, per assumption, normally distributed error term v is added.[3]

$$(6) \quad log(r^{v}_{t,g,o,d,m}) = \alpha_t + \alpha_g + \beta_{g'} log(a_{o,d,m}) + \gamma_{g'} log(p_{t,g,o,d,m}) + \delta_{g'} log(f_{t,o}) + \varepsilon_{g'} log(f_{t,d}) + v_{t,g,o,d,m}$$

For the selection of the estimation sample, it is considered that not all MoTs involved in the transport from the origin economy to the destination economy are recorded in UN Comtrade, but only the mode used on the last segment of the route. Using this last MoT as determinant variable in the freight rate regression would therefore in many cases be inaccurate and distort the estimation unless the last MoT can reasonably be assumed to be the only MoT. To keep the estimation of the Transport Cost Model unaffected from those distortions, for fitting the model only observations are used in which intermodal transloading

The Transport Cost Model is only **run on cases without intermodal transshipment**

3 The validity of that assumption has been verified by graphical inspection of the distribution of the residual. See also the residuals-fitted plots in Figure 4.

To capture heterogeneity, **separate regressions are run for each commodity group by transport mode**

should not be assumed to occur, based on the Time Distance Matrix. Furthermore, the data on which the regressions are run have been cleaned from invalid and implausible cases in the ad-valorem freight rate and unit value, as described in Chapter VIII below.

To capture the heterogeneity of the estimated effects with respect to commodity group and transport mode, the regression in Equation 5 is run separately for the 96 commodity groups defined at HS Chapter level and the five modes, air, sea, rail, road, and others. When run on the full set of determinant variables, the model yields a coefficient of determination of 0.34. The results of the individual commodity- and MoT-specific regressions are presented in Table A2 in the Appendix. As expected, the coefficient of distance is mostly positive and the coefficients of the unit value, GDP per capita in the economy of origin and GDP per capita in the economy of destination mostly negative. Interestingly, the year fixed effects rarely turn our significant.

!

Coefficient of determination of the Transport Cost Model: **0.34**

Different versions of the Transport Cost Model are run to **enable predictions in different data environments**

To enable predictions in different data environments, additionally to the full model in which all determinants are included, three variants are estimated by excluding or including distance and unit value. To dispose of an option of the last resort, for predictions in especially sparce data environments, the median ad-valorem freight rate is also calculated for each combination of commodity group, at both HS Chapter and HS Heading level, MoT and year. Table 4 shows the size of the observation sample that could be used for the different versions of the model as well as the accuracy of the estimations. When both transport distance and unit value are known, the mean squared error accounts for 60 per cent of the variance of the outcome variable (the log ad-valorem freight rate). In other words, the model is capable to explain 40 per cent of the variance. The predictive power reduces to 25 per cent of the variance when transport distance and the unit value are missing. The median at HS Chapter level, which will be used as last resort, when the other aforementioned methods fail, allows predicting 14 per cent of the variance, the remaining 86 per cent representing share of the prediction error in the total variance.

Table 4
Accuracy of different variants of the Transport Cost Model

Model variant	Mean squared error	Coefficient of determination	Number of observations
Econometric model conditional on distance and unit value	1.214	0.396	1'746'290
Econometric model conditional on distance, not unit value	1.431	0.287	1'762'000
Econometric model conditional on unit value, not distance	1.803	0.310	3'283'025
Econometric model unconditional on distance or unit value	1.958	0.251	3'307'931
Median at HS Heading level (4 digits code)	2.154	0.180	3'268'945
Median at HS Chapter level (2 digits code)	2.257	0.145	3'347'457

Source: UNCTAD.

To obtain these results, the Transport Cost model has undergone several iterations of estimation, prediction and removal of outliers, by comparing the actual values with the predicted values and their confidence range, as described in Section V.E above. Table 5 shows how the accuracy of the data in the estimation sample is successively enhanced further after each round, after extreme outliers, beyond the range from one thousandth to thousand times the median, have already been removed. After the sixth round, around 1,500 outliers have been identified, and no new outlier is detected. The mean squared error of the overall model, for which the best feasible model variant is applied depending on the available variables in the individual cases, decreases from 1.814 to 1.796, as a result of that iterative process.

The **accuracy of the Transport Cost model improves successively** as outliers are identified and removed

Table 5
Accuracy of the Transport Cost Model after each iteration round

Round	Mean squared error	Normalized mean squared error[1]	Number of observations	Number of detected outliers
1	1.814	0.682	3 349 044	1 249
2	1.800	0.680	3 347 795	272
3	1.797	0.680	3 347 523	54
4	1.796	0.680	3 347 469	9
5	1.796	0.680	3 347 460	2
6	1.796	0.680	3 347 458	1
7	1.796	0.680	3 347 457	-

Source: UNCTAD.

[1] Ratio of the mean squared error to the variance of the actual values.

2. Prediction

The prediction of the ad-valorem freight rate follows the functional form in Equation (5), setting observed values for distance, unit value, and GDP per capita in the origin and destination economies, the model estimates for the coefficients α, β, γ, δ and ε, and zero for the error term ν. If observed values for distance[4] or unit value are missing, the version of the model that is unconditional on those determinants is used for prediction. In the few cases with negative estimated effects of distance or positive estimated effects of unit value or GDP per capita, these effects are also treated to be zero, to prevent predictions that are not supported by theory. If the estimated model relies on less than 20 observations, the number of degrees of freedom is considered too small for drawing inference, and the median ad-valorem freight rate at HS Heading level is used. If data is unavailable for the calculation of that median, the median at HS Chapter level is used instead.

Predictions are carried out using the observations of the determinant variables and estimated coefficients, **adapted to the data environment**

B. Route Split Model

The Route Split Model describes the distribution of the transport of the goods traded between two economies, in terms of FOB value, over different available routes. It uses as determinants the type of commodity, the ad-valorem freight rate and transit time as well as time- and cost-

4 Distance is missing for example in all cases in which the MoT is category "99" (other).

The Route Split Model describes the **distribution of international trade across transport routes**

The Route Split Model is only run on cases in which the reasonable **transport route consists of only one segment**

Different versions of the Route Split Model are run to **enable predictions in different data environments**

!
Coefficient of determination of the Route Split Model: **0.36**

independent preferences for individual MoTs, assuming the functional form below:

$$(7)\quad u^{FOB}_{t,g,o,d,i,j} = \frac{x_{t,g,o,d,i}}{x_{t,g,o,d,j}} = \left(\frac{r^{V}_{t,g,o,d,i}}{r^{V}_{t,g,o,d,j}}\right)^{\beta_g} \left(\frac{b^{V}_{t,g,o,d,i}}{b^{V}_{t,g,o,d,j}}\right)^{\gamma_g} \frac{\prod_m e^{D_{m,t,g,o,d,i}\delta_{m,g}}}{\prod_m e^{D_{m,t,g,o,d,j}\delta_{m,g}}}$$

with $j \neq i$

where x designates the FOB value and b transit time. The subscript i identifies a specific route used for the trade of commodity g from economy o to economy d in year t, and the subscript j a numeraire route that is constant for all observations relating to the same trade. m is an identifier of MoT. D_m is a dummy variable that is 1 if MoT m is used in any segment of the route and otherwise 0. β and γ represent the cost and time elasticities of the relative FOB value. δ_m is a cost- and time-independent effect of the utilization of mode m.[5]

1. Estimation

For estimation with OLS, the model in Equation 7 is transformed into its logarithmic form and a, per assumption, normally distributed error term, v, is added:[6]

$$(8)\quad log\left(u^{FOB}_{t,g,o,d,i,j}\right) = \beta_g log\left(\frac{r^{V}_{t,g,o,d,i}}{r^{V}_{t,g,o,d,j}}\right) + \gamma_g log\left(\frac{b^{V}_{t,g,o,d,i}}{b^{V}_{t,g,o,d,j}}\right) + \sum_m\left[\delta_i D_{m,t,g,o,d,i} - \delta_j D_{m,t,g,o,d,j}\right] + v_{t,g,o,d,i}$$

Like with the Transport Cost Model, the estimation sample is constrained by the information available in UN Comtrade. Firstly, for each last MoT recorded in UN Comtrade other MoTs, not showing up in the data, may have been involved in the shipment from the origin to the destination economy. Furthermore, for a single last MoT observed, the imported goods may have travelled on different routes, so that the average transit time cannot be unambiguously identified. Fortunately, the Time Distance Matrix allows us to identify cases in which the available and reasonable routes lead to comparable ad-valorem freight rates and travel times. It turns out that this is the case if and only if a single route per last MoT is available and reasonable, according to that Matrix. All these cases consist of only one route segment, meaning that intermodal transloading should not be reasonably assumed, so the last MoT recorded in UN Comtrade can also be interpreted as the only MoT on the identified route. The estimation of the Route Split Model focuses on those cases only, so that distortions from intermodal transloading and multiple route options can be ruled out.

Four variants of the model are estimated: two at HS Heading level, of which one is estimated with and one without transit time; and two at HS Chapter level, of which one is estimated with and one without transit time. This will enable predictions in cases in which an insufficient number of observations is available at HS Heading leve or which are not covered in the Time Distance Matrix, like for example the route pairs involving the category "other modes" as last MoT, for which the information on transit time is missing.

Table 6 shows the accuracy of in-sample predictions of the different variants of the Route Split Model, as indicated by the mean squared error and the coefficient of variation, as well as the number of observations used for the estimation, and Table A3 in the Appendix shows the result of the, around thousand, individual regressions run at HS Heading level, for the model version that is conditional on transit time. In the most favorable data environment, in which a sufficient number of observations at HS Heading level is available and transit time known, the overall model yields a coefficient of determination of 0.36.

5 For the theoretical foundations of the model, see Hoffmeister and Dalheimer (2024).

6 The validity of that assumption has been verified by graphical inspection of the distribution of the residual. The domain of the log pairwise ratio is unbounded from below and above, by definition, and approximately symmetrical, like log odds in common binominal models such as the logit model.

Table 6
Accuracy of different variants of the Route Split Model

Model variant	Mean squared error	Coefficient of determination	Number of observations
Conditional on transit time, at HS Heading level	6.259	0.355	320'488
Conditional on transit time, at HS Chapter level	7.477	0.232	322'254
Unconditional on transit time, at HS Heading level	9.081	0.327	1'209'007
Unconditional on transit time, at HS Chapter level	10.053	0.255	1'209'547

Source: UNCTAD.

Like the estimation of the Transport Cost Model, the estimation of the Route Split Model is run several times, where outliers are removed after each iteration. Eight MoT pairs with outlying FOB value ratios, belonging to six bilateral commodity flows, have been identified in the first round. Their exclusion from the regressions has only a slight impact on the accuracy of the model, as Table 7 reveals. In the second round, no further outliers are identified.

Table 7
Accuracy of different variants of the Route Split Model

Round	Mean squared error	Normalized mean squared error[1]	Number of observations (FOB ratios)	Number of detected outliers (FOB ratios)
1	8.988	0.666	1'209'555	8
2	8.987	0.666	1'209'547	-

Source: UNCTAD.

[1] Ratio of the mean squared error to the variance of the actual values.

2. Prediction

For the prediction of the distribution across routes, firstly, the ratio between pairs of alternative routes is predicted using Formula 7, setting observed values for the ad-valorem freight and transit time, and the model estimates for the coefficients β, γ and δ. In cases with more than one segment per route, δ is set as the proportion of segments in which a given mode is observed. If observations of transit time are not available for any of the two routes, γ is set to zero and the version of the model that is unconditional on transit time is used for the prediction of the pairwise ratio. If observations of the ad-valorem freight rates per route are not available, the Transport Cost Model is employed for their prediction. In the few cases with positive effects of the ad-valorem freight rate or transit time these coefficients are set to zero, as positive elasticities would not be supported by theory. If the estimated model relies on less than 20 observations, the median pairwise ratio at HS Heading level or, if unavailable, at HS Chapter level, is used.

For prediction, **pairwise ratios are first calculated and then combined** for the calculation of mode shares

For predictions in cases in which the FOB value is missing, pairwise ratios for CIF values can be calculated from the reported CIF values as follows:

$$(9) \quad u^{\text{CIF}}_{t,g,o,d,i/j} = \frac{\left(1+r^{V}_{t,g,o,d,i}\right)x_{t,g,o,d,i}}{\left(1+r^{V}_{t,g,o,d,i}\right)x_{t,g,o,d,j}}$$

Next, the predicted pairwise ratios for FOB values are transformed into route shares as follows:

$$(10) \quad \frac{x_{t,g,o,d,j}}{\sum_{i\in\Theta} x_{t,g,o,d,i}} = \frac{1}{\sum_{i\in\Theta} u^{\text{FOB}}_{t,g,o,d,i,j}}$$

If the FOB value is missing, the route shares of CIF values are compiled the same way, substituting u^{FOB} with u^{CIF}.

7.

Constructing the dataset

7. Constructing the dataset

For the construction of the dataset, the pre-processed UN Comtrade data are combined with the Time Distance Matrix, filled up by model-based estimates, broken down by route segments, and aggregated by MoT. Gaps in trade data reporting are filled up by imputations.

Having retrieved the source data from UN Comtrade and the Time Distance Matrix and having fit the econometric models to estimate missing information, let us now turn to the use of these inputs for the compilation of the T&T Dataset. The next two sections describe how the data on trade value and volume, transport expenditure and transport work by MoT are compiled for the cases in which data on imports are available in UN Comtrade for a given economy in a given year. Section VII.C will describe the methods used to fill data gaps when imports have not been reported for an economy in a given year.

A. Compilation steps when imports have been reported

If UN Comtrade had complete data coverage over all reporting countries regarding the breakdown by last MoT, FOB values were always reported additionally to the corresponding CIF values, and the delivery of imports was always realized without intermodal transshipment, the distribution by mode and transport expenditure in the associated international freight transport could be accurately and comprehensively recorded simply by copying the acquired UN Comtrade data into the T&T Dataset and calculating transport expenditure as the difference between the CIF and the FOB value.
In reality, however, as Table 3 above shows, countries' reporting of data for UN Comtrade is far from complete. In particular, the newly recommended joint reporting of CIF and FOB values and of the breakdowns by last MoT are often missing. Furthermore, multimodal transport *is* widespread for the realization of international trade, in particular for imports to and from landlocked economies and island economies. Therefore, additional calculations are needed. These are described below.

In the most unfavorable case, in which only the CIF value but not the FOB value is available in the UN Comtrade data and imports are not broken down by last MoT (Situation D in Table 3), the compilation proceeds as follows:

1) Based on the Time Distance Matrix, the available and most reasonable routes for the transport of goods from the origin to the destination economy of the given bilateral trade are identified, and the distance and transit time of each segment of those routes is matched to the international trade data.
2) The ad-valorem freight rate of each route segment is predicted, using the Transport Cost Model.
3) The ad-valorem freight rate (predicted at Step 2) and transit time are summed up across segments by route.
4) The proportions in which imports are distributed across the different routes (route shares) are predicted using the Route Split Model, using the involved modes, the ad-valorem freight rate and transit time on the individual routes (calculated at Step 3) as determinants.
5) The volume in kilogram and the FOB value of the goods transported on each route, and thus in each of its segments,

Specific calculations are needed as data reporting for UN Comtrade is incomplete and the last transport mode, recorded in these data, is often not the only one used

is calculated by multiplying the volume (in kilogram) or FOB value, respectively, of the bilateral commodity flow with the route share predicted at Step 4.

6) The transport work, in ton-km and 1000 $-km, performed in each route segment is calculated by multiplying the volume in kilogram or the FOB value, respectively, transported on that route (calculated at Step 5) with the distance of the route segment as recorded in the Time Distance Matrix.

7) The transport expenditure incurred in each route segment is calculated by multiplying the ad-valorem freight rate of that segment (predicted at step 2) with the FOB value and the route share (predicted at step 3).[7]

8) Volume in kilogram, the FOB value, transport work and transport expenditure are summed up across the route segments involved in the bilateral commodity flow, by MoTs used in these segments.

9) The volume in kilogram and the FOB value of trade assigned to the multimodal category is calculated by subtracting their sums obtained at Step 8 from the volume or FOB value, respectively, of the bilateral commodity flow observed in the international trade data.

When the CIF and the FOB value are jointly available or imports are broken down by last MoT, principally the same method is applied, making use of that prior information, as follows:

- If the breakdown by last MoT is known, at Step 1, the Time Distance Matrix is matched to the international trade data at a finer level of granularity, distinguishing not only by bilateral trade but also by last MoT. This reduces the number of route options among which imports need to be split at Step 4. In cases in which only one reasonable route option per last MoT is identified by the Time Distance Matrix, such split is not even required.
- If the CIF and the FOB value are jointly available, only one reasonable route has been identified and this route consists of a single segment, the model-based prediction of ad-valorem freight rate in Step 2 is not required, as it is given by the difference between the observed CIF and FOB values as a ratio over the FOB value. In all other cases, the transport expenditures predicted for the individual route segments are aligned to the total transport expenditure observed in the international trade data, using iterative proportional fitting.

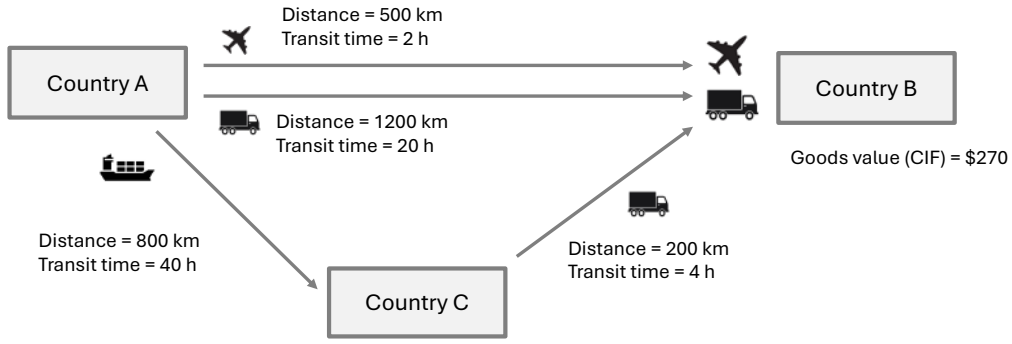
B. A fictive example

Figure 5 illustrates the compilation steps above for a bilateral commodity flow, using the fictive example from Section II.B above. In the international trade data, the value and volume of trade, the transport expenditure and transport work assigned to different routes and route segments are not available. However, it is known from those data that goods worth $270 including transport expenditure were imported by Country B from Country A. From the Time Distance Matrix, it is also known that these goods can reasonably be transported on three different routes: one direct route by airplane, one direct route by truck, and one indirect route over Country C, first by sea and then, on the last segment from Country C to Country B, by road. Furthermore, the Time Distance Matrix provides us with the transport distance and transit time of each individual route segment.

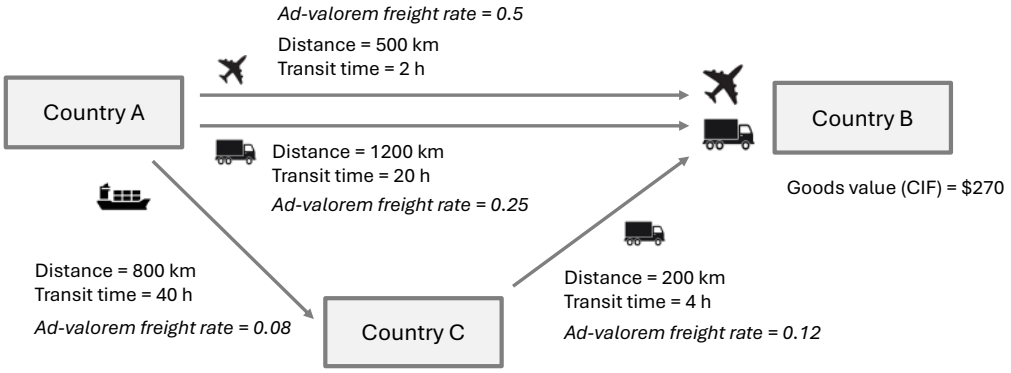
7 In some cases, in which a single route option per last MoT exists and those routes consist of several segments, the so calculated ad-valorem freight rate can be compared with the CIF-FOB margin per last MoT actually observed in UN Comtrade. A t-test did not reveal any difference of the means of these two values. Thus, no evidence has been found for any transport expenditure caused by intermodal transloading.

Figure 5
Compilation steps for a fictive bilateral trade flow

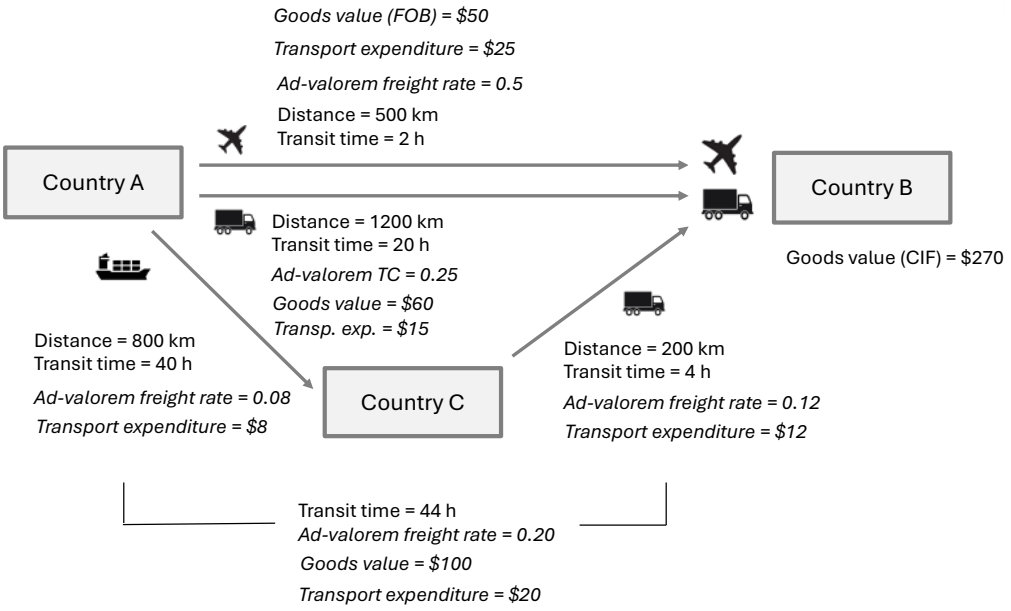
Step 1: *assessment of the value of imports, distance and transit time on the identified reasonable routes*



Steps 2 and 3: *prediction of ad-valorem freight rates*



Steps 4 to 7: *split of imports by route and calculation of transport expenditure*



Source: UNCTAD.

The Transport Cost Model provides us with estimated values of the ad-valorem freight rate on each route segment, based on the information on distance, the unit value (including transport expenditure) – derived from the volume and the CIF value – and GDP per capita in the economies of origin and destination. It predicts that the ad-valorem freight rate amounted to 50 per cent for the transport by air, 25 per cent on the direct route by truck, 8 per cent on the route segment via sea on the indirect route, and 12 per cent via road on that indirect route. That means, the ad-valorem freight rates were 50 per cent, 25 per cent and (8 + 12 =) 20 per cent of the three different routes respectively.

According to the Time Distance Matrix, the corresponding transit times amounted to 2 hours on the direct route by airplane, 20 hours on the direct route by road, and (40 + 4 =) 44 hours on the indirect route by sea and road. Feeding the information on ad-valorem freight rate, transit time and the involved modes into the Route Split Model, the proportions, in terms of value, by which the goods worth $270 (including transport expenditure) were transported on each route can be derived. In the example, the model predicts that goods worth $50 were transported by air, goods worth $60 by road on the direct route, and goods worth $100 on the indirect route by sea and road.

Now that estimates of the ad-valorem transport costs and the value of the transported goods are available for each individual route segment, the corresponding transport expenditure can be derived as the product of the two. Transport expenditure is estimated to amount to (0.5 x $50 =) $25 for the transport by air on the first direct route, (0.25 x $60 =) $15 for the transport by road on the other direct route, (0.08 x $100 =) $8 for the transport by sea on the first segment of the indirect route, and (0.12 x $100 =) $12 for the transport by road on the second segment of the indirect route.

Summing up across segments by mode, it can be concluded that goods worth $50 were transported by air, goods worth $100 by sea and goods worth $160 by road. Goods worth $100 were transported by more than one mode, due to their transloading in Country C. Summing up the first three values and subtracting the value of goods subjected to multimodal transport yields the total FOB value of the bilateral commodity flow: $50 + $160 + $100 – $100 = $210. Transport expenditure of $25 was spent on transport by air, $8 on transport by sea and ($15 + $12 =) $27 on transport by road.

Finally, the required transport work performed in each mode can be calculated. As the goods worth $50 transported over the first route airplane needed to travel over 5000 km by air, transport work of 25,000 $-km had to be performed by air. As the goods worth $100 transported on the indirect route needed to travel over 800 km by sea, transport work of 80,000 $-km had to be performed by sea. As the same goods also needed to be transported by road over 200 km and, additionally, goods worth $60 needed to be transported, by road over 1200 km, on the second direct route, transport work of ($100 · 200 km + $60 · 1200 km =) 92000 $-km had to be performed by road.

Table 8 shows how these values are recorded in the work file for the compilation of the T&T Dataset at the level of individual segments and then summed up across segments by MoT taking multimodal transport into account.

Table 8
Recording of values in the fictive example above

1. Before aggregation

Origin	Destination	Route ID	Segment ID	Transit	Last MoT	MoT	FOB value ($)	Transp. expend. ($)	Distance (km)	Transp. Work ($-km)
A	**B**	1	1	-	Air	Air	50	25	500	25,000
A	**B**	2	1	-	Road	Road	60	15	1,200	72,000
A	**B**	3	1	C	Road	Sea	100	8	800	80,000
A	**B**	3	2	C	Road	Road	100	12	200	20,000

2. After aggregation

Origin	Destination	MoT	FOB value ($)	Transport expenditure ($)	Distance (km)	Transport Work ($-km)
A	**B**	Air	50	25	500	25,000
A	**B**	Sea	100	8	800	80,000
A	**B**	Road	160	27	1,400	92,000
A	**B**	Multimodal	-100	-	-	-
A	**B**	**Total**	**210**	**60**	**2,700**	**197,000**

Source: UNCTAD.

C. Imputations when imports have not been reported

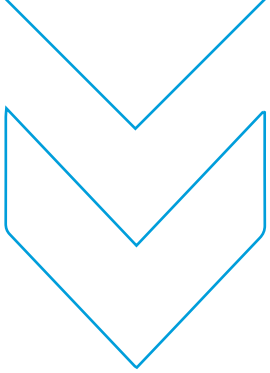
As mentioned in Chapter III, not all 170 economies that reported imports to UN Comtrade for any of the years from 2016 to 2021 did so for all years of that period. For the years 2016 and 2017, the imports of four economies are missing; by 2021, this number rises to 35.

To fill those data gaps, firstly, the growth rate of the value of bilateral trade is extrapolated or interpolated by benchmarking on the growth rates observed in the IMF's Direction of Trade Statistics (IMF, 2024). Next, the breakdown of the value of bilateral trade by MoT is estimated by benchmarking the mode share, by commodity group, on the development of its global median and multiplying the CIF value by that share; the corresponding FOB value is estimated by benchmarking the development of the ad-valorem freight rate, by commodity group and MoT, on its global median and dividing the CIF value by that rate plus one; and, finally, the volume of trade in kilogram is estimated by benchmarking the development of the unit value, by commodity group and MoT, on its global median and dividing the FOB value by that rate.

Specific imputations are carried out to **fill data gaps caused by non-reporting of data** in individual years

!

Between 2017 and 2021, **countries' non-reporting in individual years rises from 4 to 35 cases**



8.

Final remarks

8. Final remarks

Expanding the availability of detailed official trade data, leveraging additional data sources, refining the statistical models and further accuracy checking and cross-validation can lead to considerable further enhancements of the dataset.

With the construction and dissemination of the T&T Dataset an important milestone in enhancing the evidence base for analyses of the linkages between international trade and freight transport has been reached. However, it should be acknowledged that this does not mark the end of the journey. The primary data coverage for this dataset is still relatively slim. As outlined in Chapter III, around half of the trade files retrieved from UN Comtrade lack important information for the measurement of international transport from the trade side, namely jointly reported CIF and FOB values and breakdowns by the MoT by which imported goods entered the economy. These gaps considerably limit the potential for the compilation of precise estimates, for two reasons: firstly, the limited availability of prior information directly constrains the reliable compilation of transport expenditure and model split in the affected cases; secondly, the econometric models applied are fit on a sample with reduced representativeness for the economies of the world. Strengthening the countries' capacities to collect the required data and compile international merchandise trade statistics with sufficient level of detail would help enhance completeness and accuracy of global statistics on trade and transport developed with the presented approach. That said, the data coverage in the required UN Comtrade variables has already increased since the time of the compilation of the present version of the T&T Dataset, as analyses after its launch have shown. If an update of the dataset was run today, this would likely yield much higher accuracy than the one released.

Furthermore, the outcome of the – experimental – compilation of the dataset has been checked for outliers and internal inconsistences, but it has not yet been sufficiently cross-validated with information from other sources and contrasted with the real-world experiences from traders and carriers, as to safely consider the dataset as sound and fully reliable in the current stage. Users are therefore advised to use the data with care, especially in cases in which pairs of CIF and FOB values and breakdown by last MoT were not available in UN Comtrade at the time of the compilation of the dataset, where the table in Annex A can be used as guidance. Since the release of the T&T dataset, UNCTAD has received valuable feedback from users, including researchers, global industry associations of the transport sector and government agencies. This could be carefully reviewed and used for methodological enhancements in the next dataset update.

Within the limited time and resources available for the development of the present version of the T&T Dataset, the emphasis in the development of methods was put on the most fundamental problems, such as the proper recording and estimation of intermodal transshipment, the building of basic, trackable and effective quantitative models for out-of-sample predictions and identification of outliers and for ensuring efficient use of processing time and memory space. There is certainly scope for further refinement of those methods. A full assessment of the accuracy of the out-of-sample predictions would provide valuable

The construction of the T&T Dataset does not mark the end of the journey. Much more can be done. **Capacity building is key**

Validation of the data is ongoing. Users are advised to use them with care

There is scope for refinement of methods

Further untapped information is available in UN Comtrade and other data sources, such as satellite and register data

information on the expected accuracy in different situations of source data availability but could not yet be carried out.

Much more information useful for the assessment of the transport involved in international merchandise trade is available in UN Comtrade that has not yet been leveraged. This includes the volume and value of trade reported from the exporter side, available for some countries with jointly reported CIF and FOB values and as breakdowns by the MoT by which goods left the economy. UN Comtrade also includes information on the country of consignment and of re-exports, useful for the tracking of the actual routes. Furthermore, linking with real-time satellite data, such as the Automatic Identification System for maritime transport and flight tracking systems, and with administrative data, such as bills of laden or shipping manifests, may also bear considerable potential. UNCTAD aims to work further on the testing and enhancement of the compilation methods, leveraging further sources of data, as resources will allow.

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Annex A.
Information included in UN Comtrade trade files for imports

Reporting country		2016	2017	2018	2019	2020	2021
004	Afghanistan	R	R	R	R	-	-
008	Albania	R	RM	RM	RM	RM	-
012	Algeria	R	R	-	-	-	-
020	Andorra	R	R	R	-	-	-
024	Angola	RCM	RCM	RM	R	R	R
028	Antigua and Barbuda	R	RM	RM	RM	-	-
032	Argentina	RC	RC	RC	RC	RC	RC
051	Armenia	R	RM	RM	RM	RM	RM
533	Aruba	R	R	R	R	R	R
036	Australia	R	RCM	RCM	RCM	RCM	RCM
040	Austria	R	R	R	R	R	R
031	Azerbaijan	RM	RM	RM	RM	RM	RM
044	Bahamas	R	R	R	R	R	-
048	Bahrain	R	R	R	R	R	-
052	Barbados	R	R	R	R	R	R
112	Belarus	R	R	R	R	R	R
056	Belgium	R	R	R	R	R	R
084	Belize	R	RM	RM	RM	RM	RM
204	Benin	RM	RM	RM	RM	RM	RM
060	Bermuda	R	R	R	R	-	R
068	Bolivia (Plurinational State of)	RCM	RCM	RCM	RCM	RCM	RCM
070	Bosnia and Herzegovina	R	RM	RM	RM	RM	RM
072	Botswana	R	R	R	R	R	R
076	Brazil	RCM	RCM	RCM	RCM	RCM	RCM
096	Brunei Darussalam	R	RM	RM	RM	R	R
100	Bulgaria	RM	RM	RM	RM	RM	RM
854	Burkina Faso	R	R	R	R	R	R
108	Burundi	R	R	R	R	R	R
384	Côte d'Ivoire	RM	RM	RM	RM	R	-
132	Cabo Verde	R	RC	R	R	R	-

Reporting country		2016	2017	2018	2019	2020	2021
116	Cambodia	R	R	R	R	R	R
120	Cameroon	R	R	R	-	-	-
124	Canada	-	-	-	-	-	-
136	Cayman Islands	-	-	-	-	RM	RM
140	Central African Republic	R	R	R	R	R	-
152	Chile	RC	RC	RC	RC	RC	RC
156	China	R	R	R	R	R	R
344	China, Hong Kong SAR	RM	R	R	R	R	R
446	China, Macao SAR	R	RM	RM	RM	RM	RM
170	Colombia	R	RCM	RCM	RCM	RCM	RM
174	Comoros	RM	RM	RM	RM	R	R
178	Congo	RM	RM	RM	RM	R	R
180	Congo, Dem. Rep. of the	RM	RM	RM	RM	RM	-
188	Costa Rica	R	R	R	R	R	R
191	Croatia	R	R	R	R	R	R
196	Cyprus	RM	RM	RM	RM	RM	RM
203	Czechia	R	RCM	RCM	RCM	RCM	RCM
208	Denmark	R	R	R	R	R	R
214	Dominican Republic	RCM	RCM	RCM	RCM	RCM	RCM
218	Ecuador	R	RCM	RCM	RCM	RCM	RCM
818	Egypt	R	R	R	R	R	R
222	El Salvador	R	R	R	R	R	R
233	Estonia	RM	RM	RM	RM	RM	RM
748	Eswatini	RM	RM	RM	RM	R	R
231	Ethiopia	RM	RM	RM	R	R	R
242	Fiji	R	R	R	R	R	R
246	Finland	R	RM	RM	R	R	R
251	France	R	RM	RM	RM	R	R
258	French Polynesia	RM	RM	RM	RM	RM	-
270	Gambia	RM	RM	RM	R	RM	R
268	Georgia	RM	RM	RM	RM	RM	RM
276	Germany	RM	RM	RM	RM	RM	RM
288	Ghana	R	R	R	RM	-	-
300	Greece	R	RM	RM	RM	RM	RM
304	Greenland	R	R	R	-	-	-
308	Grenada	RM	RM	RM	RM	RM	RM
320	Guatemala	R	R	R	R	R	R

Reporting country		2016	2017	2018	2019	2020	2021
324	Guinea	R	-	-	-	-	-
328	Guyana	R	RM	RM	RM	RM	RM
340	Honduras	R	RCM	R	R	R	R
348	Hungary	RM	RM	RM	RM	RM	RM
352	Iceland	R	RC	RC	RC	RC	RC
356	India	R	R	R	R	R	R
360	Indonesia	R	R	R	R	R	R
364	Iran (Islamic Rep. of)	R	R	R	-	-	-
372	Ireland	R	R	R	R	R	R
376	Israel	R	R	R	R	R	R
380	Italy	R	R	R	R	R	R
388	Jamaica	R	R	R	R	R	R
392	Japan	R	R	R	R	R	R
400	Jordan	R	RM	R	R	R	R
398	Kazakhstan	R	R	R	R	R	-
404	Kenya	R	R	R	R	RM	R
296	Kiribati	RM	RM	RM	-	RM	-
410	Korea, Republic of	R	R	R	R	R	R
414	Kuwait	RM	RM	RM	R	R	R
417	Kyrgyzstan	R	RM	RM	RM	RM	RM
418	Lao People's Dem. Rep.	R	R	R	RM	RM	R
428	Latvia	RM	RM	RM	RM	RM	RM
422	Lebanon	R	R	R	R	R	R
426	Lesotho	R	R	R	R	R	-
434	Libya	R	R	R	R	-	-
440	Lithuania	R	R	R	R	R	R
442	Luxembourg	R	R	RCM	RCM	RCM	RCM
450	Madagascar	RCM	RCM	RCM	RCM	R	R
454	Malawi	R	R	R	R	R	-
458	Malaysia	R	RM	RM	RM	RM	RM
462	Maldives	R	R	RCM	R	-	RM
466	Mali	R	R	R	R	-	-
470	Malta	R	RM	RM	RM	R	R
478	Mauritania	R	R	R	R	RM	R
480	Mauritius	RC	R	RCM	RCM	RCM	RCM
484	Mexico	-	-	-	-	-	-
498	Moldova, Republic of	R	RM	RM	RM	RM	RM

Reporting country		2016	2017	2018	2019	2020	2021
496	Mongolia	R	RM	RM	R	RM	RM
499	Montenegro	RM	RM	RM	RM	RM	RM
500	Montserrat	R	R	R	R	R	-
504	Morocco	R	R	R	R	R	R
508	Mozambique	RM	RCM	RCM	R	R	R
104	Myanmar	RM	RM	RM	RM	RM	RM
516	Namibia	R	RM	R	RCM	RM	-
524	Nepal	R	R	R	R	R	R
528	Netherlands (Kingdom of the)	R	R	R	R	R	R
554	New Zealand	RM	RCM	R	RC	RC	RC
558	Nicaragua	RM	RCM	R	R	R	R
562	Niger	R	R	R	R	R	R
566	Nigeria	R	R	RM	R	RM	RM
807	North Macedonia	RM	RM	RM	RM	RM	RM
579	Norway	R	R	R	R	R	R
512	Oman	R	R	R	R	R	R
586	Pakistan	R	R	R	R	R	R
585	Palau	R	-	-	-	-	-
591	Panama	R	R	R	R	R	R
600	Paraguay	R	RC	R	R	RC	RC
604	Peru	RCM	RCM	RCM	RCM	R	R
608	Philippines	R	R	RC	RC	RC	RC
616	Poland	R	R	R	R	R	R
620	Portugal	RM	RM	RM	RM	RM	RM
634	Qatar	R	R	R	R	R	R
642	Romania	R	RM	RM	RM	RM	RM
643	Russian Federation	R	R	R	R	R	R
646	Rwanda	RCM	RCM	RCM	R	R	R
659	Saint Kitts and Nevis	RM	RM	-	-	-	-
662	Saint Lucia	R	R	R	R	R	-
670	Saint Vincent and the Grenadines	R	R	R	R	R	RM
882	Samoa	R	R	R	R	-	R
678	Sao Tome and Principe	R	RCM	RCM	RM	RM	RM
682	Saudi Arabia	R	R	R	R	R	R
686	Senegal	R	R	RC	R	R	R
688	Serbia incl. Kosovo	R	RCM	RCM	RCM	RCM	RCM
690	Seychelles	RM	RM	RM	RM	RM	RM

Reporting country		2016	2017	2018	2019	2020	2021
694	Sierra Leone	R	RM	R	-	-	-
702	Singapore	R	R	R	R	R	R
703	Slovakia	RM	RM	RCM	RCM	RCM	RCM
705	Slovenia	RM	RM	RM	RM	RM	RM
090	Solomon Islands	R	R	R	-	-	-
710	South Africa	-	-	-	-	-	-
724	Spain	RM	RM	RM	RM	RM	RM
144	Sri Lanka	R	R	-	R	R	R
275	State of Palestine	R	R	R	R	R	R
729	Sudan	RM	R	RM	-	-	-
740	Suriname	RM	R	RM	RM	RM	RM
752	Sweden	RM	RM	RM	RM	RM	RM
757	Switzerland and Liechtenstein	RM	RM	RM	RM	RM	RM
792	Türkiye	RCM	RCM	RCM	RCM	RCM	-
762	Tajikistan	R	R	R	R	R	R
834	Tanzania, United Rep. of	R	R	R	R	R	R
764	Thailand	RM	RM	RM	RM	R	R
626	Timor-Leste	-	RM	-	-	-	-
768	Togo	RM	RM	RM	RM	RM	RM
780	Trinidad and Tobago	RM	RM	RM	RM	RM	RM
788	Tunisia	R	R	R	R	R	R
800	Uganda	R	RM	R	R	RM	-
804	Ukraine	R	R	R	R	R	R
784	United Arab Emirates	R	R	R	R	R	R
926	United Kingdom	R	RM	R	RM	RM	RM
842	United States of America	R	R	R	RC	R	R
858	Uruguay	R	RCM	RCM	RCM	RCM	R
860	Uzbekistan	-	R	R	R	R	R
704	Viet Nam	R	R	R	R	R	R
887	Yemen	-	-	R	R	-	-
894	Zambia	RM	RM	RM	RM	RM	R
716	Zimbabwe	RM	R	R	R	RM	R

Source: UNCTAD calculations, based on UN Comtrade Database, data extraction from 2022.

Notes: "R" means, a trade file was available, so a CIF value – in a few cases a FOB value – was reported. "C" means, the trade file contained the CIF and the FOB value, so transport expenditure could be calculated. "M" means, the trade file contained a breakdown by last MoT, the mode by which the imported goods entered the country. A dash ("-") means, a trade file for imports was not available.

Annex B.
Regressions results for the Transport Cost Model

Commodity group (HS Rev. 2017)		Mode	Intercept	log distance	log unit value	log GDP per capita at origin	log GDP per capita at destination	R^2	N
01	Animals; live	Air	-0.64	0.47 *	-0.63 *	0.16 *	-0.49 *	0.59	1550
01	Animals; live	Sea	15.64 *	-0.58 *	-0.87 *	-0.15	-0.87 *	0.74	55
01	Animals; live	Road	-3.46	-0.01	-0.63 *	0.66 *	-0.41	0.54	137
02	Meat and edible meat offal	Air	-0.57	0.52 *	-0.32 *	0.04	-0.58 *	0.56	1029
02	Meat and edible meat offal	Sea	-4.59 *	0.30 *	-0.41 *	0.04	-0.10 *	0.41	1306
02	Meat and edible meat offal	Road	-6.28 *	0.03	0.11	0.08	0.29	0.26	189
03	Fish and crustaceans, mollus ...	Air	-0.03	0.55 *	-0.51 *	0.06 *	-0.55 *	0.50	2794
03	Fish and crustaceans, mollus ...	Sea	0.32	0.01	-0.38 *	0.02	-0.21 *	0.33	3408
03	Fish and crustaceans, mollus ...	Road	-3.17	0.10 *	0.06	0.03	0.04	0.15	307
04	Dairy produce; birds' eggs; ...	Air	-0.83	0.69 *	-0.42 *	-0.06	-0.53 *	0.52	2064
04	Dairy produce; birds' eggs; ...	Sea	-2.87 *	0.23 *	-0.32 *	-0.02	-0.14 *	0.26	2600
04	Dairy produce; birds' eggs; ...	Road	-1.51	0.03	-0.09	0.08	-0.16	0.15	261
05	Animal originated products; ...	Air	-2.64 *	0.41 *	-0.10 *	0.01	-0.39 *	0.21	1362
05	Animal originated products; ...	Sea	-2.08	0.10	-0.37 *	-0.04	-0.08 *	0.41	830
05	Animal originated products; ...	Rail	-0.20	-0.25	0.00	-0.02	0.02	0.57	20
05	Animal originated products; ...	Road	-5.04	0.08	-0.25 *	0.04	0.21	0.48	93
06	Trees and other plants, live ...	Air	-0.75	0.50 *	-0.35 *	0.03	-0.49 *	0.38	1909
06	Trees and other plants, live ...	Sea	-2.70 *	0.08	-0.43 *	0.02	-0.04	0.26	599
06	Trees and other plants, live ...	Road	-5.03 **	0.11	-0.32 *	0.04	0.20	0.37	128
07	Vegetables and certain roots ...	Air	2.86 *	0.50 *	-0.45 *	0.10 *	-0.87 *	0.52	2396
07	Vegetables and certain roots ...	Sea	-2.08 *	0.07 *	-0.31 *	0.02	-0.12 *	0.28	3299
07	Vegetables and certain roots ...	Rail	-6.85 *	0.14	-0.22 *	0.06	0.22	0.52	80
07	Vegetables and certain roots ...	Road	-3.44 *	0.08	-0.07	0.04	0.09	0.18	387
08	Fruit and nuts, edible; peel ...	Air	1.02	0.45 *	-0.34 *	0.16 *	-0.80 *	0.39	2765
08	Fruit and nuts, edible; peel ...	Sea	-1.85 *	-0.04	-0.35 *	0.05 *	-0.09 *	0.26	4349
08	Fruit and nuts, edible; peel ...	Rail	-9.66 *	0.13	-0.09	-0.09	0.71 *	0.40	81
08	Fruit and nuts, edible; peel ...	Road	-1.16	0.07 *	0.03	-0.03	-0.17	0.13	610
09	Coffee, tea, mate and spices	Air	-1.91 *	0.54 *	-0.41 *	0.07 *	-0.42 *	0.30	3960

Commodity group (HS Rev. 2017)		Mode	Intercept		log distance		log unit value		log GDP per capita at origin		log GDP per capita at destination		R^2	N
09	Coffee, tea, mate and spices	Sea	-1.59	*	-0.06	*	-0.31	*	0.06	*	-0.11	*	0.23	4657
09	Coffee, tea, mate and spices	Rail	-7.68	*	0.14		0.03		0.01		0.37	*	0.20	95
09	Coffee, tea, mate and spices	Road	3.04	*	0.08	*	-0.01		-0.04		-0.63	*	0.22	373
10	Cereals	Air	0.32		0.65	*	-0.66	*	0.08		-0.74	*	0.45	1180
10	Cereals	Sea	-3.34	*	0.18	*	-0.26	*	0.06	*	-0.14	*	0.24	1501
10	Cereals	Rail	-9.61	*	0.43	*	-0.69	*	0.09		0.17		0.46	63
10	Cereals	Road	-6.55	*	-0.03		-0.36	*	0.36	*	0.15		0.32	203
11	Products of the milling indu ...	Air	2.11	*	0.50	*	-0.47	*	0.04		-0.79	*	0.47	1579
11	Products of the milling indu ...	Sea	-3.57	*	0.27	*	-0.37	*	0.01		-0.16	*	0.33	3354
11	Products of the milling indu ...	Rail	9.73	**	-0.97	*	0.04		-0.89	*	0.38	**	0.50	47
11	Products of the milling indu ...	Road	2.48		0.06		-0.11	**	0.11		-0.65	*	0.28	277
12	Oil seeds and oleaginous fru ...	Air	0.62		0.36	*	-0.36	*	-0.01		-0.41	*	0.39	4702
12	Oil seeds and oleaginous fru ...	Sea	-2.23	*	0.02		-0.33	*	0.07	*	-0.11	*	0.26	3720
12	Oil seeds and oleaginous fru ...	Rail	-16.42	*	0.52	*	-0.14		0.46	*	0.50	*	0.46	103
12	Oil seeds and oleaginous fru ...	Road	-1.56		0.12	**	-0.21	*	0.05		-0.24		0.25	401
13	Lac; gums, resins and other ...	Air	1.40	*	0.18	*	-0.54	*	-0.02		-0.30	*	0.36	1800
13	Lac; gums, resins and other ...	Sea	-1.60	*	-0.02		-0.37	*	0.02		-0.10	*	0.21	1245
13	Lac; gums, resins and other ...	Road	-5.04		0.10	**	-0.17	*	0.03		0.19		0.36	91
14	Vegetable plaiting materials ...	Air	2.37		0.38	*	-0.27	*	0.02		-0.61	*	0.45	398
14	Vegetable plaiting materials ...	Sea	0.79		-0.01		-0.31	*	-0.06		-0.09	**	0.47	581
14	Vegetable plaiting materials ...	Road	-22.63	*	-0.04		-0.06		0.05		2.35	*	0.67	88
15	Animal or vegetable fats and ...	Air	-0.21		0.56	*	-0.51	*	-0.01		-0.56	*	0.36	4102
15	Animal or vegetable fats and ...	Sea	-2.32	*	0.14	*	-0.32	*	0.01		-0.14	*	0.25	5567
15	Animal or vegetable fats and ...	Rail	-2.67		0.42	**	-0.17		0.00		-0.36	*	0.74	54
15	Animal or vegetable fats and ...	Road	-2.75	**	0.05	**	-0.18	*	0.11	*	-0.08		0.28	500
16	Meat, fish or crustaceans, m ...	Air	-1.54	**	0.62	*	-0.35	*	0.01		-0.50	*	0.49	1315
16	Meat, fish or crustaceans, m ...	Sea	-2.47	*	0.10	*	-0.35	*	0.05	*	-0.15	*	0.23	2264
16	Meat, fish or crustaceans, m ...	Road	0.93		0.11	*	-0.20	*	0.17	*	-0.60	*	0.27	145
17	Sugars and sugar confectionery	Air	0.19		0.63	*	-0.46	*	-0.12	*	-0.55	*	0.35	2356
17	Sugars and sugar confectionery	Sea	-4.04	*	0.24	*	-0.29	*	0.03	**	-0.12	*	0.20	2814
17	Sugars and sugar confectionery	Rail	-0.63		0.13		-0.09		-0.10		-0.20		0.36	45
17	Sugars and sugar confectionery	Road	-3.78	**	0.07		-0.15	*	0.02		0.05		0.16	247
18	Cocoa and cocoa preparations	Air	-1.90	*	0.75	*	-0.64	*	-0.16	*	-0.38	*	0.37	1904
18	Cocoa and cocoa preparations	Sea	-3.98	*	0.27	*	-0.31	*	-0.01		-0.12	*	0.30	2322
18	Cocoa and cocoa preparations	Rail	-10.45	*	0.11		-0.23		0.18		0.48	*	0.79	27
18	Cocoa and cocoa preparations	Road	-7.93	*	0.22	*	-0.24	**	-0.01		0.42		0.20	195

Commodity group (HS Rev. 2017)		Mode	Intercept	log distance	log unit value	log GDP per capita at origin	log GDP per capita at destination	R^2	N
19	Preparations of cereals, flo ...	Air	2.09 *	0.52 *	-0.60 *	0.01	-0.72 *	0.47	2909
19	Preparations of cereals, flo ...	Sea	-4.42 *	0.29 *	-0.37 *	0.01	-0.09 *	0.27	4628
19	Preparations of cereals, flo ...	Rail	-3.18	-0.04	0.04	-0.04	0.15	0.19	81
19	Preparations of cereals, flo ...	Road	-7.69 *	0.12 *	-0.05	0.02	0.44 **	0.20	307
20	Preparations of vegetables, ...	Air	0.81	0.58 *	-0.47 *	0.09 *	-0.75 *	0.44	3270
20	Preparations of vegetables, ...	Sea	-2.82 *	0.16 *	-0.29 *	0.02 **	-0.14 *	0.23	6644
20	Preparations of vegetables, ...	Rail	-9.27 *	0.14	-0.14	-0.14	0.80 *	0.51	110
20	Preparations of vegetables, ...	Road	0.65	0.04	-0.17 *	0.13 *	-0.48 *	0.19	427
21	Miscellaneous edible prepara ...	Air	0.63 **	0.47 *	-0.50 *	-0.04 **	-0.49 *	0.37	5511
21	Miscellaneous edible prepara ...	Sea	-2.28 *	0.12 *	-0.36 *	-0.02	-0.10 *	0.29	5436
21	Miscellaneous edible prepara ...	Rail	-4.22	-0.24	-0.09	-0.01	0.43 *	0.22	93
21	Miscellaneous edible prepara ...	Road	-4.64 *	0.09 *	-0.32 *	0.14 *	0.07	0.21	407
22	Beverages, spirits and vinegar	Air	1.51 *	0.72 *	-0.45 *	-0.16 *	-0.72 *	0.36	3911
22	Beverages, spirits and vinegar	Sea	-2.51 *	0.22 *	-0.33 *	-0.05 *	-0.12 *	0.35	5494
22	Beverages, spirits and vinegar	Rail	-1.89	0.17	-0.09	0.04	-0.21	0.28	76
22	Beverages, spirits and vinegar	Road	0.53	0.05	-0.21 *	0.01	-0.37 **	0.24	387
23	Food industries, residues an ...	Air	-0.09	0.71 *	-0.45 *	-0.03	-0.69 *	0.42	1290
23	Food industries, residues an ...	Sea	-3.89 *	0.18 *	-0.39 *	0.03 **	-0.08 *	0.35	2054
23	Food industries, residues an ...	Rail	-13.41 *	0.50 **	-0.46 *	0.27	0.22	0.42	58
23	Food industries, residues an ...	Road	-3.84 **	0.18 *	-0.26 *	-0.01	-0.03	0.30	271
24	Tobacco and manufactured tob ...	Air	-1.04	0.58 *	-0.62 *	-0.10 *	-0.29 *	0.36	1647
24	Tobacco and manufactured tob ...	Sea	-1.29 **	-0.02	-0.28 *	-0.04	-0.09 *	0.18	987
24	Tobacco and manufactured tob ...	Road	-9.14 *	-0.01	-0.22 *	0.07	0.70 *	0.34	132
25	Salt; sulphur; earths, stone ...	Air	3.88 *	0.35 *	-0.37 *	-0.18 *	-0.66 *	0.33	5064
25	Salt; sulphur; earths, stone ...	Sea	-2.30 *	0.15 *	-0.42 *	0.00	-0.14 *	0.43	7790
25	Salt; sulphur; earths, stone ...	Rail	-0.95	0.25	-0.36 *	0.20	-0.59 *	0.49	203
25	Salt; sulphur; earths, stone ...	Road	-9.05 *	0.06	-0.38 *	0.11 *	0.63 *	0.29	890
26	Ores, slag and ash	Air	5.85 *	-0.21 **	-0.23 *	-0.13 **	-0.41 *	0.23	755
26	Ores, slag and ash	Sea	-2.33 *	0.06	-0.42 *	0.03	-0.10 *	0.50	1169
26	Ores, slag and ash	Rail	8.83	0.23	-0.03	0.22	-1.59 *	0.73	40
26	Ores, slag and ash	Road	-13.67 *	-0.20	-0.35 *	0.07	1.34 *	0.46	139
27	Mineral fuels, mineral oils ...	Air	1.22 **	0.41 *	-0.33 *	-0.16 *	-0.43 *	0.27	3321
27	Mineral fuels, mineral oils ...	Sea	-2.35 *	0.11 *	-0.18 *	0.00	-0.11 *	0.28	4651
27	Mineral fuels, mineral oils ...	Rail	-5.80 **	0.49 *	-0.15	0.27	-0.32	0.21	201
27	Mineral fuels, mineral oils ...	Road	-3.38 **	0.07	-0.27 *	0.10	-0.09	0.25	422
28	Inorganic chemicals; organic ...	Air	-0.03	0.35 *	-0.28 *	-0.08 *	-0.35 *	0.26	17245

Commodity group (HS Rev. 2017)		Mode	Intercept		log distance		log unit value		log GDP per capita at origin		log GDP per capita at destination		R^2	N
28	Inorganic chemicals; organic ...	Sea	-2.28	*	0.12	*	-0.34	*	-0.02	*	-0.12	*	0.36	14281
28	Inorganic chemicals; organic ...	Rail	-4.18	*	0.51	*	-0.25	*	0.18	*	-0.38	*	0.42	291
28	Inorganic chemicals; organic ...	Road	0.18		0.06	*	-0.23	*	0.11	*	-0.42	*	0.22	1757
29	Organic chemicals	Air	0.95	*	0.19	*	-0.27	*	-0.06	*	-0.30	*	0.24	29313
29	Organic chemicals	Sea	-0.75	*	-0.04	*	-0.28	*	-0.01		-0.13	*	0.24	17434
29	Organic chemicals	Rail	-4.75	*	0.27	*	-0.09	*	0.04		-0.02		0.27	418
29	Organic chemicals	Road	-2.63	*	0.06	*	-0.13	*	0.01		-0.05		0.17	1893
30	Pharmaceutical products	Air	-0.14		0.27	*	-0.36	*	-0.11	*	-0.18	*	0.27	10533
30	Pharmaceutical products	Sea	-0.41		-0.13	*	-0.30	*	-0.03	*	-0.04	*	0.24	4059
30	Pharmaceutical products	Rail	-12.44	*	0.24		-0.09		0.26	**	0.45	*	0.65	46
30	Pharmaceutical products	Road	-5.93	*	0.06	**	-0.10	*	-0.08	**	0.37	*	0.18	436
31	Fertilizers	Air	4.67	*	0.49	*	-0.51	*	-0.25	*	-0.73	*	0.41	1548
31	Fertilizers	Sea	-4.12	*	0.26	*	-0.41	*	-0.01		-0.07	*	0.34	3210
31	Fertilizers	Rail	-14.40	*	0.90	*	-0.47		0.05		0.22		0.61	54
31	Fertilizers	Road	-2.51		0.09		-0.50	*	0.05		-0.02		0.34	248
32	Tanning or dyeing extracts; ...	Air	-0.04		0.36	*	-0.49	*	-0.07	*	-0.28	*	0.34	13545
32	Tanning or dyeing extracts; ...	Sea	-2.39	*	0.00		-0.33	*	0.04	*	-0.10	*	0.24	10500
32	Tanning or dyeing extracts; ...	Rail	-2.57		-0.08		-0.19	*	-0.04		0.20	**	0.13	235
32	Tanning or dyeing extracts; ...	Road	-3.11	*	0.09	*	-0.20	*	0.00		-0.02		0.16	1023
33	Essential oils and resinoids ...	Air	-1.65	*	0.49	*	-0.47	*	-0.05	*	-0.25	*	0.33	11349
33	Essential oils and resinoids ...	Sea	-1.66	*	0.01		-0.34	*	-0.03	*	-0.07	*	0.26	7423
33	Essential oils and resinoids ...	Rail	-7.97	*	-0.09		-0.14	*	-0.09		0.75	*	0.44	148
33	Essential oils and resinoids ...	Road	-6.29	*	0.08	*	-0.16	*	-0.06		0.44	*	0.11	659
34	Soap, organic surface-active ...	Air	-0.80	*	0.48	*	-0.48	*	-0.03	**	-0.37	*	0.32	8974
34	Soap, organic surface-active ...	Sea	-2.31	*	0.10	*	-0.27	*	0.00		-0.12	*	0.18	6945
34	Soap, organic surface-active ...	Rail	-2.83		-0.11		-0.21	*	-0.16		0.31	*	0.21	195
34	Soap, organic surface-active ...	Road	-4.23	*	0.03		-0.04		-0.05		0.22		0.06	607
35	Albuminoidal substances; mod ...	Air	-0.28		0.40	*	-0.38	*	-0.07	*	-0.34	*	0.33	5622
35	Albuminoidal substances; mod ...	Sea	-2.93	*	0.07	*	-0.36	*	0.00		-0.05	*	0.28	3798
35	Albuminoidal substances; mod ...	Rail	-17.60	*	0.43		0.17		0.40	**	0.74	*	0.31	70
35	Albuminoidal substances; mod ...	Road	-0.08		0.07	**	-0.25	*	0.14	*	-0.42	*	0.24	372
36	Explosives; pyrotechnic prod ...	Air	0.98		0.45	*	-0.25	*	-0.15	*	-0.41	*	0.30	1004
36	Explosives; pyrotechnic prod ...	Sea	-1.86	*	0.12	**	-0.31	*	0.00		-0.05		0.29	778
36	Explosives; pyrotechnic prod ...	Road	-0.89		0.19	*	0.02		0.03		-0.43	**	0.19	190
37	Photographic or cinematograp ...	Air	-0.27		0.26	*	-0.38	*	-0.03		-0.24	*	0.26	2779
37	Photographic or cinematograp ...	Sea	-1.35	*	-0.11	*	-0.28	*	0.02		-0.07	*	0.23	1603

Commodity group (HS Rev. 2017)		Mode	Intercept		log distance		log unit value		log GDP per capita at origin		log GDP per capita at destination		R^2	N
37	Photographic or cinematograp ...	Rail	-11.28	*	0.37	*	-0.13		0.20		0.55	*	0.80	34
37	Photographic or cinematograp ...	Road	0.22		0.00		-0.21	*	-0.17		-0.12		0.29	118
38	Chemical products n.e.c.	Air	0.29		0.42	*	-0.44	*	-0.12	*	-0.36	*	0.37	17344
38	Chemical products n.e.c.	Sea	-2.39	*	0.09	*	-0.33	*	-0.01		-0.11	*	0.26	12821
38	Chemical products n.e.c.	Rail	-4.35	*	0.12		-0.12	*	-0.12		0.21	*	0.29	276
38	Chemical products n.e.c.	Road	-3.30	*	0.07	*	-0.18	*	0.06	**	0.00		0.19	1414
39	Plastics and articles thereof	Air	0.80	*	0.39	*	-0.45	*	-0.10	*	-0.35	*	0.32	37852
39	Plastics and articles thereof	Sea	-2.35	*	0.06	*	-0.38	*	0.01		-0.10	*	0.25	28673
39	Plastics and articles thereof	Rail	-6.02	*	0.01		-0.11	*	0.05		0.27	*	0.11	986
39	Plastics and articles thereof	Road	-0.73		0.03	*	-0.25	*	0.05	*	-0.27	*	0.19	2666
40	Rubber and articles thereof	Air	-0.97	*	0.35	*	-0.33	*	-0.07	*	-0.24	*	0.24	20983
40	Rubber and articles thereof	Sea	-1.62	*	-0.03	**	-0.33	*	0.01		-0.11	*	0.26	14145
40	Rubber and articles thereof	Rail	-6.26	*	-0.01		-0.14	*	-0.06		0.43	*	0.26	431
40	Rubber and articles thereof	Road	-2.89	*	0.07	*	-0.22	*	0.10	*	-0.12		0.20	1227
41	Raw hides and skins (other t ...	Air	-1.18	*	0.34	*	-0.65	*	-0.03		-0.16	*	0.33	2717
41	Raw hides and skins (other t ...	Sea	-2.34	*	0.07	**	-0.22	*	0.00		-0.07	*	0.25	1638
41	Raw hides and skins (other t ...	Road	-14.18	*	-0.03		-0.33	*	0.12	*	1.19	*	0.34	426
42	Articles of leather; saddler ...	Air	-1.10	*	0.26	*	-0.38	*	0.01		-0.21	*	0.23	8584
42	Articles of leather; saddler ...	Sea	0.18		-0.15	*	-0.34	*	0.02		-0.12	*	0.31	4113
42	Articles of leather; saddler ...	Rail	-14.58	*	0.27		0.25	*	0.04		0.88	*	0.49	84
42	Articles of leather; saddler ...	Road	-2.74		0.16	*	-0.23	*	0.13	*	-0.23		0.18	402
43	Furskins and artificial fur; ...	Air	-0.32		0.21	*	-0.39	*	-0.03		-0.19	*	0.29	1287
43	Furskins and artificial fur; ...	Sea	0.42		-0.26	*	-0.28	*	0.02		-0.07		0.20	466
43	Furskins and artificial fur; ...	Road	-0.37		0.15		-0.21	*	0.08		-0.39		0.21	111
44	Wood and articles of wood; w ...	Air	0.36		0.45	*	-0.36	*	0.00		-0.55	*	0.31	8735
44	Wood and articles of wood; w ...	Sea	-0.83	*	0.08	*	-0.38	*	-0.01		-0.20	*	0.30	10114
44	Wood and articles of wood; w ...	Rail	-5.74	*	-0.03		-0.17	*	0.08		0.36	*	0.22	265
44	Wood and articles of wood; w ...	Road	-3.94	*	0.10	*	-0.25	*	0.07	*	0.08		0.22	1226
45	Cork and articles of cork	Air	-1.02		0.37	*	-0.38	*	0.02		-0.31	*	0.22	1176
45	Cork and articles of cork	Sea	-0.27		-0.15	*	-0.41	*	-0.03		-0.03		0.28	819
45	Cork and articles of cork	Rail	-27.62	*	0.55		0.96	*	0.51		1.43	*	0.87	20
45	Cork and articles of cork	Road	-4.19		0.13		-0.85	*	0.50	*	-0.21		0.63	84
46	Manufactures of straw, espar ...	Air	1.95	**	0.29	*	-0.33	*	0.01		-0.57	*	0.33	1011
46	Manufactures of straw, espar ...	Sea	-0.32		0.04		-0.33	*	-0.12	*	-0.14	*	0.25	938
46	Manufactures of straw, espar ...	Rail	-14.43		0.44		-0.42		-0.09		0.91		0.34	26
46	Manufactures of straw, espar ...	Road	-4.12		0.16	**	-0.35	*	0.22	**	-0.15		0.29	76

Commodity group (HS Rev. 2017)		Mode	Intercept	log distance	log unit value	log GDP per capita at origin	log GDP per capita at destination	R^2	N
47	Pulp of wood or other fibrou ...	Air	-0.42	0.63 *	-0.23 *	0.01	-0.62 *	0.33	264
47	Pulp of wood or other fibrou ...	Sea	-4.41 *	0.26 *	-0.39 *	0.00	-0.04	0.29	919
47	Pulp of wood or other fibrou ...	Rail	-3.26	0.32	-0.05	0.15	-0.34 *	0.81	24
47	Pulp of wood or other fibrou ...	Road	-7.01	0.13	-0.69 *	0.06	0.40	0.42	74
48	Paper and paperboard; articl ...	Air	0.44 **	0.39 *	-0.44 *	-0.09 *	-0.37 *	0.29	21446
48	Paper and paperboard; articl ...	Sea	-2.89 *	0.14 *	-0.36 *	0.00	-0.10 *	0.28	16235
48	Paper and paperboard; articl ...	Rail	-6.80 *	0.03	0.01	0.08	0.48 *	0.21	446
48	Paper and paperboard; articl ...	Road	-3.68 *	0.03	-0.17 *	0.05 **	0.10	0.10	1465
49	Printed books, newspapers, p ...	Air	0.52 *	0.30 *	-0.48 *	-0.04 *	-0.33 *	0.38	14072
49	Printed books, newspapers, p ...	Sea	-0.74 *	-0.02	-0.36 *	-0.01	-0.12 *	0.24	6511
49	Printed books, newspapers, p ...	Rail	-6.50 *	-0.15	-0.24 *	0.02	0.57 *	0.29	130
49	Printed books, newspapers, p ...	Road	-8.43 *	0.05	-0.36 *	0.15 *	0.56 **	0.22	540
50	Silk	Air	-1.99 **	0.25 *	-0.50 *	-0.01	-0.04	0.26	762
50	Silk	Sea	-1.17	-0.34 *	-0.36 *	0.18 *	0.04	0.35	316
50	Silk	Road	-18.10 *	0.13	0.10	-0.27	1.74 *	0.75	44
51	Wool, fine or coarse animal ...	Air	-2.50 *	0.40 *	-0.60 *	0.02	-0.16 *	0.30	2411
51	Wool, fine or coarse animal ...	Sea	-3.04 *	-0.07 **	-0.35 *	0.11 *	-0.03	0.25	1384
51	Wool, fine or coarse animal ...	Road	-20.97 *	0.09 **	-0.43 *	0.08	1.87 *	0.46	257
52	Cotton	Air	-0.97 *	0.45 *	-0.53 *	-0.07 *	-0.29 *	0.33	5552
52	Cotton	Sea	-3.51 *	-0.03	-0.35 *	0.09 *	0.00	0.25	4453
52	Cotton	Rail	-10.22	0.00	0.37	-0.37	1.21 *	0.48	58
52	Cotton	Road	-10.50 *	0.04	-0.42 *	0.13 *	0.75 *	0.21	626
53	Vegetable textile fibres; pa ...	Air	-1.20 **	0.53 *	-0.36 *	-0.04	-0.30 *	0.35	1579
53	Vegetable textile fibres; pa ...	Sea	-2.11 *	-0.03	-0.36 *	0.05 **	-0.05 **	0.30	1336
53	Vegetable textile fibres; pa ...	Rail	7.13 **	0.07	-0.12 *	-0.07	-0.94 *	0.83	27
53	Vegetable textile fibres; pa ...	Road	-2.50	0.08	-0.22 **	0.29 *	-0.38	0.25	117
54	Man-made filaments; strip an ...	Air	0.38	0.32 *	-0.54 *	-0.05 *	-0.29 *	0.32	4894
54	Man-made filaments; strip an ...	Sea	-2.17 *	-0.02	-0.31 *	0.03 **	-0.07 *	0.18	3598
54	Man-made filaments; strip an ...	Rail	-5.17	-0.14	0.12	-0.14	0.38	0.23	92
54	Man-made filaments; strip an ...	Road	-7.44 *	0.06 **	-0.17 *	-0.05	0.53 *	0.17	442
55	Man-made staple fibres	Air	-0.85 *	0.45 *	-0.56 *	-0.04 *	-0.29 *	0.36	5604
55	Man-made staple fibres	Sea	-3.40 *	0.05 *	-0.31 *	0.07 *	-0.06 *	0.24	5132
55	Man-made staple fibres	Rail	-8.42 **	0.40 **	0.19	0.10	0.27	0.44	81
55	Man-made staple fibres	Road	-9.29 *	0.03	-0.15 *	0.03	0.65 *	0.22	685
56	Wadding, felt and nonwovens, ...	Air	-0.23	0.40 *	-0.43 *	-0.09 *	-0.32 *	0.29	7162
56	Wadding, felt and nonwovens, ...	Sea	-2.14 *	0.06 *	-0.34 *	0.02	-0.08 *	0.21	5480

Commodity group (HS Rev. 2017)		Mode	Intercept		log distance		log unit value		log GDP per capita at origin		log GDP per capita at destination		R^2	N
56	Wadding, felt and nonwovens, ...	Rail	-12.41	*	-0.09		-0.04		0.15		1.02	*	0.43	118
56	Wadding, felt and nonwovens, ...	Road	0.32		0.15	*	-0.16	*	0.05		-0.45	*	0.19	596
57	Carpets and other textile fl ...	Air	-1.11	*	0.50	*	-0.35	*	0.04	*	-0.45	*	0.29	4231
57	Carpets and other textile fl ...	Sea	-0.72	*	-0.03		-0.36	*	0.05	*	-0.15	*	0.27	3466
57	Carpets and other textile fl ...	Rail	-2.40		-0.12		-0.35	*	0.05		0.07		0.41	49
57	Carpets and other textile fl ...	Road	0.44		0.02		-0.15	*	0.15	**	-0.47	**	0.14	279
58	Fabrics; special woven fabri ...	Air	0.18		0.28	*	-0.42	*	-0.07	*	-0.26	*	0.25	6837
58	Fabrics; special woven fabri ...	Sea	-1.65	*	-0.09	*	-0.32	*	0.00		0.00		0.20	3176
58	Fabrics; special woven fabri ...	Rail	-13.10	*	0.10		-0.14		0.00		1.00	*	0.48	80
58	Fabrics; special woven fabri ...	Road	-9.13	*	0.14	*	-0.16	*	0.07		0.52	**	0.17	479
59	Textile fabrics; impregnated ...	Air	0.12		0.32	*	-0.37	*	-0.10	*	-0.26	*	0.26	7391
59	Textile fabrics; impregnated ...	Sea	-1.78	*	-0.02		-0.30	*	0.01		-0.06	*	0.18	4222
59	Textile fabrics; impregnated ...	Rail	-8.72	**	0.00		-0.03		-0.02		0.63	*	0.30	107
59	Textile fabrics; impregnated ...	Road	-0.51		0.04		-0.16	*	0.09	**	-0.37	**	0.16	460
60	Fabrics; knitted or crocheted	Air	-1.71	*	0.51	*	-0.57	*	-0.07	*	-0.22	*	0.32	3224
60	Fabrics; knitted or crocheted	Sea	-2.99	*	0.03		-0.32	*	0.09	*	-0.05	*	0.18	2356
60	Fabrics; knitted or crocheted	Rail	-9.23	*	0.38		0.04		0.01		0.33		0.50	43
60	Fabrics; knitted or crocheted	Road	-12.80	*	0.09	**	-0.22	*	0.02		1.05	*	0.19	377
61	Apparel and clothing accesso ...	Air	-2.46	*	0.35	*	-0.34	*	0.09	*	-0.27	*	0.20	36708
61	Apparel and clothing accesso ...	Sea	-0.24		-0.18	*	-0.34	*	0.07	*	-0.14	*	0.21	18243
61	Apparel and clothing accesso ...	Rail	-18.63	*	0.37	*	0.27	*	0.12	**	1.12	*	0.56	311
61	Apparel and clothing accesso ...	Road	-8.25	*	0.03	*	-0.25	*	0.11	*	0.51	*	0.14	1912
62	Apparel and clothing accesso ...	Air	-2.29	*	0.29	*	-0.36	*	0.08	*	-0.20	*	0.19	34394
62	Apparel and clothing accesso ...	Sea	-0.02		-0.21	*	-0.37	*	0.07	*	-0.11	*	0.27	16350
62	Apparel and clothing accesso ...	Rail	-21.25	*	0.50	*	0.28	*	0.16	**	1.24	*	0.65	263
62	Apparel and clothing accesso ...	Road	-10.80	*	0.03	**	-0.26	*	0.11	*	0.82	*	0.16	1670
63	Textiles, made up articles; ...	Air	-1.12	*	0.34	*	-0.37	*	0.02	**	-0.31	*	0.25	12040
63	Textiles, made up articles; ...	Sea	-0.74	*	-0.09	*	-0.35	*	0.07	*	-0.14	*	0.31	8409
63	Textiles, made up articles; ...	Rail	-9.43	*	-0.17		-0.05		-0.13		1.02	*	0.38	138
63	Textiles, made up articles; ...	Road	-5.50	*	0.11	*	-0.29	*	0.12	*	0.17		0.23	824
64	Footwear; gaiters and the li ...	Air	-1.64	*	0.33	*	-0.46	*	0.09	*	-0.28	*	0.24	9558
64	Footwear; gaiters and the li ...	Sea	0.09		-0.15	*	-0.41	*	0.05	*	-0.13	*	0.32	5357
64	Footwear; gaiters and the li ...	Rail	-20.20	*	0.24		-0.08		-0.04		1.59	*	0.56	163
64	Footwear; gaiters and the li ...	Road	-11.06	*	0.04		-0.25	*	0.05		0.86	*	0.14	531
65	Headgear and parts thereof	Air	-1.29	*	0.29	*	-0.33	*	0.01		-0.23	*	0.20	6106
65	Headgear and parts thereof	Sea	0.00		-0.15	*	-0.32	*	0.00		-0.08	*	0.26	3403

Commodity group (HS Rev. 2017)		Mode	Intercept	log distance	log unit value	log GDP per capita at origin	log GDP per capita at destination	R^2	N
65	Headgear and parts thereof	Rail	5.68	-1.48 *	-0.01	-0.43	0.93 *	0.37	59
65	Headgear and parts thereof	Road	-2.06	0.00	-0.10 **	0.10 **	-0.17	0.10	303
66	Umbrellas, sun umbrellas, wa ...	Air	0.13	0.30 *	-0.41 *	-0.03	-0.33 *	0.29	1374
66	Umbrellas, sun umbrellas, wa ...	Sea	0.97	-0.11 **	-0.37 *	0.01	-0.23 *	0.30	1203
66	Umbrellas, sun umbrellas, wa ...	Rail	-15.14 **	-0.54	0.02	-0.05	1.86 *	0.78	36
66	Umbrellas, sun umbrellas, wa ...	Road	1.30	0.10	-0.26 *	0.25 **	-0.79 **	0.25	108
67	Feathers and down, prepared; ...	Air	-0.80	0.25 *	-0.25 *	-0.05 **	-0.22 *	0.21	2089
67	Feathers and down, prepared; ...	Sea	-1.65 *	0.03	-0.32 *	-0.01	-0.06 **	0.30	1083
67	Feathers and down, prepared; ...	Rail	-35.89 *	0.80	-0.24	0.74	2.07 *	0.76	24
67	Feathers and down, prepared; ...	Road	0.79	-0.07	-0.02	0.05	-0.35	0.19	94
68	Stone, plaster, cement, asbe ...	Air	-0.04	0.36 *	-0.33 *	-0.10 *	-0.36 *	0.30	10968
68	Stone, plaster, cement, asbe ...	Sea	-0.38	0.06 *	-0.31 *	-0.05 *	-0.18 *	0.39	8888
68	Stone, plaster, cement, asbe ...	Rail	-1.17	-0.28 **	-0.19 *	-0.17	0.27 **	0.30	204
68	Stone, plaster, cement, asbe ...	Road	-5.70 *	0.04	-0.27 *	0.06	0.30 **	0.33	795
69	Ceramic products	Air	1.93 *	0.28 *	-0.36 *	-0.08 *	-0.46 *	0.37	9205
69	Ceramic products	Sea	-0.46 **	0.02	-0.36 *	-0.04 *	-0.18 *	0.36	7845
69	Ceramic products	Rail	-14.22 *	0.23	-0.20 *	0.26 **	0.83 *	0.36	190
69	Ceramic products	Road	-8.22 *	0.08 *	-0.23 *	0.07	0.53 *	0.19	716
70	Glass and glassware	Air	1.10 *	0.29 *	-0.29 *	-0.12 *	-0.37 *	0.26	16833
70	Glass and glassware	Sea	-0.74 *	0.02	-0.33 *	-0.03 *	-0.13 *	0.32	10799
70	Glass and glassware	Rail	-2.39	-0.12	-0.26 *	-0.20 **	0.27 *	0.25	328
70	Glass and glassware	Road	-4.94 *	0.03	-0.20 *	0.04	0.29 **	0.19	1057
71	Natural, cultured pearls; pr ...	Air	-0.05	0.07 *	-0.26 *	-0.04 *	-0.15 *	0.26	10521
71	Natural, cultured pearls; pr ...	Sea	-0.03	-0.14 *	-0.23 *	-0.05 **	-0.10 *	0.25	1989
71	Natural, cultured pearls; pr ...	Rail	-26.98 *	0.42 **	-0.15 **	-0.23	2.29 *	0.94	45
71	Natural, cultured pearls; pr ...	Road	-2.75	0.10	-0.12 *	0.23 *	-0.36	0.33	270
72	Iron and steel	Air	-1.93 *	0.57 *	-0.41 *	-0.10 *	-0.34 *	0.30	9975
72	Iron and steel	Sea	-3.12 *	0.14 *	-0.29 *	0.03 *	-0.13 *	0.25	11277
72	Iron and steel	Rail	-6.49 *	0.21 *	-0.03	0.10 **	0.11 **	0.15	580
72	Iron and steel	Road	-3.66 *	0.06 *	-0.16 *	0.10 *	-0.12	0.18	1439
73	Iron or steel articles	Air	-1.08 *	0.39 *	-0.33 *	-0.10 *	-0.26 *	0.25	36878
73	Iron or steel articles	Sea	-0.73 *	-0.05 *	-0.32 *	-0.01	-0.11 *	0.26	24285
73	Iron or steel articles	Rail	-6.06 *	0.00	-0.08 *	-0.12 **	0.50 *	0.21	841
73	Iron or steel articles	Road	-2.29 *	0.10 *	-0.22 *	0.08 *	-0.15 **	0.15	2376
74	Copper and articles thereof	Air	-2.26 *	0.41 *	-0.34 *	-0.12 *	-0.17 *	0.25	11136
74	Copper and articles thereof	Sea	-1.21 *	-0.13 *	-0.33 *	0.05 *	-0.15 *	0.18	6593

Commodity group (HS Rev. 2017)		Mode	Intercept	log distance	log unit value	log GDP per capita at origin	log GDP per capita at destination	R^2	N
74	Copper and articles thereof	Rail	-6.79 *	-0.30 *	-0.37 *	-0.34 *	1.08 *	0.64	175
74	Copper and articles thereof	Road	-3.24 *	0.05	-0.19 *	0.15 *	-0.05	0.22	907
75	Nickel and articles thereof	Air	-0.48	0.25 *	-0.42 *	-0.07 *	-0.12 *	0.31	2584
75	Nickel and articles thereof	Sea	2.14 **	-0.50 *	-0.48 *	-0.02	-0.02	0.28	1138
75	Nickel and articles thereof	Road	-7.01 **	0.02	-0.12 **	-0.14	0.57	0.28	178
76	Aluminium and articles thereof	Air	-0.12	0.39 *	-0.39 *	-0.09 *	-0.31 *	0.29	13574
76	Aluminium and articles thereof	Sea	-1.79 *	-0.05 *	-0.34 *	0.01	-0.10 *	0.23	10200
76	Aluminium and articles thereof	Rail	-1.10	-0.10	0.02	-0.43 *	0.35 *	0.25	226
76	Aluminium and articles thereof	Road	-6.17 *	0.07 *	-0.21 *	0.08 *	0.23 **	0.21	1119
78	Lead and articles thereof	Air	-3.75 *	0.51 *	-0.30 *	-0.02	-0.19 *	0.18	668
78	Lead and articles thereof	Sea	-1.89 *	0.02	-0.20 *	0.03	-0.19 *	0.14	704
78	Lead and articles thereof	Road	-10.33 *	-0.01	0.17	-0.06	0.87 *	0.16	126
79	Zinc and articles thereof	Air	-0.86	0.34 *	-0.38 *	-0.01	-0.28 *	0.27	1549
79	Zinc and articles thereof	Sea	-1.54 *	-0.04	-0.30 *	0.09 *	-0.23 *	0.20	1376
79	Zinc and articles thereof	Rail	-6.44	0.19	-0.80 *	-0.12	0.45	0.81	28
79	Zinc and articles thereof	Road	-1.25	0.00	-0.19 *	0.17 *	-0.33	0.33	226
80	Tin; articles thereof	Air	-4.19 *	0.58 *	-0.32 *	-0.10 **	-0.13 *	0.26	863
80	Tin; articles thereof	Sea	-2.33 **	0.12	-0.45 *	0.10 **	-0.25 *	0.36	545
80	Tin; articles thereof	Road	-2.45	0.11	-0.75 *	0.45	-0.42	0.48	65
81	Metals; n.e.c., cermets and ...	Air	-2.35 *	0.29 *	-0.25 *	-0.07 *	-0.12 *	0.21	3793
81	Metals; n.e.c., cermets and ...	Sea	3.02 *	-0.45 *	-0.31 *	-0.08 **	-0.14 *	0.31	1362
81	Metals; n.e.c., cermets and ...	Rail	-23.39	0.98	0.10	1.11	0.20	0.81	22
81	Metals; n.e.c., cermets and ...	Road	-7.92 **	-0.09 **	-0.17 *	-0.05	0.76	0.35	210
82	Tools, implements, cutlery, ...	Air	-0.80 *	0.31 *	-0.32 *	-0.08 *	-0.23 *	0.28	23563
82	Tools, implements, cutlery, ...	Sea	0.04	-0.17 *	-0.35 *	0.02 *	-0.11 *	0.25	14018
82	Tools, implements, cutlery, ...	Rail	-10.91 *	-0.12	0.11	-0.29 **	1.20 *	0.35	286
82	Tools, implements, cutlery, ...	Road	-0.09	0.10 *	-0.20 *	0.04	-0.37 *	0.15	1219
83	Metal; miscellaneous product ...	Air	0.18	0.30 *	-0.37 *	-0.10 *	-0.28 *	0.25	16799
83	Metal; miscellaneous product ...	Sea	-0.56 *	-0.07 *	-0.32 *	-0.03 *	-0.12 *	0.25	10016
83	Metal; miscellaneous product ...	Rail	-13.34 *	0.01	-0.06	-0.06	1.06 *	0.31	335
83	Metal; miscellaneous product ...	Road	-3.90 *	0.09 *	-0.20 *	0.08 *	-0.03	0.14	929
84	Nuclear reactors, boilers, m ...	Air	-0.28 **	0.29 *	-0.34 *	-0.10 *	-0.20 *	0.28	129492
84	Nuclear reactors, boilers, m ...	Sea	0.45 *	-0.14 *	-0.38 *	-0.03 *	-0.09 *	0.31	72167
84	Nuclear reactors, boilers, m ...	Rail	-4.97 *	-0.09 **	-0.09 *	-0.17 *	0.56 *	0.31	2108
84	Nuclear reactors, boilers, m ...	Road	-1.02	0.04 *	-0.26 *	-0.05 *	-0.13 *	0.22	7330
85	Electrical machinery and equ ...	Air	0.78 *	0.22 *	-0.34 *	-0.09 *	-0.23 *	0.30	113212

Commodity group (HS Rev. 2017)		Mode	Intercept		log distance		log unit value		log GDP per capita at origin		log GDP per capita at destination		R^2	N
85	Electrical machinery and equ ...	Sea	1.46	*	-0.17	*	-0.45	*	-0.03	*	-0.10	*	0.39	51872
85	Electrical machinery and equ ...	Rail	-3.75	*	-0.21	*	-0.11	*	-0.21	*	0.60	*	0.39	1920
85	Electrical machinery and equ ...	Road	0.33		0.04	*	-0.23	*	0.02		-0.29	*	0.31	4758
86	Railway, tramway locomotives ...	Air	-0.90		0.34	*	-0.36	*	-0.08	*	-0.25	*	0.26	1725
86	Railway, tramway locomotives ...	Sea	-2.70	*	0.05		-0.23	*	0.04		-0.13	*	0.34	1809
86	Railway, tramway locomotives ...	Rail	-11.26	*	0.32	*	-0.07		0.15		0.26	**	0.23	122
86	Railway, tramway locomotives ...	Road	-5.78		-0.07		-0.20	*	0.11		0.25		0.19	185
87	Vehicles; other than railway ...	Air	-1.75	*	0.45	*	-0.33	*	-0.05	*	-0.31	*	0.27	12273
87	Vehicles; other than railway ...	Sea	-1.01	*	-0.02		-0.38	*	0.01		-0.12	*	0.33	11832
87	Vehicles; other than railway ...	Rail	-1.83		0.07		-0.29	*	0.05		-0.16	**	0.36	472
87	Vehicles; other than railway ...	Road	-3.69	*	-0.02		-0.20	*	-0.07	*	0.23	**	0.13	978
88	Aircraft, spacecraft and par ...	Air	-0.72	**	0.09	*	-0.33	*	-0.06	*	-0.02		0.21	3561
88	Aircraft, spacecraft and par ...	Sea	-1.01		-0.08		-0.34	*	-0.07		0.05		0.28	725
88	Aircraft, spacecraft and par ...	Road	-4.23		-0.03		-0.06		-0.18		0.40		0.31	102
89	Ships, boats and floating st ...	Air	-0.90		0.35	*	-0.39	*	-0.10	*	-0.28	*	0.30	1114
89	Ships, boats and floating st ...	Sea	-3.04	*	0.14	*	-0.13	*	-0.04		-0.10	*	0.08	1760
89	Ships, boats and floating st ...	Road	0.81		0.10	**	-0.21	*	0.10		-0.53	**	0.35	117
90	Optical, photographic, cinem ...	Air	0.63	*	0.16	*	-0.30	*	-0.12	*	-0.18	*	0.30	65049
90	Optical, photographic, cinem ...	Sea	2.53	*	-0.25	*	-0.31	*	-0.08	*	-0.12	*	0.37	24147
90	Optical, photographic, cinem ...	Rail	-3.93	*	-0.23	*	-0.03		-0.22	*	0.72	*	0.56	756
90	Optical, photographic, cinem ...	Road	-0.25		0.02		-0.18	*	-0.08	*	-0.06		0.42	2478
91	Clocks and watches and parts ...	Air	-2.01	*	0.21	*	-0.24	*	-0.03	**	-0.12	*	0.20	8989
91	Clocks and watches and parts ...	Sea	-0.43		-0.16	*	-0.35	*	0.04	**	-0.06	*	0.36	3244
91	Clocks and watches and parts ...	Rail	-24.66	*	0.26		-0.12		0.38		1.69	*	0.61	89
91	Clocks and watches and parts ...	Road	-0.82		-0.03		-0.18	*	0.07		-0.23		0.19	279
92	Musical instruments; parts a ...	Air	0.48		0.22	*	-0.36	*	-0.05	*	-0.20	*	0.35	5388
92	Musical instruments; parts a ...	Sea	1.71	*	-0.26	*	-0.50	*	0.00		-0.04		0.53	3255
92	Musical instruments; parts a ...	Rail	-0.09		0.04		-0.17	*	-0.01		0.00		0.85	74
92	Musical instruments; parts a ...	Road	-7.46	*	0.01		-0.23	*	0.04		0.58	**	0.46	226
93	Arms and ammunition; parts a ...	Air	3.22	*	0.27	*	-0.51	*	-0.14	*	-0.37	*	0.55	4055
93	Arms and ammunition; parts a ...	Sea	6.56	*	-0.25	*	-0.60	*	-0.12	*	-0.40	*	0.74	1332
93	Arms and ammunition; parts a ...	Rail	0.90		0.28		-0.24	*	0.14		-0.61		0.98	26
93	Arms and ammunition; parts a ...	Road	9.12	*	-0.30	*	-0.20	*	0.09		-0.90	**	0.40	99
94	Furniture; bedding, mattress ...	Air	0.01		0.37	*	-0.41	*	-0.02		-0.38	*	0.30	11587
94	Furniture; bedding, mattress ...	Sea	0.00		-0.02		-0.37	*	-0.04	*	-0.13	*	0.30	9092
94	Furniture; bedding, mattress ...	Rail	-3.78	*	-0.07		-0.19	*	-0.04		0.31	*	0.27	248

Commodity group (HS Rev. 2017)		Mode	Intercept	log distance	log unit value	log GDP per capita at origin	log GDP per capita at destination	R^2	N
94	Furniture; bedding, mattress ...	Road	-3.59 *	0.02	-0.23 *	0.07 *	0.09	0.18	776
95	Toys, games and sports requi ...	Air	-0.21	0.27 *	-0.36 *	-0.01	-0.26 *	0.28	9752
95	Toys, games and sports requi ...	Sea	0.59 *	-0.09 *	-0.41 *	-0.01	-0.13 *	0.37	6237
95	Toys, games and sports requi ...	Rail	-3.74 **	-0.06	-0.02	0.01	0.27 **	0.29	177
95	Toys, games and sports requi ...	Road	-0.91	0.05	-0.25 *	0.11 *	-0.25	0.30	479
96	Miscellaneous manufactured a ...	Air	0.44 *	0.28 *	-0.36 *	-0.09 *	-0.28 *	0.28	18551
96	Miscellaneous manufactured a ...	Sea	-0.60 *	-0.06 *	-0.40 *	0.02 *	-0.09 *	0.39	11868
96	Miscellaneous manufactured a ...	Rail	-7.93 *	-0.27 **	0.09	-0.07	1.00 *	0.43	300
96	Miscellaneous manufactured a ...	Road	-2.11 **	0.11 *	-0.27 *	0.05	-0.09	0.29	1099
97	Works of art; collectors' pi ...	Air	-0.15	0.20 *	-0.47 *	-0.03	-0.14 *	0.41	3671
97	Works of art; collectors' pi ...	Sea	1.12	-0.16 *	-0.28 *	-0.05	-0.09 *	0.33	1189
97	Works of art; collectors' pi ...	Road	-2.03	-0.11	-0.15 *	-0.27 **	0.40	0.35	99

Source: UNCTAD.

Note: Results of independent OLS regressions with fixed effects for year and commodity subgroup at HS Heading level.

Annex C.
Regressions results for the Route Split Model

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
0101	Horses, asses, mules and hin ...	-0.69	0.12	-5.10 *	-4.08	-2.00	0.73	21
0201	Meat of bovine animals; fres ...	-0.31	-0.66	1.70	-	3.79	0.43	39
0202	Meat of bovine animals; frozen	-1.40 *	-1.75 **	5.23 **	-	5.60 *	0.72	54
0203	Meat of swine; fresh, chille ...	-0.18	0.05	4.01 *	-	5.32 *	0.61	32
0204	Meat of sheep or goats; fres ...	-0.45	-0.65	2.66	-	1.98	0.35	25
0207	Meat and edible offal of pou ...	-0.29	-0.61	5.10 *	-	4.03	0.59	36
0210	Meat and edible meat offal; ...	-1.15 *	-2.31 **	6.53 **	-	4.55	0.69	76
0302	Fish; fresh or chilled, excl ...	0.13	0.27	-1.94	-	2.14	0.20	72
0303	Fish; frozen, excluding fish ...	-0.63 *	0.31	2.84 *	-	1.19	0.64	133
0304	Fish fillets and other fish ...	-0.79 *	-0.45	3.14 *	-	3.28 *	0.51	174
0305	Fish, dried, salted or in br ...	-1.18 *	0.23	0.87	-	-	0.56	110
0306	Crustaceans; in shell or not ...	-0.66 *	-0.18	2.53	-	1.31	0.48	143
0307	Molluscs; whether in shell o ...	-0.49 *	-0.83	5.55 *	-	4.72 *	0.68	130
0401	Milk and cream; not concentr ...	-0.11	-0.26	5.29	-	7.56	0.70	35
0402	Milk and cream; concentrated ...	-1.19 *	-0.98 **	5.33 *	4.08	4.50 *	0.72	96
0403	Buttermilk, curdled milk and ...	-0.52	-0.30	2.04	-	0.83	0.42	31
0404	Whey and products consisting ...	-0.60 *	-0.71	4.18 *	-	6.17 *	0.71	60
0405	Butter and other fats and oi ...	-1.59 *	-0.36	1.31	-	0.81	0.66	82
0406	Cheese and curd	-0.94 *	-0.22	2.94 *	-	3.33 *	0.77	251
0408	Birds' eggs, not in shell; e ...	-1.05 *	-4.16 **	12.23 **	-	13.44 **	0.84	25
0409	Honey; natural	-0.07	-0.58	3.62	-	3.47	0.43	44
0410	Edible products of animal or ...	-0.31	0.41	-1.36	-	-0.64	0.10	29
0504	Guts, bladders and stomachs ...	-0.86 *	0.84	1.23	-	2.06	0.82	42
0511	Animal products not elsewher ...	-0.73 *	-0.08	1.26	-	-1.28	0.31	129
0601	Bulbs, tubers, tuberous root ...	-1.42 *	-2.41	7.62 **	-	2.20	0.83	41
0602	Plants, live; n.e.c. in head ...	-0.65 *	-2.12 *	5.16 *	-	5.20 *	0.16	119
0603	Flowers; cut flowers and flo ...	-0.62	1.04	-5.86	-	0.87	0.47	65
0604	Foliage, branches and other ...	-0.53	2.87 **	-7.78 **	-	-7.41 **	0.12	71
0701	Potatoes; fresh or chilled	-0.61 **	-0.92	5.72 **	-	4.75	0.63	30

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
0703	Onions, shallots, garlic, le ...	-0.57	3.90 **	-6.79	-4.66	-2.98	0.49	45
0709	Vegetables; n.e.c. in chapte ...	-0.01	0.91	-2.53	-	-0.58	0.04	74
0710	Vegetables (uncooked or cook ...	-0.16	2.37	-0.42	-	-8.08	0.82	58
0711	Vegetables provisionally pre ...	-0.11	0.15	3.30	-	1.78	0.65	39
0712	Vegetables, dried; whole, cu ...	-0.48 *	-0.01	2.64 *	-	2.45 *	0.62	268
0713	Vegetables, leguminous; shel ...	-0.88 *	-1.08 *	5.68 *	-1.07	5.40 *	0.67	106
0714	Manioc, arrowroot, salep, Je ...	-0.34	0.99	-3.02	-	-0.63	0.06	20
0801	Nuts, edible; coconuts, Braz ...	-0.67 *	0.08	2.95 *	-	3.18 *	0.68	88
0802	Nuts (excluding coconuts, Br ...	-0.57 *	-0.23	3.53 *	0.38	5.28 *	0.59	157
0803	Bananas, including plantains ...	-1.55 *	-4.78	9.81	11.45	21.88	0.72	20
0804	Dates, figs, pineapples, avo ...	0.64 *	0.36	3.21 *	10.72 *	4.33 *	0.53	135
0805	Citrus fruit; fresh or dried	1.69 *	-0.92	6.20	-	5.47	0.43	42
0806	Grapes; fresh or dried	-0.39	0.05	3.18 **	-	4.16 *	0.56	63
0808	Apples, pears and quinces; fresh	-0.43	5.54 **	-13.37	-	-12.39	0.44	23
0809	Apricots, cherries, peaches ...	-0.73 **	3.76	-7.44	-	-4.29	0.72	28
0810	Fruit, fresh; n.e.c. in chap ...	-0.40	2.15	-4.98	-12.60 *	-2.09	0.38	83
0811	Fruit and nuts; uncooked or ...	-0.61 *	-0.28	4.45 **	-	7.04 *	0.67	83
0813	Fruit, dried, other than tha ...	-0.69 *	0.04	2.40 *	-	3.21 *	0.63	173
0901	Coffee, whether or not roast ...	-0.85 *	-0.48	4.09 *	5.93 *	5.16 *	0.68	401
0902	Tea	-0.45 *	0.26	1.97 *	-	1.29	0.62	339
0904	Pepper of the genus piper; d ...	-0.48 *	0.35	2.08 **	-	2.11 **	0.66	170
0905	Vanilla	-0.40 *	-0.93	0.13	-	4.02	0.44	55
0906	Cinnamon and cinnamon-tree f ...	-0.70 *	0.56	1.82	-	-1.02	0.71	72
0907	Cloves (whole fruit, cloves ...	0.02	-	2.45	-	-1.53	0.72	23
0908	Nutmeg, mace and cardamoms	-0.12	-1.36 *	6.72 *	-	8.34 *	0.71	63
0909	Seeds of anise, badian, fenn ...	-0.87 *	-1.28 *	5.38 *	-	4.93 *	0.61	99
0910	Ginger, saffron, tumeric (cu ...	-0.55 *	-0.05	1.95 **	-1.11	1.91 **	0.46	279
1001	Wheat and meslin	-1.95 *	3.68 **	-7.45	-11.91	-5.79	0.70	34
1005	Maize (corn)	-0.88 *	-0.36	4.67 **	3.79	2.80	0.64	106
1006	Rice	-0.13	-3.39	14.26 *	17.56 **	10.19 **	0.67	74
1008	Buckwheat, millet and canary ...	-0.12	-0.14	4.41	-	4.67	0.64	34
1101	Wheat or meslin flour	0.15	-1.50 **	9.45 *	9.98 *	11.76 *	0.74	53
1102	Cereal flours; other than of ...	0.16	-1.65 **	8.27 *	11.10 *	8.37 *	0.68	57
1103	Cereal groats; meal and pellets	-0.15	-6.31 *	19.47 *	-	20.83 *	0.63	33
1104	Cereal grains otherwise work ...	-0.91 *	-0.25	4.29 *	1.34	4.77 *	0.76	46
1106	Flour, meal and powder; of t ...	-0.62 *	-0.28	1.93 **	-	2.60 **	0.46	137

	Commodity group (HS Rev. 2017)	log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
1107	Malt; whether or not roasted	-0.56 **	-0.06	5.47 *	-	5.25 *	0.83	36
1108	Starches; inulin	-0.47 *	0.67	2.33 **	2.91	1.81	0.74	115
1206	Sunflower seeds; whether or ...	-0.44	-2.43 *	10.59 *	14.46 *	8.02 *	0.66	68
1207	Oil seeds and oleaginous fru ...	-1.06 *	-0.09	1.50	-	2.57	0.42	189
1208	Flours and meals of oil seed ...	0.39	-0.60	5.40	-0.17	-	0.69	23
1209	Seeds, fruit and spores; of ...	-0.70 *	-0.48	0.36	-	1.42	0.14	541
1210	Hop cones, fresh or dried, w ...	-0.10	-0.08	1.76 **	-	1.82 **	0.54	66
1211	Plants and parts of plants (...	-0.63 *	-0.78 **	3.94 *	-	3.03 *	0.49	377
1212	Locust beans, seaweeds and o ...	-0.05	-0.90	5.20 **	2.05	3.67	0.51	178
1301	Lac; natural gums, resins, g ...	-0.23	1.12 *	-1.16	-	-3.14 **	0.41	157
1302	Vegetable saps and extracts; ...	-0.66 *	0.68 *	-1.11 **	-2.31	-1.15 **	0.38	640
1401	Vegetable materials of a kin ...	-0.74	0.06	2.35 **	-	0.80	0.75	34
1404	Vegetable products not elsew ...	-0.35	0.57	1.28	-	0.33	0.45	96
1504	Fats and oils and their frac ...	-0.62 *	-0.45	3.32 *	-	2.26	0.54	107
1505	Wool grease and fatty substa ...	-0.19	-0.70	4.57 *	-	5.21 *	0.70	66
1507	Soya-bean oil and its fracti ...	0.33	-0.89	6.58	-	5.79	0.53	29
1509	Olive oil and its fractions; ...	-1.29 *	-0.19	3.30 **	-	4.26 **	0.79	128
1511	Palm oil and its fractions; ...	-0.05	-1.20	9.45 *	-	8.57 *	0.77	39
1512	Sun-flower seed, safflower o ...	0.17	0.51	3.04 *	1.17	1.46	0.63	99
1513	Coconut (copra), palm kernel ...	-0.62 *	-0.49	4.58 *	-	4.00 *	0.65	102
1514	Rape, colza or mustard oil a ...	-0.13	0.12	1.48	2.51	2.07	0.37	29
1515	Fixed vegetable fats and oil ...	-0.04	0.34	1.93 **	-	1.38	0.49	381
1516	Animal or vegetable fats and ...	-0.52 *	-1.08 *	5.38 *	-	6.35 *	0.65	202
1517	Margarine; edible mixtures o ...	-0.39 *	-0.54	4.89 *	-	5.69 *	0.69	150
1518	Animal or vegetable fats, oi ...	0.15	-0.99 **	5.45 *	-	4.45 **	0.60	66
1521	Vegetable waxes (other than ...	-0.22	-0.07	2.58	-	1.87	0.59	66
1601	Sausages and similar product ...	-1.25 *	-0.32	1.24	-	1.89	0.58	81
1602	Prepared or preserved meat, ...	-0.92 *	-1.01 *	3.95 *	-	3.79 *	0.69	115
1603	Extracts and juices of meat, ...	-1.03 *	-2.74	6.27	-	-	0.43	28
1604	Prepared or preserved fish; ...	-1.26 *	0.13	1.94 **	-	3.29 *	0.70	219
1605	Crustaceans, molluscs and ot ...	-0.53 **	1.70 *	-0.72	-	-4.89	0.70	80
1701	Cane or beet sugar and chemi ...	-0.31	0.20	3.08 *	2.58	0.98	0.55	137
1702	Sugars, including lactose, m ...	-0.39 *	0.52 **	2.26 *	-	1.43 **	0.65	394
1704	Sugar confectionery (includi ...	-0.72 *	0.12	3.02 *	3.39	3.29 *	0.72	489
1801	Cocoa beans; whole or broken ...	-0.84 *	-2.22	6.90	-	8.65	0.59	40
1803	Cocoa; paste; whether or not ...	-0.77	-4.00	12.47	14.59 **	14.52 **	0.79	30

	Commodity group (HS Rev. 2017)	log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
1804	Cocoa; butter, fat and oil	-0.48	-1.06	3.79	5.10	5.24	0.35	44
1805	Cocoa; powder, not containin ...	-1.27 *	1.40	-1.78	-	-0.49	0.79	133
1806	Chocolate and other food pre ...	-0.86 *	-0.06	3.01 *	1.28	3.04 *	0.69	579
1901	Malt extract; flour/groats/m ...	-0.33 *	-0.10	4.29 *	3.01	4.15 *	0.70	396
1902	Pasta; whether or not cooked ...	-0.43 *	-1.11 *	8.42 *	6.92 **	7.42 *	0.82	171
1904	Prepared foods obtained by s ...	-0.59 *	-0.34	5.08 *	5.92 *	5.58 *	0.73	214
1905	Bread, pastry, cakes, biscui ...	-0.75 *	-0.41 **	4.96 *	1.45	4.58 *	0.77	516
2001	Vegetables, fruit, nuts and ...	-0.42 **	0.06	3.94	-0.76	3.46	0.73	92
2002	Tomatoes; prepared or preser ...	-1.01 *	-2.53	10.64 **	5.88	8.09 **	0.73	68
2003	Mushrooms and truffles, prep ...	-0.36	-2.20	8.60	-	5.37	0.65	51
2004	Vegetables preparations n.e. ...	-0.95 *	2.19	-0.63	-	-1.07	0.86	64
2005	Vegetables preparations n.e. ...	-0.63 *	0.01	4.71 *	-	3.97 *	0.80	215
2006	Vegetables, fruit, nuts, fru ...	0.14	-0.85	5.84	4.81	3.43	0.62	39
2007	Jams, fruit jellies, marmala ...	-0.45 *	-1.00 *	5.76 *	-	7.43 *	0.76	168
2008	Fruit, nuts and other edible ...	-0.43 *	-0.33	5.25 *	5.48 *	5.74 *	0.78	369
2009	Fruit juices (including grap ...	-0.17	-0.42	5.43 *	4.66 **	5.46 *	0.65	258
2101	Extracts, essences, concentr ...	-0.49 *	-0.03	2.97 *	3.55	4.40 *	0.66	365
2102	Yeasts (active or inactive); ...	-0.45 *	-0.09	1.90 *	-	1.83 *	0.44	335
2103	Sauces and preparations ther ...	-0.40 *	0.51 **	2.22 *	4.24 **	3.04 *	0.76	440
2104	Soups and broths and prepara ...	-0.70 *	-1.42 *	6.72 *	-	8.81 *	0.70	122
2105	Ice cream and other edible i ...	-0.01	-0.13	4.90	-	6.19	0.76	29
2106	Food preparations not elsewh ...	-0.84 *	-0.12	1.84 *	-0.14	2.11 *	0.59	1224
2201	Waters, including natural or ...	-0.02	-0.71	5.54 *	-	4.56 **	0.58	81
2202	Waters, including mineral an ...	-0.56 *	-0.71 *	6.83 *	8.14 *	6.81 *	0.78	273
2203	Beer made from malt	-0.45 *	-0.02	5.82 *	-	4.21 *	0.87	129
2204	Wine of fresh grapes, includ ...	-0.52 *	-0.68	5.62 *	-	5.83 *	0.74	325
2205	Vermouth and other wine of f ...	-0.22	-4.12	15.40 **	-	17.88 **	0.84	23
2206	Fermented beverages, n.e.c. ...	-0.08	0.38	2.69	-	0.41	0.58	47
2207	Ethyl alcohol, undenatured; ...	-0.80 *	-0.62	4.37 *	3.72 **	3.78 *	0.60	75
2208	Ethyl alcohol, undenatured; ...	-0.49 *	0.09	3.57 *	-	3.26 *	0.71	565
2209	Vinegar and substitutes for ...	-0.21	-0.11	3.92 *	-1.23	3.80 **	0.68	104
2301	Flours, meal and pellets, of ...	0.06	-0.24	4.35 **	-	3.26	0.49	26
2302	Bran, sharps and other resid ...	-0.89 **	0.53	-0.95	-0.80	0.69	0.36	35
2303	Residues of starch manufactu ...	0.04	-2.57	10.01 **	12.24 **	5.99	0.67	21
2306	Oil-cake and other solid res ...	0.13	0.59	1.18	-4.08	0.01	0.57	23
2309	Preparations of a kind used ...	-0.53 *	-0.31	4.01 *	0.85	3.81 *	0.74	569

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
2401	Tobacco, unmanufactured; tob ...	-1.16 *	-0.38	4.51 *	-	5.89 *	0.88	124
2402	Cigars, cheroots, cigarillos ...	-0.81 *	-0.35 **	1.03	-	2.10 *	0.35	318
2403	Manufactured tobacco and man ...	-0.26 **	-0.65 **	3.81 *	-	3.09 *	0.48	148
2501	Salt (including table salt a ...	0.02	-0.13	3.60 *	5.71 *	3.84 *	0.57	298
2503	Sulphur of all kinds; other ...	0.24	-3.12	12.53 *	10.98	8.45 **	0.52	29
2504	Graphite; natural	-0.02	0.08	2.98	-	2.86	0.59	56
2505	Sands of all kinds; natural, ...	0.01	-0.49	4.79 *	7.43 *	3.04 *	0.47	137
2506	Quartz; (other than natural ...	-0.26	-0.39	3.62	-	1.83	0.54	37
2507	Kaolin and other kaolinic cl ...	-0.51 **	0.18	4.87 *	1.11	4.00 *	0.78	69
2508	Clays; (not including expand ...	-0.42 *	0.04	4.06 *	3.52	3.83 *	0.67	154
2511	Natural barium sulphate (bar ...	-0.28	0.04	4.00 **	4.60	1.54	0.69	25
2512	Siliceous fossil meals (e.g. ...	-0.36	1.16	-0.61	-	1.27	0.51	36
2513	Pumice stone; emery; natural ...	0.78 *	1.14 *	1.18	-	-3.09	0.58	72
2515	Marble, travertine, ecaussin ...	-1.28 *	-2.00	6.48	4.86	8.15 *	0.88	25
2516	Granite, porphyry, basalt, s ...	0.26	-0.50	4.42	3.32	4.96	0.40	26
2517	Pebbles, gravel, crushed sto ...	-0.65 *	0.02	3.79 *	0.44	2.69 **	0.73	63
2519	Natural magnesium carbonate ...	-0.01	0.55	2.90 *	-	0.46	0.60	107
2520	Gypsum; anhydrite; plasters ...	-0.45 **	-0.50	5.61 *	7.09 **	6.23 *	0.71	68
2523	Portland cement, aluminous c ...	-0.39 *	-0.39	6.70 *	7.07 *	4.59 *	0.75	118
2525	Mica, including splittings; ...	-0.07	-0.06	2.68 *	-	2.22	0.46	61
2526	Natural steatite; whether or ...	-0.20	1.16 **	0.48	-	-3.57 **	0.70	82
2529	Feldspar; leucite; nepheline ...	-0.55	-0.43	4.67 *	1.04	4.85 *	0.67	38
2530	Mineral substances not elsew ...	-0.47 *	-0.72	5.24 *	7.72 **	7.07 *	0.62	114
2701	Coal; briquettes, ovoids and ...	-1.07 **	4.50 *	-7.20	-5.30	-6.39	0.65	23
2703	Peat; (including peat litter ...	0.10	-3.09 **	15.50 *	-	9.16 *	0.84	23
2707	Oils and other products of t ...	-0.64 **	0.35	4.16 *	-1.56	2.51	0.67	44
2710	Petroleum oils and oils from ...	-0.45 *	-0.27	5.39 *	1.64	3.02 *	0.64	1024
2711	Petroleum gases and other ga ...	-0.54 **	-0.49	4.17 *	2.06	0.56	0.52	85
2712	Petroleum jelly; paraffin wa ...	-0.07	0.09	3.73 *	6.53	3.66 *	0.60	242
2715	Bituminous mixtures based on ...	-0.13	-0.37	4.57 *	1.64	3.96 *	0.61	35
2801	Fluorine, chlorine, bromine ...	-0.08	-0.28	3.32	-	0.83	0.37	50
2803	Carbon; carbon blacks and ot ...	-0.46 *	-0.79 **	6.35 *	4.74 *	5.69 *	0.75	162
2804	Hydrogen, rare gases and oth ...	-0.23	-0.77 *	3.49 *	-	3.03 *	0.22	234
2805	Alkali or alkaline-earth met ...	-0.32	5.25 *	-12.29 *	-	-10.83 *	0.64	34
2806	Hydrogen chloride (hydrochlo ...	-0.25	-1.62 **	7.86 *	-	10.78 *	0.76	44
2807	Sulphuric acid; oleum	-0.10	0.32	3.87 **	0.53	2.46	0.58	53

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2808	Nitric acid; sulphonitric acids	-0.33	2.95 *	-6.92 **	-	-5.23	0.54	27
2809	Diphosphorus pentoxide; phos ...	-0.04	-0.43	4.85 *	3.16	2.41	0.52	99
2810	Oxides of boron; boric acids	-0.23	-1.69	6.22	-	6.02	0.42	50
2811	Inorganic acids and other in ...	-0.09	0.06	3.38 *	0.81	1.71 *	0.56	496
2812	Halides and halide oxides of ...	0.70 *	-1.00	6.97 *	-	4.41 **	0.63	54
2813	Sulphides of non-metals; com ...	-0.62	-0.27	1.23	-	2.96	0.38	21
2815	Sodium hydroxide (caustic so ...	-0.13	-0.14	4.57 *	4.82	1.94 **	0.56	181
2816	Hydroxide and peroxide of ma ...	0.47	10.75 *	-22.69 **	-	-28.51 *	0.73	26
2817	Zinc; oxide and peroxide	-0.45 *	-0.24	3.43 **	-	1.49	0.65	111
2818	Aluminium oxide (including a ...	-0.19	0.13	2.97 *	-	1.31	0.56	218
2819	Chromium oxides and hydroxides	0.04	6.13	-12.39	-	-41.24	0.68	25
2820	Manganese oxides	0.46	-0.74	10.10 *	-	7.65 *	0.90	22
2821	Iron oxides and hydroxides; ...	-0.15	0.22	1.71	2.52	-0.38	0.38	143
2822	Cobalt oxides and hydroxides ...	-0.30	-1.55	8.44 *	-	7.03 **	0.57	23
2823	Titanium oxides	-0.35 **	0.73	1.87	-	0.18	0.62	115
2825	Hydrazine and hydroxylamine ...	-0.31 **	0.12	2.81 *	-	1.32	0.59	186
2826	Fluorides; fluorosilicates, ...	-0.18	0.08	2.79 **	-	0.53	0.45	109
2827	Chlorides; chloride oxides a ...	-0.07	0.42 **	2.15 *	1.86	0.73	0.54	337
2828	Hypochlorites; commercial ca ...	-0.25	0.03	2.54	-	1.82	0.31	58
2829	Chlorates and perchlorates; ...	0.45	0.37	2.27 **	-	1.41	0.43	104
2830	Sulphides; polysulphides whe ...	0.38	0.20	4.65 *	6.40	2.12	0.56	70
2831	Dithionites and sulphoxylates	-0.52	1.28	0.57	-	0.33	0.82	31
2832	Sulphites; thiosulphates	0.23	0.17	4.32 *	-0.38	1.92	0.56	137
2833	Sulphates; alums; peroxosulp ...	-0.27 *	0.07	3.95 *	-3.72	2.67 *	0.62	357
2834	Nitrites; nitrates	-0.38 **	0.08	2.87 *	-	1.02	0.62	143
2835	Phosphinates (hypophosphites ...	-0.29 **	-0.41	4.63 *	-5.03 **	2.79 *	0.61	293
2836	Carbonates; peroxocarbonates ...	-0.20	0.37	3.56 *	-0.72	2.77 *	0.65	342
2837	Cyanides, cyanide oxides and ...	0.17	0.24	3.56	-	4.62 **	0.49	89
2839	Silicates; commercial alkali ...	-0.12	0.56	1.78	-1.72	-0.01	0.59	158
2840	Borates; peroxoborates (perb ...	-0.43 **	0.51	-0.20	-	0.50	0.37	90
2841	Salts of oxometallic or pero ...	-0.26	0.14	2.12 **	-	-0.17	0.47	128
2842	Salts of inorganic acids or ...	-0.17	0.20	2.31 *	-	2.25 *	0.55	216
2843	Colloidal precious metals; i ...	-0.17	0.54	-1.82	-	-1.14	0.04	108
2844	Radioactive chemical element ...	-0.30	2.69	-5.90	-	-8.75	0.23	39
2845	Isotopes other than those of ...	-0.54	-1.74 *	4.10 *	-	4.55 *	0.49	33
2846	Compounds, inorganic or orga ...	0.21	-0.15	2.16	-	1.83	0.31	58

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
2847	Hydrogen peroxide; whether o ...	-0.21	-0.23	3.40	-	2.09	0.41	70
2849	Carbides, whether or not che ...	-0.56 *	0.54	-0.05	4.13	-0.55	0.39	95
2850	Hydrides, nitrides, azides, ...	-0.08	-1.15 *	6.05 *	-	5.80 *	0.66	66
2852	Inorganic or organic compoun ...	0.21	0.14	0.63	-	-1.03	0.18	37
2853	Phosphides, chemically defin ...	-0.32	0.14	0.24	-	0.98	0.18	103
2901	Acyclic hydrocarbons	-0.04	0.58	1.02	4.64 *	1.27	0.52	148
2902	Cyclic hydrocarbons	-0.30	0.60	1.56	-	0.32	0.49	213
2903	Halogenated derivatives of h ...	0.03	0.13	3.82 *	2.40	2.89 *	0.66	216
2904	Sulphonated, nitrated or nit ...	-0.41 *	0.10	2.51 *	-	1.50 **	0.51	177
2905	Acyclic alcohols and their h ...	-0.03	-0.31	5.34 *	8.14 *	3.85 *	0.64	563
2906	Alcohols; cyclic, and their ...	-0.30 **	0.21	1.25	-	-0.11	0.39	230
2907	Phenols; monophenols, polyph ...	-0.07	1.28 *	-0.69	-	-2.50 **	0.40	249
2908	Phenols or phenol-alcohols; ...	-0.55 *	0.28	0.07	-	-0.31	0.42	68
2909	Ethers, ether-alcohols, ethe ...	-0.39 *	0.46 **	1.26 **	-0.98	0.71	0.56	384
2910	Epoxides, epoxyalcohols, epo ...	-0.59 *	-1.15 *	5.89 *	-	7.34 *	0.69	95
2911	Acetals and hemiacetals; whe ...	0.11	1.18 *	-0.86	-	-3.23	0.50	76
2912	Aldehydes, whether or not wi ...	-0.07	0.81 *	0.76	-	-0.04	0.58	279
2913	Aldehydes; halogenated, sulp ...	-0.26	3.95	-8.41	-	-23.81	0.39	29
2914	Ketones and quinones; whethe ...	-0.38 *	0.83 *	0.23	-	-1.61 **	0.46	346
2915	Acids; saturated acyclic mon ...	-0.08	0.25	3.31 *	0.39	2.04 *	0.61	625
2916	Acids; unsaturated acyclic m ...	-0.35 *	0.85 *	0.89	2.85	-1.33 **	0.57	435
2917	Acids; polycarboxylic acids, ...	-0.04	-0.38	4.90 *	-0.80	3.53 *	0.52	297
2918	Acids; carboxylic acid with ...	-0.56 *	0.75 *	0.32	-1.01	-0.84	0.52	606
2919	Esters; phosphoric, and thei ...	-0.27	0.55	1.08	-	0.57	0.57	133
2920	Esters of other inorganic ac ...	-0.46 *	0.30	2.29 **	-	2.62 *	0.56	158
2921	Amine-function compounds	-0.73 *	0.54 **	0.82	0.15	0.22	0.53	390
2922	Oxygen-function amino-compounds	-0.71 *	0.13	0.74	-5.52 **	0.35	0.23	551
2923	Quaternary ammonium salts an ...	-0.35 *	0.62 *	0.28	0.13	0.19	0.43	326
2924	Carboxyamide-function compou ...	-0.57 *	0.88 *	-1.26	-	-1.86 *	0.29	394
2925	Carboxyimide-function compou ...	-0.37 *	0.73 *	0.19	-	-0.62	0.54	251
2926	Nitrile-function compounds	-0.53 *	0.77 **	0.50	-3.67	-1.18	0.62	163
2927	Diazo-, azo- or azoxy-compounds	0.45	0.71 **	0.43	-	-1.39	0.33	72
2928	Organic derivatives of hydra ...	-0.59 *	0.69 **	-0.58	-	-1.97	0.33	120
2929	Nitrogen-function compounds, ...	-0.54 *	0.35	3.11 *	-2.25	2.44 **	0.69	167
2930	Organo-sulphur compounds	-0.87 *	0.89 *	0.03	6.18	-0.05	0.54	321
2931	Other organo-inorganic compounds	-0.69 *	0.80 *	0.05	-1.10	-0.50	0.54	248

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2932	Heterocyclic compounds with ...	-0.56 *	1.16 *	-2.76 *	-	-3.41 *	0.21	385
2933	Heterocyclic compounds with ...	-0.61 *	0.73 *	-1.60 *	-3.07	-2.13 *	0.14	585
2934	Nucleic acids and their salt ...	-0.72 *	0.92 *	-2.91 *	-	-2.50 *	0.15	408
2935	Sulphonamides	-0.44 *	1.25 *	-2.89 *	-	-3.41 *	0.19	172
2936	Provitamins, vitamins; natur ...	-0.60 *	0.81 *	-1.40 **	-4.54 **	-1.34 **	0.29	478
2937	Hormones, prostaglandins, th ...	-0.63 *	0.17	-4.11 *	-	-1.30	0.46	142
2938	Glycosides, natural or repro ...	-0.42 *	-0.03	-0.32	-	-0.06	0.08	187
2939	Alkaloids; natural or reprod ...	-0.85 *	0.16	-1.70	-	-1.13	0.16	207
2940	Sugars, chemically pure, oth ...	-0.52 *	-0.54	3.27 *	-	2.77 **	0.41	153
2941	Antibiotics	-0.71 *	0.57 **	-1.65 **	-	-1.75 **	0.15	279
2942	Organic compounds; n.e.c. in ...	-0.26 **	-0.33	1.22	-	0.56	0.08	144
3001	Glands and other organs (ext ...	-0.64 **	0.17	-1.41	-	0.12	0.11	47
3002	Human blood; animal blood fo ...	-0.93 *	-0.39	-2.27 *	-	0.44	0.42	605
3003	Medicaments; (not goods of h ...	-0.92 *	0.98 *	-3.25 *	-	-2.02 **	0.26	248
3004	Medicaments; (not goods of h ...	-0.71 *	-0.39 *	0.04	-	1.36 *	0.14	1554
3005	Wadding, gauze, bandages (dr ...	-0.56 *	0.39 **	-0.42	-3.86 *	-0.46	0.25	708
3006	Pharmaceutical goods	-0.83 *	0.88 *	-4.06 *	-5.53 *	-2.24 *	0.21	833
3101	Fertilizers; animal or veget ...	-1.00 *	0.21	1.78 **	-	1.38	0.76	114
3102	Fertilizers; mineral or chem ...	-0.76 *	0.18	5.60 *	4.82 *	3.71 *	0.74	183
3104	Fertilizers; mineral or chem ...	-0.65 *	0.20	5.05 *	-	3.08 *	0.71	108
3105	Fertilizers; mineral or chem ...	-0.81 *	0.03	4.80 *	4.66 *	4.47 *	0.82	373
3201	Tanning extracts of vegetabl ...	-0.42 *	-1.39 **	6.03 *	-	3.64 *	0.62	75
3202	Tanning substances; syntheti ...	-0.84 *	0.97 *	0.38	-	-0.85	0.82	110
3203	Colouring matter of vegetabl ...	-0.35 *	0.17	-0.03	-	1.13	0.24	331
3204	Synthetic organic colouring ...	-0.42 *	0.62 *	0.53	-1.81 **	0.40	0.59	855
3205	Colour lakes; preparations b ...	-0.54 *	0.74 **	-2.43 *	-	-2.53 **	0.17	125
3206	Colouring matter and prepara ...	-0.30 *	0.45 **	2.15 *	2.06 **	0.51	0.64	553
3207	Pigments, prepared; opacifie ...	-0.63 *	0.13	0.86	-	0.47	0.40	317
3208	Paints, varnishes; (enamels ...	-0.20 *	-0.22	3.56 *	1.66	3.57 *	0.61	735
3209	Paints and varnishes (includ ...	-0.35 *	-0.38 **	3.38 *	-0.63	3.36 *	0.61	531
3210	Paints and varnishes (includ ...	-0.39 *	-0.62 *	3.34 *	-0.27	3.33 *	0.52	305
3211	Driers; prepared	-0.18	-0.14	2.33 **	-	5.28 *	0.59	76
3212	Pigments (metallic powders a ...	-0.66 *	0.32	-0.18	-5.77 **	0.28	0.45	462
3213	Colours; artists, students, ...	-0.48 *	0.48 **	0.80	-0.05	-0.13	0.58	240
3214	Glaziers' putty, grafting pu ...	-0.19 *	-	2.91 *	0.48	1.83 *	0.53	792
3215	Ink; printing, writing or dr ...	-0.50 *	0.73 *	-1.08 *	-5.08 **	-0.81	0.35	974

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
3301	Oils; essential (concretes, ...	-0.35 *	0.39 *	-0.78	-	-1.21 *	0.14	746
3302	Odoriferous substances and m ...	-0.46 *	0.42 *	-0.18	-4.34 *	-0.25	0.38	696
3303	Perfumes and toilet waters	-0.62 *	0.20	0.03	-5.16 *	1.18 **	0.34	519
3304	Cosmetic and toilet preparat ...	-0.56 *	0.37 *	-0.82 **	-4.72 *	0.24	0.21	1316
3305	Hair preparations; for use o ...	-0.52 *	-0.16	2.52 *	1.65	2.87 *	0.60	723
3306	Oral or dental hygiene prepa ...	-0.74 *	-0.18	2.40 *	3.65 *	2.87 *	0.57	449
3307	Perfumery, cosmetic or toile ...	-0.47 *	0.38 **	1.09 **	1.81	1.98 *	0.55	777
3401	Soap; organic surface-active ...	-0.57 *	0.08	2.63 *	2.86 *	2.56 *	0.63	758
3402	Organic surface-active agent ...	-0.47 *	-0.14	3.28 *	1.42	2.21 *	0.58	1141
3403	Lubricating preparations and ...	-0.12	0.06	1.79 *	-4.56 *	1.47 *	0.39	891
3404	Waxes; artificial, prepared	-0.48 *	-0.21	2.75 *	4.99 *	2.87 *	0.57	403
3405	Polishes, creams, scouring p ...	-0.23 *	-0.30	2.85 *	-1.98	2.78 *	0.46	512
3406	Candles, tapers and the like	-0.66 *	0.71 *	-0.34	-2.21	-0.85	0.40	325
3407	Modelling pastes, including ...	-0.56 *	0.16	1.13	-2.30	1.38	0.40	302
3501	Casein, caseinates and other ...	-0.85 *	0.59	-0.35	-	-1.87	0.54	74
3502	Albumins (including concentr ...	-0.55 *	-0.24	2.74 **	-	5.29 *	0.72	73
3503	Gelatin (including gelatin i ...	-0.77 *	-0.36	3.03	-	3.14	0.67	99
3504	Peptones and their derivativ ...	-0.43 *	0.01	1.97 **	-	1.24	0.49	297
3505	Dextrins and other modified ...	-0.40 *	0.18	2.61 *	-0.91	3.27 *	0.66	274
3506	Prepared glues and other pre ...	-0.26 *	0.33 **	1.18 *	-0.99	0.62	0.41	1150
3507	Enzymes; prepared enzymes no ...	-0.52 *	0.02	0.62	0.46	0.18	0.30	537
3603	Safety fuses; detonating fus ...	-0.46	0.03	1.75	-	2.25	0.50	61
3604	Fireworks, signalling flares ...	0.41	-2.09	8.28	-	2.58	0.38	36
3605	Matches; other than pyrotech ...	-1.00	1.86	-4.53	-	-0.14	0.50	26
3606	Ferro-cerium and other pyrop ...	-0.40	-0.23	3.42 *	-	2.26	0.47	55
3701	Photographic plates and film ...	-0.65 *	0.95 *	-1.09	-	-1.15	0.60	259
3702	Photographic film in rolls, ...	-0.62 *	0.79 **	-2.35 *	-	-2.43 **	0.21	143
3703	Photographic paper, paperboa ...	-0.29	1.34 *	-1.12	-	-1.87	0.50	133
3707	Chemical preparations for ph ...	-0.20 **	0.60 *	0.34	-2.11	0.26	0.50	413
3801	Artificial graphite; colloid ...	-	-0.26	3.98 *	-	2.38 *	0.52	186
3802	Activated carbon; activated ...	-0.32 *	-0.22	4.06 *	-2.26	2.96 *	0.60	281
3804	Residual lyes from the manuf ...	-1.28 *	0.42	0.54	-	-1.37	0.83	29
3805	Gum, wood or sulphate turpen ...	-0.57	1.83	-3.18	-	-1.31	0.59	26
3806	Rosin and resin acids and de ...	0.33	-0.36	5.71 *	-	3.68 *	0.60	108
3808	Insecticides, rodenticides, ...	-0.97 *	0.34 **	1.38 *	-3.81 *	1.46 *	0.75	902
3809	Finishing agents, dye carrie ...	-0.56 *	0.41 **	1.48 *	-	1.16 **	0.72	439

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
3810	Metal-pickling preparations; ...	-0.24 *	0.60 *	-0.33	-4.51	0.10	0.29	376
3811	Anti-knock preparations, oxi ...	-0.27 *	0.47 **	2.37 *	-	1.55 **	0.66	408
3812	Prepared rubber accelerators ...	-0.23 **	0.04	3.84 *	-	2.67 *	0.72	248
3813	Preparations and charges for ...	-0.08	-0.37	3.48 *	-	3.12 *	0.55	68
3814	Organic composite solvents a ...	-0.13	-0.20	2.81 *	0.08	2.31 *	0.51	449
3815	Reaction initiators, reactio ...	-0.51 *	0.07	1.95 *	0.50	2.93 *	0.59	426
3816	Refractory cements, mortars, ...	-0.23	0.09	3.34 *	-	3.21 *	0.66	214
3818	Chemical elements doped for ...	-1.02 *	-	-1.50	-	-1.78	0.45	33
3819	Hydraulic brake fluids and o ...	0.24 **	0.02	3.07 *	-	2.62 *	0.56	238
3820	Anti-freezing preparations a ...	-0.34 *	-0.46 **	3.57 *	-	3.27 *	0.58	317
3821	Prepared culture media for t ...	-0.41 *	0.20	-1.84 *	-	-1.21	0.09	292
3822	Reagents; diagnostic or labo ...	-0.69 *	0.43 **	-4.11 *	-8.11 *	-2.25 *	0.42	924
3823	Industrial monocarboxylic fa ...	-1.00 *	-0.70	4.32 *	2.69	4.10 *	0.69	160
3824	Prepared binders for foundry ...	-0.64 *	0.10	1.76 *	-2.09 **	1.57 *	0.56	1134
3901	Polymers of ethylene, in pri ...	-0.29 *	0.67 *	3.90 *	6.38 *	3.33 *	0.79	507
3902	Polymers of propylene or of ...	-0.51 *	-0.40	5.90 *	5.23 *	5.39 *	0.80	361
3903	Polymers of styrene, in prim ...	-0.29 *	0.22	4.00 *	3.85 **	3.34 *	0.74	290
3904	Polymers of vinyl chloride o ...	-0.24 **	0.70 *	2.67 *	4.03 *	1.96 *	0.69	280
3905	Polymers of vinyl acetate or ...	-0.25 **	0.90 *	1.63 **	5.06 **	0.05	0.74	251
3906	Acrylic polymers in primary ...	-0.53 *	0.37 **	2.25 *	1.00	0.98 **	0.69	638
3907	Polyacetals, other polyether ...	-0.44 *	0.40 **	2.39 *	2.12	1.01	0.63	734
3908	Polyamides in primary forms	-0.31 *	-0.08	3.69 *	-	3.49 *	0.69	292
3909	Amino-resins, phenolic resin ...	-0.38 *	0.42 **	2.57 *	-0.03	1.81 *	0.74	570
3910	Silicones in primary forms	-0.18 **	0.80 *	0.08	-0.49	-0.82	0.42	635
3911	Petroleum resins, coumarone- ...	-0.63 *	0.68 **	1.04	0.96	0.61	0.65	249
3912	Cellulose and its chemical d ...	-0.38 *	0.53 *	1.75 *	-0.48	0.68	0.63	421
3913	Natural polymers (e.g. algin ...	-0.30 *	0.53 *	-0.53	-	-0.57	0.18	374
3914	Ion-exchangers; based on pol ...	-0.68 *	0.19	1.60 **	-	1.00	0.56	126
3915	Waste, parings and scrap, of ...	-0.67 *	-1.70 *	9.22 *	-	8.83 *	0.84	58
3916	Monofilament of which any cr ...	-0.23 *	0.12	2.09 *	-	1.31 *	0.52	667
3917	Tubes, pipes and hoses and f ...	-0.15 *	0.08	1.59 *	-2.42 *	0.76 **	0.32	1727
3918	Floor coverings of plastics, ...	-0.37 *	0.23	2.39 *	-3.73	1.78 *	0.62	515
3919	Self-adhesive plates, sheets ...	-0.36 *	0.34 *	0.19	-6.10 *	-0.26	0.23	1553
3920	Plastics; plates, sheets, fi ...	-0.46 *	0.08	2.76 *	0.39	1.36 *	0.62	1324
3921	Plastic plates, sheets, film ...	-0.25 *	-	2.47 *	0.96	1.93 *	0.46	1083
3922	Sanitary ware; baths, shower ...	-0.54 *	0.47 **	0.47	-3.60 **	0.96	0.45	456

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate		log relative transit time		Mode: Sea		Mode: Rail		Mode: Road		R^2	N
3923	Plastic articles for the con ...	-0.26	*	-0.21		2.57	*	-2.44	*	1.81	*	0.41	1974
3924	Tableware, kitchenware, othe ...	-0.34	*	0.63	*	1.59	*	-1.36		0.69		0.60	1172
3925	Plastics; builders' wares n. ...	-0.26	*	0.53	*	0.91	**	-2.68		0.57		0.48	879
3926	Articles of plastics and art ...	-0.37	*	0.43	*	-0.45	**	-5.06	*	-1.00	*	0.19	2834
4001	Natural rubber, balata, gutt ...	-1.07	*	-0.73		3.87	*	-		3.00		0.59	109
4002	Synthetic rubber and factice ...	-0.28	*	0.84	*	2.42	*	4.13	*	1.92	*	0.71	389
4003	Reclaimed rubber in primary ...	-1.69	*	2.14	**	-4.47		-		-5.44	**	0.79	20
4005	Compounded rubber, unvulcani ...	-0.10		0.08		2.62	*	1.75		2.05	*	0.51	319
4006	Unvulcanised rubber in other ...	-0.13		-0.06		0.91		-3.92	**	-		0.11	343
4007	Vulcanised rubber thread and ...	-0.12		-1.02		4.64		-		3.80		0.39	69
4008	Plates, sheets, strip, rods ...	-0.05		-0.06		2.29	*	-0.86		1.86	*	0.39	786
4009	Tubes, pipes and hoses, of v ...	-0.21	*	-0.07		1.18	*	-2.03	*	0.69	**	0.23	1787
4010	Conveyor or transmission bel ...	-0.11		1.04	*	-1.65	*	-3.40	*	-1.87	*	0.20	1470
4011	New pneumatic tyres, of rubber	-0.35	*	0.38	*	3.52	*	3.04	*	2.78	*	0.75	976
4012	Retreaded or used pneumatic ...	-0.10		0.54	**	2.70	*	-		1.62	**	0.62	323
4013	Inner tubes, of rubber	-0.42	*	-0.02		3.85	*	-		2.88	*	0.62	331
4014	Hygienic or pharmaceutical a ...	-0.38	*	0.50		1.01		-		0.57		0.50	283
4015	Articles of apparel and clot ...	-0.49	*	0.16		1.28	**	-		0.93		0.37	686
4016	Articles of vulcanised rubbe ...	-0.25	*	0.45	*	-1.09	*	-4.62	*	-1.24	*	0.08	2463
4017	Hard rubber (e.g. ebonite) i ...	0.06		0.32		0.98		-		-0.27		0.30	264
4102	Raw skins of sheep or lambs ...	0.74		-1.12	*	6.56	*	-		5.33	*	0.72	27
4104	Tanned or crust hides and sk ...	-1.67	*	-0.74		1.61		-		3.51	**	0.64	93
4106	Tanned or crust hides and sk ...	-1.56	*	3.59		-10.20		-8.57		-5.91		0.58	26
4107	Leather further prepared aft ...	-0.81	*	-0.59	*	0.87		-		2.13	*	0.29	273
4112	Leather further prepared aft ...	-0.89	*	0.28		-1.53		-		-2.56		0.39	22
4113	Leather further prepared aft ...	-0.94	*	-0.27		-0.15		-		-2.24		0.30	74
4114	Chamois (including combinati ...	0.02		-2.33		8.47	**	-		7.25	**	0.66	42
4115	Composition leather with a b ...	-1.49	*	-0.03		-0.10		-		-0.07		0.61	49
4201	Saddlery and harness for any ...	-0.32	**	0.12		-0.17		-		0.37		0.07	288
4202	Trunks; suit, camera, jewell ...	-0.50	*	0.61	*	-1.89	*	-5.63	**	-1.35	*	0.10	1897
4203	Articles of apparel and clot ...	-0.42	*	0.58	*	-1.51	*	-		-0.89	**	0.11	890
4205	Leather or composition leath ...	-0.37	*	0.29		-1.10		-		0.15		0.07	420
4302	Tanned or dressed furskins (...	-0.43	**	-0.40		1.34		-		-0.70		0.24	124
4303	Articles of apparel, clothin ...	-0.27		-0.45		0.79		-		1.43		0.04	131
4304	Artificial fur and articles ...	-0.94	**	3.43		-9.41		-		-8.11		0.51	22
4401	Fuel wood, in logs, billets, ...	0.36		0.37		3.77	**	3.63		1.90		0.60	40

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate		log relative transit time		Mode: Sea		Mode: Rail		Mode: Road		R^2	N
4402	Wood charcoal (including she ...	-1.52	*	-0.62		4.04	**	3.60		2.79		0.68	43
4407	Wood sawn or chipped lengthw ...	-0.40		0.76		2.48	**	-0.49		2.09	**	0.58	99
4408	Sheets for veneering (includ ...	-0.33		-0.61		4.02	*	-		3.48	*	0.53	131
4409	Wood (including strips, frie ...	-0.46	**	-1.09	*	7.11	*	-		5.88	*	0.74	113
4410	Particle board, oriented str ...	0.15		-0.61		8.28	*	6.02	**	6.33	*	0.79	82
4411	Fibreboard of wood or other ...	-0.52	*	-0.45		5.80	*	1.95		4.33	*	0.75	208
4412	Plywood, veneered panels and ...	-0.69	*	-1.03	*	6.36	*	2.24		5.16	*	0.68	202
4413	Densified wood, in blocks, p ...	0.65		-1.16		7.89		5.52		4.52		0.58	25
4414	Wooden frames; for paintings ...	-0.50	*	0.78	*	-0.14		-		-2.18	**	0.50	183
4415	Packing cases, boxes, crates ...	-0.56	*	-0.57	**	2.93	*	-3.11		3.39	*	0.43	304
4416	Casks, barrels, vats, tubs a ...	-0.77		-5.14		15.56		-		19.19		0.61	21
4417	Tools, tool bodies, tool han ...	0.42		-0.05		2.95	**	-		2.01		0.33	102
4418	Builders' joinery and carpen ...	-0.47	*	-0.23		4.05	*	-		3.88	*	0.71	348
4419	Tableware and kitchenware, o ...	-0.30	*	0.23		1.47	*	-		0.09		0.49	392
4420	Wood marquetry and inlaid wo ...	-0.22	*	0.20		0.73		-		-0.37		0.22	593
4421	Wooden articles n.e.c. in he ...	-0.50	*	-0.02		1.25	*	-0.14		1.24	*	0.33	783
4503	Cork; articles of natural cork	-0.51	*	-0.06		1.40		-		-0.27		0.56	123
4504	Agglomerated cork (with or w ...	0.14		-0.15		3.49	*	-		1.50	**	0.45	297
4601	Plaits and similar products ...	0.17		-0.14		3.61	*	-		2.42		0.56	80
4602	Basketwork, wickerwork and o ...	-0.17		0.41		0.96		-		-0.42		0.37	268
4801	Newsprint, in rolls or sheets	-0.25		-0.29		6.43	*	4.41		5.59	*	0.68	47
4802	Uncoated paper and paperboar ...	-0.20		-0.50		6.15	*	2.44		3.98	*	0.62	528
4803	Tissue, towel, napkin stock ...	-0.15		-0.46		5.92	*	-		4.30	*	0.55	157
4804	Uncoated kraft paper and pap ...	-0.24	**	-0.02		5.37	*	5.31	*	4.93	*	0.74	258
4805	Uncoated paper and paperboar ...	-0.11		-0.24		5.36	*	2.71		2.34	*	0.63	308
4806	Vegetable parchment, greasep ...	-0.26		0.51		2.98	*	-		1.15		0.62	157
4807	Composite paper and paperboa ...	-0.32		0.04		3.56	*	-		2.89	**	0.64	50
4808	Paper and paperboard, corrug ...	-0.37	*	0.20		2.36	*	-2.85		1.09		0.58	179
4809	Carbon paper, self copy pape ...	-0.19		-0.27		4.27	*	-		3.94	*	0.55	153
4810	Paper and paperboard, coated ...	-0.36	*	0.17		5.47	*	5.03	*	3.67	*	0.79	456
4811	Paper, paperboard, cellulose ...	-0.42	*	0.64	*	1.44	*	1.65		0.06		0.59	921
4812	Filter blocks, slabs and pla ...	-0.37	**	-0.59	**	2.61	*	-		3.49	*	0.41	72
4813	Cigarette paper, whether or ...	-0.50	*	-0.24		2.43	*	2.40		3.15	*	0.52	226
4814	Wallpaper and similar wall c ...	-0.73	*	0.43	**	-1.40	**	-		-1.99	*	0.22	356
4816	Carbon paper, self-copy pape ...	-0.32		-0.43		3.31	*	-		2.42	**	0.35	142
4817	Envelopes, letter cards, pla ...	-0.24	**	-0.23		1.88	*	-		0.97		0.26	326

	Commodity group (HS Rev. 2017)	log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
4818	Toilet paper, width 36cm or ...	-0.14	0.33	2.96 *	1.91	1.44 **	0.58	583
4819	Cartons, boxes, cases, bags ...	-0.26 *	0.06	1.67 *	-3.16 **	1.38 *	0.37	1330
4820	Registers, account books, di ...	-0.48 *	-0.17	1.28 *	-4.02	0.89	0.26	973
4821	Paper or paperboard labels o ...	-0.37 *	0.15	-1.07 **	-3.91 **	-0.75	0.04	1116
4822	Bobbins, spools, cops and si ...	-0.13	0.78	0.55	-	0.51	0.48	53
4823	Paper, paperboard, cellulose ...	-0.06	0.01	1.72 *	-2.69	0.79	0.23	1211
4901	Printed books, brochures, le ...	-0.51 *	-0.27	0.74	-0.77	0.52	0.13	1450
4902	Newspapers, journals and per ...	-0.37 *	0.16	0.56	-	-1.03	0.21	290
4903	Children's picture, drawing ...	-0.77 *	0.21	0.88	-	0.91	0.51	144
4904	Music, printed or in manuscr ...	-0.22	-0.96 *	2.54 *	-	2.77 **	0.19	58
4905	Maps and hydrographic or sim ...	-0.13	-0.10	1.41	-	0.47	0.13	125
4906	Plans and drawings; for arch ...	-0.84 *	3.30 *	-10.43 *	-	-8.11 *	0.42	44
4907	Unused postage, revenue or s ...	-0.85 *	1.67	-5.47	-	-4.31	0.23	70
4908	Transfers (decalcomanias)	-0.49 *	0.24	-1.46 **	-	-1.78 *	0.10	664
4909	Printed or illustrated postc ...	-0.41 *	0.54 **	-1.69 **	-	-1.39	0.07	282
4910	Calendars of any kind, print ...	-0.29 *	-0.05	0.37	-	0.09	0.11	545
4911	Printed matter, n.e.c., incl ...	-0.57 *	-0.03	-0.83 **	-5.58 *	-0.43	0.13	1631
5007	Woven fabrics of silk or of ...	-0.96 *	0.07	-2.42 **	-	-0.26	0.22	99
5101	Wool, not carded or combed	-0.88 *	6.68	-11.02	-26.84	-35.26	0.87	23
5105	Wool and fine or coarse anim ...	-0.85 *	0.20	1.82	-	3.51 **	0.70	79
5106	Yarn of carded wool, not put ...	-0.62 **	0.09	0.51	-	1.15	0.38	73
5107	Yarn of combed wool, not put ...	-0.25	-0.20	2.00 *	-	3.83 *	0.54	128
5108	Yarn of fine animal hair (ca ...	-0.60	3.18	-9.48	-	-5.73	0.27	31
5109	Yarn of wool or of fine anim ...	-0.28	-0.46	1.77	-	1.99	0.15	95
5111	Woven fabrics of carded wool ...	-0.84 *	-0.30	0.58	-	1.99 *	0.37	144
5112	Woven fabrics of combed wool ...	-0.80 *	-0.80 *	1.73 **	-	3.37 *	0.31	192
5203	Cotton, carded or combed	0.85	0.98	-0.61	-	3.33	0.48	24
5204	Cotton sewing thread, whethe ...	-1.12 *	0.24	-0.85	-	-0.77	0.34	103
5205	Cotton yarn (other than sewi ...	-0.85 *	-0.50	4.18 *	5.30	4.68 *	0.73	187
5206	Cotton yarn (other than sewi ...	-1.27 *	-1.31	4.64 **	-	3.35 **	0.76	75
5207	Cotton yarn (other than sewi ...	-0.27	0.04	0.96	-0.24	1.46	0.26	95
5208	Woven fabrics of cotton, con ...	-0.92 *	0.39 **	-1.21 **	-	-0.48	0.34	461
5209	Woven fabrics of cotton, con ...	-0.77 *	0.03	0.80	-	1.16 **	0.51	418
5210	Woven fabrics of cotton, con ...	-0.68 *	-0.02	1.21	-	1.66 *	0.55	275
5211	Woven fabrics of cotton, con ...	-1.02 *	0.14	0.30	-	0.77	0.58	269
5212	Other woven fabrics of cotto ...	-0.66 *	-0.09	0.23	-	1.36	0.28	170

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
5306	Flax yarn	-0.68 **	1.43	-3.37	-	2.27	0.70	46
5308	Yarn of other vegetable text ...	-0.11	0.18	1.70	-	-	0.76	28
5309	Woven fabrics of flax	-0.54 *	0.05	-0.41	-	1.68 *	0.31	275
5310	Woven fabrics of jute, other ...	-0.62	-0.91	4.76 **	-	6.56	0.58	38
5311	Woven fabrics of other veget ...	-0.74	-6.63	17.83	-	19.58	0.35	38
5401	Sewing thread of man-made fi ...	-0.31 *	0.22	0.94	0.04	0.61	0.35	334
5402	Synthetic filament yarn (oth ...	-0.49 *	0.22	2.70 *	3.04	2.49 *	0.69	539
5403	Artificial filament yarn (ot ...	-0.75 **	-0.27	1.93	-	2.07	0.49	65
5404	Synthetic monofilament of 67 ...	-0.70 *	0.34	0.62	-	-0.32	0.53	215
5406	Man-made filament yarn (othe ...	-0.48 **	-0.44	3.84 **	-	0.19	0.62	70
5407	Woven fabrics of synthetic f ...	-0.72 *	0.13	0.97 **	-5.93 *	1.26 *	0.54	751
5408	Woven fabrics of artificial ...	-0.80 *	-0.32	0.35	-	2.37 *	0.33	226
5501	Synthetic filament tow	-0.45	-0.61	4.01	-	2.26	0.59	48
5503	Synthetic staple fibres, not ...	-0.40 *	0.45 **	3.07 *	-	1.17	0.67	199
5504	Artificial staple fibres, no ...	0.02	1.32	2.25	-	-5.90	0.74	33
5506	Synthetic staple fibres, car ...	-1.09 *	0.49	-0.60	-	-1.90	0.69	37
5508	Sewing thread of man-made st ...	-0.22	0.50	1.01	-	-1.72	0.44	101
5509	Yarn (other than sewing thre ...	-0.89 *	-0.23	2.84 *	-	3.25 *	0.73	221
5510	Yarn (other than sewing thre ...	-0.93 *	-0.51	3.87 *	-	4.71 *	0.67	111
5511	Yarn (not sewing thread), of ...	-0.71 *	0.85	0.83	-	-1.15	0.72	72
5512	Woven fabrics of synthetic s ...	-0.91 *	0.30	-0.39	-	-0.40	0.46	375
5513	Woven fabrics of synthetic s ...	-0.18	0.66 *	1.54	-	0.38	0.58	187
5514	Woven fabrics of synthetic s ...	-0.57 *	0.96 *	-0.91	-	-2.38 **	0.55	178
5515	Woven fabrics of synthetic s ...	-0.71 *	-0.15	1.10	-	2.36 *	0.47	344
5516	Woven fabrics of artificial ...	-0.77 *	-0.06	0.70	-	1.77 *	0.45	275
5601	Wadding of textile materials ...	0.05	0.19	2.57 *	-0.87	1.91 **	0.47	307
5602	Felt; whether or not impregn ...	-0.08	0.55 **	0.75	-	0.79	0.42	348
5603	Nonwovens; whether or not im ...	-0.30 *	0.16	2.65 *	-0.30	1.88 *	0.58	630
5604	Rubber thread and cord, text ...	-0.81 *	-0.17	1.42	-	1.91	0.44	166
5605	Yarn; metallised, whether or ...	-0.33	-0.27	1.83 **	-	0.38	0.27	92
5606	Yarn and strip and the like ...	-0.66 *	0.11	1.74	-	0.63	0.49	83
5607	Twine, cordage, ropes and ca ...	-0.36 *	0.12	1.02	-2.81	0.46	0.27	763
5608	Twine, cordage or rope; knot ...	-0.55 *	-0.72 *	3.33 *	-0.81	3.08 *	0.38	370
5609	Articles of yarn, strip or t ...	-0.28 *	-0.34	2.02 *	-	0.96	0.24	312
5701	Carpets and other textile fl ...	-0.61 *	0.11	0.18	-	0.28	0.25	240
5702	Carpets and other textile fl ...	-0.31 *	-0.45 **	2.92 *	-2.87	3.19 *	0.46	565

	Commodity group (HS Rev. 2017)	log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
5703	Carpets and other textile fl ...	-0.37 *	0.62 *	0.83	-1.02	0.08	0.59	568
5704	Carpets and other textile fl ...	0.08	0.40	2.32 **	-0.41	1.87	0.56	119
5705	Carpets and other textile fl ...	-0.57 *	0.79 *	-0.14	-	0.26	0.52	341
5801	Fabrics; woven pile and chen ...	-0.62 *	-0.07	0.58	-5.10 **	1.47 *	0.40	345
5802	Fabrics; terry towelling and ...	-0.91 *	4.19 **	-9.79	-	-	0.61	50
5804	Tulles and other net fabrics ...	-0.60 *	0.47 **	-1.11	-0.73	-1.88 *	0.21	200
5805	Tapestries; hand-woven, (Gob ...	-0.43	-5.08	13.30	-	19.19 **	0.70	20
5806	Fabrics; narrow woven, other ...	-0.36 *	0.32 **	-0.01	-	-0.19	0.21	684
5807	Labels, badges and similar a ...	-0.67 *	-0.01	-1.66 *	-	-0.76	0.10	313
5808	Braids in the piece; ornamen ...	-0.52 *	-0.53	2.08 **	-	2.90 *	0.28	163
5809	Fabrics, woven; of metal thr ...	-0.35	10.69 **	-28.19 **	-	-	0.41	23
5810	Embroidery; in the piece, in ...	-0.50 *	0.53 **	-1.52 **	-	-1.13	0.11	223
5811	Quilted textile products; in ...	-0.59 **	1.43 **	-0.29	-	-1.08	0.70	59
5901	Textile fabrics, gum or amyl ...	-0.29	0.43	1.04	-	-1.02	0.46	115
5902	Textile fabrics; tyrecord of ...	-0.77 *	0.53	-0.36	-	-0.77	0.65	91
5903	Textile fabrics impregnated, ...	-0.44 *	0.33 **	0.78	-3.87 **	1.01 **	0.51	566
5904	Linoleum, whether or not cut ...	-0.35	5.30	-11.93	-	-9.91	0.78	20
5905	Textile wall coverings	-0.46 **	-0.50	0.37	-	0.86	0.13	68
5906	Textile fabrics, rubberised; ...	-0.04	0.68 *	0.68	-	-0.46	0.45	318
5907	Textile fabrics; otherwise i ...	-0.72 *	0.52 *	-0.26	-	-0.65	0.55	194
5908	Textile wicks, woven, plaite ...	0.18	-2.80	9.61 **	-	7.80	0.43	39
5909	Textile hose piping and simi ...	-0.06	0.23	0.79	-	0.28	0.19	231
5910	Textiles; transmission or co ...	-0.25 **	0.01	0.44	-	0.12	0.12	343
5911	Textile products and article ...	-0.33 *	0.30	-0.27	-2.24 **	-0.70	0.14	915
6001	Fabrics; pile fabrics, inclu ...	-0.21	0.41	1.77 **	2.38	1.26	0.54	200
6002	Fabrics; knitted or crochete ...	-0.56 **	0.73	-0.97	-	-3.06	0.39	70
6003	Fabrics; knitted or crochete ...	-0.41 **	-0.49	3.53 *	-	2.62	0.64	78
6004	Fabrics; knitted or crochete ...	-1.02 *	-0.02	0.01	-	0.89	0.46	254
6005	Fabrics; warp knit (includin ...	0.12	0.04	3.63 *	-3.23	2.01 *	0.60	267
6006	Fabrics; knitted or crochete ...	-0.52 *	0.07	1.72 *	-	2.11 *	0.55	410
6101	Coats; men's or boys' overco ...	-0.47 *	0.24	-0.11	-	0.08	0.23	697
6102	Coats; women's or girls' ove ...	-0.52 *	0.13	-0.30	-	-0.19	0.13	688
6103	Suits, ensembles, jackets, b ...	-0.64 *	0.42 *	-1.00 *	-5.69 **	-0.11	0.23	1194
6104	Suits, ensembles, jackets, d ...	-0.40 *	0.22	-0.78 **	-5.31 **	0.59	0.12	1525
6105	Shirts; men's or boys', knit ...	-0.68 *	0.67 *	-2.06 *	-4.59	-1.03 *	0.19	1034
6106	Blouses, shirts and shirt-bl ...	-0.63 *	0.74 *	-2.32 *	-	-1.11 *	0.20	1019

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate		log relative transit time		Mode: Sea		Mode: Rail		Mode: Road		R^2	N
6107	Underpants, briefs, nightshi ...	-0.59	*	0.81	*	-1.27	*	-		-0.60		0.34	654
6108	Slips, petticoats, briefs, p ...	-0.68	*	0.83	*	-1.72	*	-5.96	**	-1.50	*	0.27	750
6109	T-shirts, singlets and other ...	-0.57	*	0.17		-0.32		-4.37	*	1.03	*	0.26	2060
6110	Jerseys, pullovers, cardigan ...	-0.56	*	-0.04		-0.26		-5.98	**	1.36	*	0.15	1636
6111	Garments and clothing access ...	-0.48	*	0.54	*	-0.99	**	-		-0.51		0.19	692
6112	Track suits, ski suits and s ...	-0.56	*	0.11		-0.06		-		0.76		0.19	733
6113	Garments made up of knitted ...	-0.47	*	0.99	*	-2.39	*	-		-3.04	*	0.22	158
6114	Garments; knitted or crochet ...	-0.31	*	0.29	**	-0.79		-7.24	*	-0.62		0.05	879
6115	Hosiery; panty hose, tights, ...	-0.64	*	0.31	**	-0.48		-0.10		0.56		0.27	963
6116	Gloves, mittens and mitts; k ...	-0.28	*	0.13		1.15	*	-3.51		1.40	*	0.35	630
6117	Clothing accessories; made u ...	-0.30	*	0.34	**	-0.55		-		-0.27		0.10	631
6201	Overcoats, car-coats, capes, ...	-0.34	*	-0.02		0.05		-3.31		1.22	*	0.11	1027
6202	Coats; women's or girls' ove ...	-0.24	*	-0.10		-0.19		-5.25		1.38	*	0.07	995
6203	Suits, ensembles, jackets, b ...	-0.54	*	0.31	*	-0.88	*	-		0.91	*	0.23	1654
6204	Suits, ensembles, jackets, d ...	-0.41	*	0.59	*	-2.03	*	-3.50	**	-0.14		0.14	1744
6205	Shirts; men's or boys' (not ...	-0.44	*	0.76	*	-2.19	*	-		-0.93	*	0.11	1166
6206	Blouses, shirts and shirt-bl ...	-0.38	*	0.72	*	-2.47	*	-		-0.91	*	0.08	1200
6207	Singlets and other vests, un ...	-0.38	*	0.45	*	-0.12		-		0.05		0.28	574
6208	Singlets and other vests, sl ...	-0.36	*	0.50	*	-1.13	*	-		-0.67		0.12	630
6209	Garments and clothing access ...	-0.44	*	0.57	*	-0.95	**	-		-0.01		0.24	597
6210	Garments made up of fabrics ...	-0.52	*	0.36	**	-0.98		-		0.08		0.14	504
6211	Track suits, swimwear and ot ...	-0.35	*	0.37	*	-1.32	*	-2.13		-0.42		0.05	1220
6212	Brassieres, girdles, corsets ...	-0.57	*	0.60	*	-1.46	*	-3.50		-0.47		0.17	769
6213	Handkerchiefs (not knitted o ...	0.19		-0.10		1.37		-		-0.02		0.11	131
6214	Shawls, scarves, mufflers, m ...	-0.34	*	0.40	**	-1.86	*	-		-1.17	*	0.06	447
6215	Ties, bow ties and cravats (...	-0.21		0.35		-1.09	**	-		-0.59		0.04	194
6216	Gloves, mittens and mitts (n ...	-0.45	*	0.21		0.39		-		0.43		0.34	395
6217	Clothing accessories n.e.c.; ...	-0.36	*	0.18		-0.53		-		-0.10		0.08	554
6301	Blankets and travelling rugs	-0.34	*	-0.18		1.17	**	-		1.49	**	0.16	456
6302	Bed linen, table linen, toil ...	-0.49	*	0.20		0.53		-		0.83		0.27	908
6303	Curtains (including drapes) ...	-0.48	*	-0.02		0.82		0.34		0.33		0.25	444
6304	Furnishing articles; excludi ...	-0.51	*	-0.83	*	2.53	*	-3.68	**	2.04	*	0.20	461
6305	Sacks and bags, of a kind us ...	-0.73	*	-0.08		1.92	*	-1.42		2.15	*	0.48	398
6306	Tarpaulins, awnings and sunb ...	-0.42	*	-0.07		1.08		-		0.73		0.22	420
6307	Textiles; made up articles n ...	-0.33	*	0.32	*	-0.29		-3.37	*	-0.12		0.15	1554
6308	Textiles; sets of woven fabr ...	-0.63	**	0.72		-1.49		-		-1.09		0.27	61

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
6309	Textiles; worn clothing and ...	-0.06	1.30 *	-1.04	-	-0.69	0.46	104
6310	Rags; used or new, scrap twi ...	-0.13	0.89 **	0.47	-	1.05	0.44	166
6401	Footwear; waterproof, with o ...	-0.69 *	0.35	0.44	-	0.52	0.41	272
6402	Footwear; with outer soles a ...	-0.54 *	0.28	0.71	1.41	0.90	0.40	768
6403	Footwear; with outer soles o ...	-0.54 *	0.06	0.53	-0.42	1.35 *	0.32	1150
6404	Footwear; with outer soles o ...	-0.60 *	0.40 **	-0.16	-1.43	0.03	0.32	809
6405	Footwear; other footwear n.e ...	-0.29 *	0.42	-0.26	-	-0.28	0.15	425
6406	Footwear; parts of footwear; ...	-0.63 *	-0.02	0.65	4.65	1.02	0.36	436
6504	Hats and other headgear; pla ...	-0.15	0.55 **	-0.87	-	-1.19 **	0.08	197
6505	Hats and other headgear; kni ...	-0.30 *	0.26 **	-0.37	-4.18	-0.54	0.08	1036
6506	Headgear; n.e.c. in chapter ...	-0.48 *	0.60 *	-0.69	0.37	-0.59	0.22	787
6507	Head-bands, linings, covers, ...	-0.40 *	0.61 *	-0.99	-3.48	-1.28 **	0.22	283
6601	Umbrellas; sun umbrellas (in ...	-0.32 *	0.15	1.42 **	-	0.65	0.40	296
6602	Walking-sticks, seat-sticks, ...	-0.41	0.18	1.27	-	0.79	0.38	99
6603	Trimmings, parts and accesso ...	-0.12	0.52	1.36	-0.18	-0.70	0.58	67
6701	Skin and other parts of bird ...	-0.67 **	1.42	-2.56	-	-3.68	0.50	43
6702	Flowers, foliage and fruit, ...	-0.14	0.47	1.73 **	-	-0.63	0.47	154
6703	Human hair, dressed, thinned ...	-0.89 **	-1.28 **	3.08	-	1.69	0.13	52
6704	Wigs, false beards, eyebrows ...	-0.27	0.24	-0.45	-	-0.34	0.05	251
6802	Monumental or building stone ...	-0.47 *	-0.25	4.87 *	4.77 *	2.64 *	0.69	364
6803	Slate, worked; and articles ...	0.51	-0.17	5.02 **	-	2.30	0.66	44
6804	Millstones, grindstones, gri ...	-0.44 *	0.50 *	-0.84 **	-7.14 *	-1.44 *	0.15	957
6805	Abrasive powder or grain; na ...	-0.18 *	0.14	1.80 *	-1.11	0.95 **	0.41	870
6806	Slag, rock wool and similar ...	0.15	0.05	3.30 *	-1.50	2.57 *	0.57	357
6807	Asphalt or similar material; ...	-0.80 *	-0.15	3.26 *	-	2.51	0.66	62
6808	Panels, boards, tiles, block ...	0.15	0.88	2.26	-	-1.70	0.75	38
6809	Plaster or compositions base ...	-0.20	0.25	2.98 *	-	2.53	0.58	92
6810	Cement, concrete or artifici ...	-0.31 *	-0.24	5.22 *	2.92	3.62 *	0.72	252
6811	Asbestos-cement, of cellulos ...	-0.46 **	-0.15	4.76	-	1.31	0.72	57
6812	Fabricated asbestos fibres; ...	-0.26	1.96 **	-4.42	-	-4.94 **	0.13	266
6813	Friction material and articl ...	-0.14	0.36	0.51	-	-0.09	0.29	608
6814	Mica; worked, articles of, i ...	-0.53 *	0.24	-0.34	-	0.08	0.32	158
6815	Stone or other mineral subst ...	-0.13 **	0.59 *	-0.88 **	-7.02 *	-1.64 *	0.11	1053
6901	Bricks, blocks, tiles and ot ...	-0.50	-0.01	1.85	-	1.21	0.50	35
6902	Refractory bricks, blocks, t ...	-0.21 **	0.44 **	2.63 *	-2.26	2.04 *	0.72	224
6903	Ceramic goods; (e.g. retorts ...	-0.22 *	0.24	1.14 **	1.90	0.59	0.41	378

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate		log relative transit time		Mode: Sea		Mode: Rail		Mode: Road		R^2	N
6904	Ceramic building bricks, flo ...	0.13		4.34		-6.11		-		2.09		0.82	27
6905	Roofing tiles, chimney-pots, ...	0.25		-5.17	*	17.54	*	-		36.26	*	0.84	24
6907	Ceramic flags and paving, he ...	-0.86	*	-0.35		5.14	*	4.17	**	3.27	*	0.79	294
6909	Ceramic ware for laboratory, ...	-0.39	*	0.16		0.16		-		-0.87		0.14	408
6910	Ceramic sinks, wash basins, ...	-0.37	*	0.54	*	1.62	*	1.02		1.07	**	0.66	408
6911	Tableware, kitchenware, othe ...	-0.48	*	0.39	**	0.79		-1.61		0.11		0.47	656
6912	Ceramic tableware, kitchenwa ...	-0.39	*	0.45	**	0.93		-		0.16		0.48	497
6913	Statuettes and other ornamen ...	-0.54	*	0.56	*	-0.19		-		-1.42	*	0.33	499
6914	Ceramic articles; n.e.c. in ...	-0.31	*	0.27		0.45		-		-0.44		0.21	409
7002	Glass in balls (other than m ...	0.14		-0.60		3.29	*	-0.93		3.11	*	0.24	121
7003	Glass; cast glass and rolled ...	-0.18		-0.03		4.88	*	0.35		1.50		0.64	60
7004	Glass; drawn glass and blown ...	0.07		-0.27		5.21	*	-		0.55		0.62	47
7005	Glass; float glass and surfa ...	-0.26		-0.80	**	6.20	*	2.32		5.71	*	0.61	138
7006	Glass of heading no. 7003, 7 ...	-		-0.42		4.35	*	-		2.61	*	0.51	148
7007	Safety glass, consisting of ...	-0.24	*	0.46	*	-0.30		-2.47	*	-0.14		0.30	1220
7008	Glass; multiple-walled insul ...	-0.23		-0.11		2.90	*	-		3.49	*	0.58	60
7009	Glass mirrors; whether or no ...	-0.26	*	0.36	*	0.72	**	-2.12	*	-0.01		0.39	1153
7010	Carboys, bottles, flasks, ja ...	-0.35	*	-0.74	*	5.39	*	5.39	*	4.47	*	0.56	587
7011	Glass envelopes (including b ...	0.04		0.37		-0.10		-		-1.28		0.11	83
7013	Glassware of a kind used for ...	-0.54	*	0.28		1.53	*	1.65		1.28	*	0.50	1041
7014	Signalling glassware and opt ...	0.19		-0.13		1.87	*	-0.17		1.95	*	0.32	143
7015	Clock, watch and similar gla ...	-0.22		0.76		-1.44		-		-3.30	**	0.13	82
7016	Glass; paving blocks, slabs, ...	-0.59	*	-0.27		3.47	**	1.44		2.03		0.62	138
7017	Laboratory, hygienic or phar ...	-0.04		-0.07		0.36		-		0.04		0.01	593
7018	Glass beads, imitation pearl ...	-0.32	*	0.58	**	-0.60		-5.34		-1.69	**	0.16	255
7019	Glass fibres (including glas ...	-0.22	*	0.13		1.50	*	-0.88		1.35	*	0.35	795
7020	Glass; articles n.e.c. in ch ...	-0.26	*	0.42	**	-1.00		-1.76		-1.70	*	0.05	563
7101	Pearls; natural or cultured, ...	-0.39		3.20		-9.96		-		-9.00		0.19	29
7103	Precious (excluding diamond) ...	-0.94	*	1.72	*	-4.75	*	-		-3.50		0.31	138
7104	Synthetic, reconstructed pre ...	-1.19	*	-0.20		-1.15		-		6.47		0.48	42
7106	Silver (including silver pla ...	-0.48	**	0.11		-0.90		-		-0.31		0.05	101
7110	Platinum; unwrought or in se ...	-0.25		-0.07		-1.23		-		-0.22		0.07	20
7113	Jewellery articles and parts ...	-0.72	*	-0.27		-4.41	*	-		-0.39		0.63	262
7114	Articles of goldsmiths' or s ...	-0.54	**	-0.42		0.01		-		1.35		0.19	78
7115	Articles of precious metal o ...	-0.35		-0.83		1.77		-		2.23		0.04	41
7116	Articles of natural or cultu ...	-0.63	*	1.74	**	-5.41	*	-		-4.14	**	0.17	119

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
7117	Imitation jewellery	-0.42 *	0.67 *	-3.47 *	-	-2.61 *	0.22	768
7118	Coin	-0.63	-1.27	0.15	-	4.63	0.32	32
7202	Ferro-alloys	-0.06	-	5.47 *	2.15	5.60 *	0.69	121
7204	Ferrous waste and scrap; rem ...	0.16	0.56	6.17 **	3.56	1.35	0.72	36
7205	Granules and powders, of pig ...	-0.11	-0.25	3.91 *	3.88	4.40 *	0.61	149
7207	Iron or non-alloy steel; sem ...	-0.28	-0.26	4.07 *	-0.26	2.25	0.54	65
7208	Iron or non-alloy steel; fla ...	-0.10	-0.09	6.02 *	3.09	2.00 **	0.70	145
7209	Iron or non-alloy steel; fla ...	-0.43	0.50	4.38 *	-	1.26	0.74	85
7210	Iron or non-alloy steel; fla ...	-0.46 *	0.16	5.72 *	-1.23	2.77 *	0.77	232
7211	Iron or non-alloy steel; fla ...	-0.17	-0.19	4.49 *	-	3.46 *	0.62	157
7212	Iron or non-alloy steel; fla ...	-0.45 *	0.21	3.22 *	-	2.71 *	0.75	143
7213	Iron or non-alloy steel; bar ...	0.06	-0.97 **	10.63 *	9.76 *	8.67 *	0.76	35
7214	Iron or non-alloy steel; bar ...	-0.03	-0.67 **	6.00 *	6.66 *	4.74 *	0.54	187
7215	Iron or non-alloy steel; bar ...	-	-0.10	4.64 *	-	3.79 *	0.71	176
7216	Iron or non-alloy steel, ang ...	-0.06	0.21	4.13 *	-2.49	2.62 *	0.62	290
7217	Wire of iron or non-alloy steel	-0.52 *	-0.21	4.21 *	2.39	3.17 *	0.66	297
7218	Stainless steel in ingots or ...	0.14	-0.83	4.20 *	-	4.45	0.38	46
7219	Stainless steel; flat-rolled ...	0.04	0.30	4.10 *	-	3.15 *	0.72	295
7220	Stainless steel; flat-rolled ...	-0.36 *	-0.40	3.64 *	-	2.91 *	0.56	277
7222	Stainless steel bars and rod ...	-0.18	-0.40	3.82 *	-0.18	2.73 *	0.51	367
7223	Stainless steel wire	-0.23 **	-0.06	2.55 *	-	2.39 *	0.45	301
7224	Alloy steel in ingots or oth ...	0.02	0.68	1.49	-	1.42	0.63	60
7225	Alloy steel flat-rolled prod ...	-0.30	-0.12	6.25 *	3.28	4.74 *	0.80	121
7226	Alloy steel flat-rolled prod ...	-0.08	-0.09	4.13 *	-	2.74 *	0.66	152
7227	Steel, alloy; bars and rods, ...	0.68	0.06	5.73	5.87	6.13	0.75	25
7228	Alloy steel bars, rods, shap ...	0.12	-0.05	4.38 *	3.52 *	3.65 *	0.63	398
7229	Wire of other alloy steel	-0.22	0.39	2.47 **	-0.59	2.31 **	0.61	181
7301	Iron or steel sheet piling, ...	-0.26	-0.04	1.67	-	1.14	0.25	71
7302	Railway or tramway track con ...	-0.05	0.14	3.30 *	3.54 **	3.03 *	0.55	234
7303	Tubes, pipes and hollow prof ...	0.14	0.45	2.35	-	-0.38	0.40	125
7304	Tubes, pipes and hollow prof ...	-0.01	-0.18	2.70 *	2.30	2.45 *	0.37	1003
7305	Iron or steel (excluding cas ...	0.28	0.81	2.41 **	-	1.16	0.57	131
7306	Iron or steel (excluding cas ...	-0.21 *	-0.43 **	3.63 *	-	2.90 *	0.42	846
7307	Tube or pipe fittings (e.g. ...	-0.14 *	-0.09	0.95 *	-4.82 *	0.32	0.15	1658
7308	Structures of iron or steel ...	-0.23 *	-0.42 **	4.35 *	0.53	3.71 *	0.60	937
7309	Reservoirs, tanks, vats and ...	-0.31 *	-0.03	3.98 *	-	3.04 *	0.72	225

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
7310	Tanks, casks, drums, cans, b ...	-0.38 *	-0.20	2.11 *	-1.34	1.98 *	0.33	621
7311	Containers for compressed or ...	-0.18	-0.36	3.47 *	3.36	1.48 **	0.38	413
7312	Stranded wire, ropes, cables ...	-0.18 *	0.08	1.37 *	-6.98 **	0.23	0.26	1024
7313	Barbed wire of iron or steel ...	0.01	0.17	3.82	-	2.03	0.57	80
7314	Cloth (including endless ban ...	-0.18	-0.55 **	3.04 *	3.52	2.46 *	0.26	540
7315	Chain and parts thereof, of ...	-0.36 *	0.66 *	-0.71 **	-1.78	-0.96 *	0.31	1183
7316	Anchors, grapnels and parts ...	-0.11	0.94 *	0.23	-	-3.39 **	0.60	117
7317	Nails, tacks, drawing pins, ...	-0.34 *	0.24	1.34 **	-3.79	0.36	0.36	540
7318	Screws, bolts, nuts, coach s ...	-0.31 *	0.47 *	-1.00 *	-4.57 *	-1.02 *	0.10	2375
7319	Sewing and knitting needles, ...	-0.54 *	0.24	-0.15	-	-0.37	0.18	273
7320	Springs and leaves for sprin ...	-0.27 *	0.06	0.10	-6.05 *	0.37	0.10	1539
7321	Stoves, ranges, grates, cook ...	-0.43 *	0.47 *	2.03 *	-1.15	1.16 **	0.62	573
7322	Radiators for central heatin ...	-0.16	-0.43	3.08 *	0.32	3.44 *	0.39	294
7323	Table, kitchen, other househ ...	-0.21 *	0.21	2.08 *	3.62	0.99 *	0.51	920
7324	Sanitary ware and parts ther ...	-0.40 *	0.26	1.20 **	-0.04	0.51	0.44	465
7325	Iron or steel; cast articles	-0.23 *	0.04	1.25	-1.81	0.54	0.22	639
7326	Iron or steel; articles, n.e ...	-0.26 *	-	0.72 **	-4.11 *	0.33	0.15	2218
7402	Copper; unrefined, copper an ...	-0.12	0.16	-0.24	-	-0.74	0.03	38
7403	Copper; refined and copper a ...	-0.58 *	-1.12 **	5.01 *	6.40 *	4.12 *	0.43	149
7406	Copper; powders and flakes	-0.37 **	0.37	0.98	-4.40 **	-0.10	0.56	61
7407	Copper; bars, rods and profiles	-0.19	-0.90 *	4.49 *	-	4.51 *	0.41	340
7408	Copper wire	-0.72 *	0.24	1.05	-0.46	-0.17	0.55	235
7409	Copper plates, sheets and st ...	-0.05	0.07	1.89 **	0.63	2.04 **	0.37	236
7410	Copper foil (whether or not ...	-0.22	0.35	1.50	-	-1.57	0.37	119
7411	Copper tubes and pipes	-0.39 *	0.27	1.38	2.62	1.22	0.45	413
7412	Copper; tube or pipe fitting ...	-0.51 *	0.56 *	-1.19 **	-4.85 *	-1.02 **	0.21	823
7413	Copper; stranded wire, cable ...	-0.26 **	-0.58 **	3.08 *	-	3.76 *	0.41	208
7415	Copper, nails, tacks, drawin ...	-0.40 *	-0.16	0.22	-2.24	-0.35	0.08	762
7418	Copper; table, kitchen or ot ...	-0.40 *	0.33	0.09	-	-0.58	0.31	282
7419	Copper; articles thereof n.e ...	-0.08	0.27	-0.23	-1.65	-0.19	0.05	741
7502	Nickel; unwrought	0.05	-0.07	5.13 *	-	2.54	0.76	58
7504	Nickel; powders and flakes	-0.40 **	0.44	-0.52	-	-0.18	0.49	87
7505	Nickel; bars, rods, profiles ...	-0.51 *	-0.35	1.19	-	1.81 **	0.32	166
7506	Nickel; plates, sheets, stri ...	-0.28	-0.62 **	1.74	-	3.00 *	0.15	81
7507	Nickel; tubes, pipes and tub ...	-0.37 *	-0.63 **	2.23 *	-	2.08 **	0.25	149
7508	Nickel; articles thereof n.e ...	-0.60 *	-0.41	-0.61	-	0.54	0.20	206

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
7601	Aluminium; unwrought	-0.93 *	-0.46	3.80 *	-	5.36 *	0.69	90
7603	Aluminium; powders and flakes	-0.98 *	0.20	0.73	-	1.28	0.66	51
7604	Aluminium; bars, rods and pr ...	-0.46 *	-0.17	2.64 *	-	1.97 *	0.58	682
7605	Aluminium wire	0.03	0.09	4.46 *	-	1.54	0.67	136
7606	Aluminium; plates, sheets an ...	-0.18	0.11	3.34 *	1.18	2.22 *	0.60	431
7607	Aluminium foil (whether or n ...	-0.24 *	0.12	2.56 *	3.87 *	1.56 *	0.60	606
7608	Aluminium; tubes and pipes	-0.29 *	-0.14	2.33 *	-3.38 **	1.34 **	0.41	500
7609	Aluminium; tube or pipe fitt ...	-0.38 *	0.06	0.13	-	0.33	0.15	495
7610	Aluminium; structures (exclu ...	-0.25 *	-0.03	2.55 *	-	2.05 *	0.57	645
7611	Aluminium; reservoirs, tanks ...	-0.34	1.02	-0.83	-	-2.89	0.55	26
7612	Aluminium casks, drums, cans ...	-0.30 *	0.16	1.13	-1.11	0.74	0.28	380
7613	Aluminium; containers for co ...	-0.47 *	0.27	1.10	1.49	0.60	0.44	133
7614	Aluminium; stranded wire, ca ...	-0.31	0.55	3.01	-	0.17	0.69	64
7615	Aluminium; table, kitchen or ...	-0.46 *	0.57 *	1.36 **	-3.97	0.70	0.61	443
7616	Aluminium; articles n.e.c. i ...	-0.33 *	0.03	0.40	-5.33 *	0.11	0.12	1429
7804	Lead; plates, sheets, strip ...	-0.10	0.77	-	-2.22	-0.57	0.60	35
7806	Lead; articles n.e.c. in cha ...	-0.30	-0.45	2.85 *	-	1.99	0.34	127
7901	Zinc; unwrought	-1.50 *	-0.69	2.90	5.29	4.71	0.49	50
7903	Zinc; dust, powders and flakes	0.64	-0.68	6.67 *	6.78 **	5.47 *	0.57	49
7904	Zinc; bars, rods, profiles a ...	0.20	-0.64	4.65 *	-	3.56 **	0.56	35
7905	Zinc; plates, sheets, strip ...	-0.42	8.37 **	-19.91 **	-	-0.86	0.80	24
7907	Zinc; articles n.e.c. in cha ...	-0.14	0.29	0.35	-	0.26	0.21	435
8001	Tin; unwrought	-0.14	-0.34	2.78	-	-1.13	0.56	29
8003	Tin; bars, rods, profiles an ...	-0.51	1.75 *	-3.12	-	-2.17	0.48	68
8007	Tin; articles n.e.c. in chap ...	-0.05	-0.06	1.73	-	0.14	0.24	115
8101	Tungsten (wolfram); articles ...	0.01	0.26	-0.85	-	-1.14	0.03	168
8102	Molybdenum; articles thereof ...	-0.35	0.85	-0.80	-	-2.24	0.43	50
8104	Magnesium; articles thereof, ...	-0.58 **	-0.71	4.10 *	-	3.32 **	0.48	74
8105	Cobalt; mattes and other int ...	-0.02	0.07	2.17 **	-	1.13	0.41	108
8106	Bismuth; articles thereof, i ...	-0.92 **	-0.34	0.25	-	0.81	0.29	24
8108	Titanium; articles thereof, ...	-0.42 *	0.12	-1.06	-	0.21	0.11	235
8109	Zirconium; articles thereof, ...	0.17	-9.41 *	26.93 *	-	28.07 *	0.35	35
8112	Beryllium, chromium, germani ...	-0.43 **	0.29	0.72	-6.22 **	0.63	0.51	80
8113	Cermets; articles thereof, i ...	-0.32	3.14 *	-8.81 *	-	-7.17 *	0.27	38
8201	Tools, hand; spades, shovels ...	-0.33 *	0.05	2.11 *	1.64	0.80	0.42	462
8202	Tools, hand; saws and blades ...	-0.43 *	0.46 *	0.02	-	0.43	0.36	845

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate		log relative transit time		Mode: Sea		Mode: Rail		Mode: Road		R^2	N
8203	Tools, hand; files, rasps, p ...	-0.32	*	0.57	*	-0.80	**	-1.08		-1.33	*	0.18	998
8204	Tools, hand; hand-operated s ...	-0.47	*	0.54	*	-1.21	*	-		-1.53	*	0.14	1062
8205	Tools, hand; (including glaz ...	-0.22	*	0.32	*	-0.42		-4.45	*	-0.81	*	0.10	1548
8206	Tools, hand; two or more of ...	-0.53	*	0.71	*	-1.43	*	-		-1.95	*	0.21	610
8207	Tools, interchangeable; for ...	-0.32	*	0.54	*	-2.04	*	-5.16	*	-2.11	*	0.06	1437
8208	Knives and cutting blades, f ...	-0.43	*	0.04		-0.70	**	-6.00	*	-0.87	**	0.08	1178
8209	Tools; plates, sticks, tips ...	0.09		0.21		-3.08	*	-		-2.36	*	0.41	292
8210	Tools; hand-operated mechani ...	-0.47	*	0.49	**	0.61		3.86		-0.83		0.49	199
8211	Knives; with cutting blades, ...	-0.34	*	0.52	*	-0.24		-0.18		-1.52	*	0.26	759
8212	Razors and razor blades; (in ...	-0.41	*	0.10		2.07	**	5.02		2.86	*	0.46	286
8213	Scissors; tailors' shears an ...	-0.43	*	0.50	*	-0.27		-		-0.73		0.32	440
8214	Cutlery; other articles, (e. ...	-0.39	*	0.64	*	-0.34		-		-1.31	*	0.31	484
8215	Cutlery; spoons, forks, ladl ...	-0.51	*	0.41	**	0.37		-		-0.32		0.41	562
8301	Padlocks and locks (key, com ...	-0.63	*	0.13		-0.44		-2.68	*	-0.15		0.19	1495
8302	Base metal mountings, fittin ...	-0.43	*	0.16		0.47		-3.24	*	0.21		0.31	1791
8303	Safes; armoured or reinforce ...	-0.40	*	0.27		0.99		-		-0.21		0.37	197
8304	Office equipment; filing cab ...	-0.30		0.96	**	0.19		-		-1.02		0.51	91
8305	Stationery; fittings for loo ...	-0.42	*	0.86	*	-0.34		-		-0.55		0.43	293
8306	Bells, gongs and the like; n ...	-0.38	*	0.84	*	-1.40	*	-		-1.63	*	0.21	573
8307	Tubing; flexible, with or wi ...	-0.21	*	-0.13		1.08	**	-2.42	**	0.69		0.13	689
8308	Clasps, frames with clasps, ...	-0.31	*	0.84	*	-1.81	*	-7.05	*	-1.80	*	0.16	645
8309	Stoppers, caps, lids (includ ...	-0.46	*	-0.14		1.69	*	-0.69		0.62		0.30	960
8310	Sign plates, name plates, ad ...	-0.28	*	-0.09		0.26		-1.00		0.29		0.06	718
8311	Wires, rods, tubes, plates, ...	-0.12		0.38	**	0.95		-2.94		0.50		0.34	670
8402	Boilers; steam or other vapo ...	-0.01		-0.56	**	4.16	*	-		3.37	*	0.39	303
8403	Central heating boilers; exc ...	-0.46	*	-0.49	**	3.57	*	4.05	*	4.24	*	0.63	193
8404	Auxiliary plant for use with ...	-0.09		-0.40		3.00	*	-		3.58	*	0.35	196
8405	Generators for producer or w ...	-0.43	*	-0.15		0.95		-		0.83		0.21	176
8406	Turbines; steam and other va ...	-0.45	*	-0.96	**	2.96	**	3.23		3.97	*	0.15	186
8407	Reciprocating or rotary inte ...	-1.06	*	0.96	*	-2.32	*	-1.23		-2.33	*	0.40	571
8408	Compression-ignition interna ...	-0.48	*	1.11	*	-1.00		-2.30	**	-0.93		0.56	521
8409	Parts suitable for use solel ...	-0.44	*	0.40	*	-1.17	*	-4.98	*	-0.61	**	0.16	2010
8410	Turbines; hydraulic water wh ...	-0.58	*	0.26		0.67		-		0.40		0.32	147
8411	Turbo-jets, turbo-propellers ...	-0.99	*	-0.29		-1.85	**	-		0.16		0.34	395
8412	Engines and motors; n.e.c. (...	-0.17	*	0.13		-0.19		-6.11	*	-0.39		0.06	1429
8413	Pumps; for liquids, whether ...	-0.23	*	0.32	*	-0.32		-4.48	*	-0.44		0.15	2110

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate		log relative transit time		Mode: Sea		Mode: Rail		Mode: Road		R^2	N
8414	Air or vacuum pumps, air or ...	-0.32	*	0.36	*	-0.20		-4.22	*	-0.42		0.19	1980
8415	Air conditioning machines; c ...	-0.36	*	0.96	*	-1.02	**	-4.60	*	-1.21	*	0.36	1167
8416	Furnace burners for liquid f ...	-0.33	*	-0.50	**	1.86	*	-		1.87	*	0.13	453
8417	Furnaces and ovens; industri ...	-0.25	*	-0.62	*	3.90	*	-		3.76	*	0.48	557
8418	Refrigerators, freezers and ...	-0.50	*	0.44	*	1.12	*	-4.49	*	0.73	**	0.51	1282
8419	Machinery, plant (not domest ...	-0.19	*	-0.09		1.65	*	-3.76	*	0.63		0.26	1503
8420	Machines; calendering or oth ...	-0.22	**	0.22		1.09		-		0.46		0.45	267
8421	Centrifuges, including centr ...	-0.29	*	0.34	*	-0.10		-2.72	*	-0.31		0.19	2433
8422	Dish washing machines; machi ...	-0.51	*	0.23		0.08		-2.26	*	-0.53		0.18	1477
8423	Weighing machines; excluding ...	-0.26	*	0.43	*	-0.83	**	-		-1.89	*	0.09	816
8424	Mechanical appliances for pr ...	-0.31	*	0.36	*	0.31		-3.76	*	-0.31		0.24	1472
8425	Pulley tackle and hoists oth ...	-0.51	*	0.11		0.87		-3.39		1.02	**	0.39	899
8426	Derricks, cranes, including ...	-0.19		-0.06		4.48	*	-		3.06	*	0.67	234
8427	Fork-lift and other works tr ...	-0.10		0.86	*	2.41	*	-		1.79	*	0.69	229
8428	Lifting, handling, loading o ...	-0.25	*	-0.04		3.13	*	-2.30		2.26	*	0.61	809
8429	Bulldozers, graders, levelle ...	-0.66	*	0.02		6.83	*	-		5.40	*	0.79	106
8430	Moving, grading, levelling, ...	-0.50	*	0.18		2.23	*	-		2.07	*	0.64	341
8431	Machinery parts; used solely ...	-0.25	*	0.41	*	-0.58	**	-4.45	*	-0.84	*	0.12	1998
8432	Agricultural, horticultural ...	-0.17		0.76	*	0.95		-0.27		0.46		0.60	620
8433	Harvesting and threshing mac ...	-0.07		0.86	*	0.48		4.40	*	-0.12		0.54	1004
8434	Milking machines and dairy m ...	-0.43	*	-0.18		1.10	**	-		0.95		0.20	473
8435	Presses, crushers and simila ...	-0.51	*	0.14		0.96		-		1.19		0.43	134
8436	Agricultural, horticultural, ...	-0.09		0.25		2.01	*	-		1.02	**	0.54	696
8437	Machines for cleaning, sorti ...	-0.49	*	0.09		1.20	**	-		0.72		0.42	515
8438	Machinery n.e.c. in this cha ...	-0.44	*	-0.37	*	2.34	*	-2.69		1.76	*	0.41	1067
8439	Machinery; for making pulp o ...	-0.06		-0.09		1.81	*	1.67		1.10	**	0.35	434
8440	Book-binding machinery; incl ...	-0.62	*	0.09		1.18		-		1.48		0.43	260
8441	Machines; for making up pape ...	-0.39	*	0.33	**	0.30		-		-0.16		0.30	696
8442	Machinery, apparatus and equ ...	-0.62	*	0.48	**	-1.13	**	-		-1.07	**	0.21	401
8443	Printing machinery; used for ...	-0.55	*	0.65	*	-1.60	*	-6.91	*	-1.26	*	0.13	1790
8444	Textile machinery; for extru ...	-0.66	**	2.11	*	-4.08		-		-5.72	*	0.58	55
8445	Textile machinery; spinning, ...	-0.88	*	0.40		1.93		-1.45		1.15		0.63	143
8446	Weaving machines (looms)	-0.31		-0.29		4.33	**	-		3.30		0.59	35
8447	Knitting machines, stitch-bo ...	-0.48	*	0.70	*	1.45	**	-		-0.30		0.68	133
8448	Machinery, auxiliary; for us ...	-0.44	*	-0.02		-1.28	*	-3.32		-0.90	**	0.17	662
8449	Machinery; for manufacture o ...	-		-0.25		2.46		-		6.17		0.57	41

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate		log relative transit time		Mode: Sea		Mode: Rail		Mode: Road		R^2	N
8450	Household or laundry-type wa ...	-0.88	*	0.94	*	-1.07	**	-4.61	*	-0.94		0.41	844
8451	Machinery (not of heading no ...	-0.46	*	0.55	*	0.81		-1.10		0.03		0.52	685
8452	Sewing machines; other than ...	-0.67	*	1.06	*	-2.55	*	-2.98		-2.56	*	0.20	587
8453	Machinery for preparing, tan ...	-0.22		1.28	**	-2.10		-		-1.77		0.32	213
8454	Converters, ladles, ingot mo ...	-0.45	*	-0.48	**	2.11	*	-		2.98	*	0.34	281
8455	Metal-rolling mills and roll ...	-0.02		-0.01		2.73	*	1.25		2.83	*	0.56	297
8456	Machine-tools; for working a ...	-0.23		0.30		1.40	**	-		-0.51		0.42	303
8457	Machining centres, unit cons ...	-0.30		-0.98	**	6.65	*	3.21		5.59	*	0.56	64
8458	Lathes for removing metal	-0.88	*	0.31		2.09	**	-		2.64	*	0.60	127
8459	Machine-tools; (including wa ...	-0.48	*	0.43	**	0.93		-4.68	**	1.14	**	0.58	304
8460	Machine-tools; for deburring ...	-0.42	*	0.32		0.59		-		0.62		0.36	400
8461	Machine-tools; for planing, ...	-0.57	*	0.17		1.36	**	-		0.85		0.41	261
8462	Machine-tools; (including pr ...	-0.25	**	0.29		2.25	*	-		1.44	*	0.57	477
8463	Machine-tools; n.e.c. for wo ...	-0.69	*	0.30		0.94		4.41		0.29		0.51	237
8464	Machine-tools; for working s ...	-0.56	*	0.21		0.91		1.92		-0.24		0.33	338
8465	Machine-tools; (including ma ...	-0.30	*	0.12		2.61	*	-		1.54	*	0.58	430
8466	Parts & accessories suited f ...	-0.17	*	0.04		-0.41		-5.60	*	-0.62	**	0.07	1468
8467	Tools; for working in the ha ...	-0.42	*	0.69	*	-1.15	*	-6.76	*	-1.04	*	0.21	1412
8468	Machinery and apparatus for ...	-0.63	*	0.48	*	-0.73		-		-1.28	**	0.26	382
8470	Calculating machines and poc ...	-0.64	*	0.89	*	-2.76	*	-		-1.44		0.10	377
8471	Automatic data processing ma ...	-0.50	*	0.57	*	-3.95	*	-6.33	*	-2.47	*	0.38	1555
8472	Office machines; not elsewhe ...	-0.76	*	1.28	*	-3.16	*	-		-3.40	*	0.28	497
8473	Machinery; parts and accesso ...	-0.20	*	0.44	*	-2.42	*	-5.65	*	-2.24	*	0.17	1444
8474	Machinery for sorting, scree ...	-0.23	*	0.12		1.91	*	-2.44		1.64	*	0.49	1148
8475	Machines; for assembling ele ...	-0.30	*	-0.24		0.64		-		1.07		0.07	244
8476	Automatic goods-vending mach ...	-0.73	*	0.28	**	-0.12		-5.87	*	-0.87	**	0.22	593
8477	Machinery; for working rubbe ...	-0.28	*	0.40	*	-0.03		-1.95		-0.63		0.18	1057
8478	Machinery; for preparing or ...	-0.69	*	-0.59	**	2.14	*	-		2.17	**	0.29	157
8479	Machinery and mechanical app ...	-0.29	*	0.07		0.91	*	-5.05	*	0.16		0.21	1717
8480	Moulding boxes for metal fou ...	-0.36	*	-0.12		0.75		-4.42		0.94	**	0.14	722
8481	Taps, cocks, valves and simi ...	-0.50	*	0.13		-0.72	*	-4.72	*	-0.72	*	0.10	2247
8482	Ball or roller bearings	-0.49	*	0.69	*	-1.52	*	-3.37	*	-1.51	*	0.23	1930
8483	Transmission shafts (includi ...	-0.32	*	0.43	*	-0.96	*	-4.26	*	-0.80	*	0.12	2229
8484	Gaskets and similar joints o ...	-0.46	*	0.28	*	-1.63	*	-4.52	*	-1.28	*	0.09	1764
8486	Machines and apparatus of a ...	-0.22		-0.10		0.50		-		0.08		0.05	131
8487	Machinery parts; not contain ...	-0.29	*	0.68	*	-1.78	*	-6.47	*	-1.68	*	0.07	1624

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate		log relative transit time		Mode: Sea		Mode: Rail		Mode: Road		R^2	N
8501	Electric motors and generato ...	-0.33	*	0.44	*	-0.55		-5.33	*	-0.56		0.20	1777
8502	Electric generating sets and ...	-0.29	**	1.13	*	1.15		-		0.67		0.65	393
8503	Electric motors and generato ...	-0.37	*	0.25		-0.64		-7.05	*	-0.96	**	0.08	1104
8504	Electric transformers, stati ...	-0.25	*	0.32	*	-0.76	*	-4.32	*	-1.07	*	0.05	2198
8505	Electro-magnets; permanent m ...	-0.33	*	0.56	*	-1.83	*	-5.07	*	-1.88	*	0.05	1104
8506	Cells and batteries; primary	-0.56	*	0.23		-0.36		-8.44	**	-0.60		0.14	820
8507	Electric accumulators, inclu ...	-0.30	*	0.61	*	-0.37		-2.58	*	-		0.26	1349
8508	Vacuum cleaners	-0.45	*	0.94	*	-0.87		-2.41	**	-1.34	*	0.40	520
8509	Electro-mechanical domestic ...	-0.31	*	1.26	*	-1.08	**	-4.02	*	-1.27	*	0.50	489
8510	Shavers, hair clippers and h ...	-0.35	*	0.56	*	0.09		-		-0.92		0.30	273
8511	Ignition or starting equipme ...	-0.52	*	0.45	*	-1.05	*	-0.97		-0.66	**	0.20	1584
8512	Lighting or visual signallin ...	-0.40	*	0.71	*	-1.16	*	-4.73	*	-1.20	*	0.31	1753
8513	Lamps; portable, electric, d ...	-0.44	*	0.48	*	-1.59	*	-		-1.54	*	0.08	516
8514	Industrial or laboratory ele ...	-0.27	*	0.01		1.02	**	-4.47		0.31		0.19	645
8515	Electric (electrically heate ...	-0.37	*	0.13		0.06		-5.64	*	-0.13		0.12	978
8516	Electric water, space, soil ...	-0.63	*	0.25	**	0.09		-1.17		-0.01		0.27	1461
8517	Telephone sets, including te ...	-0.52	*	0.43	*	-2.95	*	-5.56	*	-2.11	*	0.23	1937
8518	Microphones and their stands ...	-0.48	*	0.61	*	-1.69	*	-7.09	*	-1.76	*	0.10	1684
8519	Sound recording or reproduci ...	-0.67	*	0.48	**	-1.63	*	-		-1.53	**	0.11	307
8521	Video recording or reproduci ...	-0.65	*	0.61	*	-2.46	*	-		-2.51	*	0.11	444
8522	Sound or video recording app ...	-0.46	*	0.41	*	-1.28	*	-6.15	*	-1.26	*	0.10	639
8523	Discs, tapes, solid-state no ...	-0.63	*	0.44	*	-4.23	*	-6.37	*	-2.60	*	0.44	1230
8525	Transmission apparatus for r ...	-0.57	*	0.69	*	-3.96	*	-5.52	*	-2.94	*	0.29	1029
8526	Radar apparatus, radio navig ...	-0.68	*	0.46	*	-3.17	*	-3.11	*	-1.73	*	0.21	836
8527	Reception apparatus for radi ...	-0.55	*	0.74	*	-1.52	*	-4.03	*	-2.04	*	0.26	740
8528	Monitors and projectors, not ...	-0.50	*	0.80	*	-2.77	*	-2.32	**	-2.79	*	0.10	1161
8529	Transmission apparatus; part ...	-0.24	*	0.45	*	-1.72	*	-4.46	*	-1.71	*	0.05	1519
8530	Signalling, safety or traffi ...	-0.27	*	-0.05		0.35		-4.73	*	0.32		0.09	637
8531	Signalling apparatus; electr ...	-0.14	*	0.03		-0.78	*	-3.62	*	-0.33		0.06	1513
8532	Electrical capacitors; fixed ...	-0.22	*	0.69	*	-2.24	*	-7.71	*	-1.27	*	0.08	982
8533	Electrical resistors (includ ...	-0.23	*	0.89	*	-3.34	*	-6.89	*	-3.00	*	0.14	1149
8534	Circuits; printed	-0.38	*	0.78	*	-3.81	*	-5.37	*	-2.90	*	0.22	622
8535	Electrical apparatus for swi ...	-0.37	*	-0.06		0.48		-		0.47		0.10	1256
8536	Electrical apparatus for swi ...	-0.38	*	0.38	*	-1.48	*	-6.27	*	-1.34	*	0.11	2684
8537	Boards, panels, consoles, de ...	-0.40	*	0.09		-0.31		-3.85	*	-0.46		0.07	1996
8538	Electrical apparatus; parts ...	-0.16	*	0.33	*	-1.12	*	-6.14	*	-1.50	*	0.06	1902

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
8539	Lamps; electric filament or ...	-0.56 *	0.48 *	-1.39 *	-6.70 *	-1.28 *	0.12	1752
8540	Thermionic, cold cathode or ...	-0.65 *	0.45	-2.63 *	-8.38 *	-1.74	0.20	227
8541	Diodes, transistors, similar ...	-0.08	0.18	-1.02 **	-5.17 **	-0.53	0.02	1182
8542	Electronic integrated circuits	-0.48 *	0.23 **	-2.38 *	-4.89 *	-1.73 *	0.23	1481
8543	Electrical machines and appa ...	-0.42 *	0.15	-1.11 *	-5.98 *	-0.87 *	0.08	1796
8544	Insulated wire, cable and ot ...	-0.28 *	-0.02	0.25	-6.44 *	-0.17	0.11	2362
8545	Carbon electrodes, carbon br ...	-0.26 *	0.52 *	-0.72	-4.17 **	-1.23 **	0.11	737
8546	Electrical insulators of any ...	-0.23 *	0.43 **	-0.25	-	-0.51	0.20	605
8547	Insulating fittings; for ele ...	-0.08	0.38 **	-0.49	-6.44 **	-0.42	0.07	806
8548	Waste and scrap of primary c ...	-0.32 **	-0.50 *	1.14 **	-3.61 *	2.57 *	0.20	242
8607	Railway or tramway locomotiv ...	-0.36 *	-0.06	1.10	0.26	1.95 *	0.32	400
8608	Railway or tramway track fix ...	-0.41 *	-0.20	1.76 **	-	0.55	0.31	195
8609	Containers; (including conta ...	-0.31 **	-0.07	3.31 *	3.12	2.57 *	0.50	128
8701	Tractors; (other than tracto ...	-0.69 **	-0.16	6.63 *	-	5.17 *	0.83	47
8703	Motor cars and other motor v ...	-0.30 **	0.94 *	3.57 *	-	0.58	0.80	209
8704	Vehicles; for the transport ...	-0.15	0.26	6.78 *	-	4.27 *	0.87	81
8705	Special purpose motor vehicl ...	-0.82	0.16	4.46 *	-	3.55 *	0.69	30
8707	Bodies; (including cabs) for ...	-0.09	-0.15	4.15 *	-	2.65 *	0.59	149
8708	Motor vehicles; parts and ac ...	-0.33 *	0.68 *	-0.69 *	-3.49 *	-0.92 *	0.34	2722
8709	Works trucks, self-propelled ...	0.03	0.21	1.64 **	-	0.24	0.34	238
8710	Tanks and other armoured fig ...	-1.14 *	-3.99	11.02	-	-	0.43	51
8711	Motorcycles (including moped ...	-0.46 *	0.07	3.61 *	-	1.63 **	0.69	299
8712	Bicycles and other cycles; i ...	-0.68 *	0.14	1.05 **	-	-0.17	0.41	386
8713	Carriages for disabled perso ...	-0.44 *	0.17	0.55	-	0.43	0.28	240
8714	Vehicles; parts and accessor ...	-0.38 *	0.31 **	0.14	-	-0.36	0.27	1268
8715	Baby carriages and parts thereof	-0.69 *	0.57	0.96	-	0.52	0.49	144
8716	Trailers and semi-trailers; ...	-0.29 *	0.40 **	1.63 *	-5.27 **	1.48 *	0.56	735
8801	Balloons and dirigibles; gli ...	-0.12	-0.25	1.39	-	1.66	0.16	47
8802	Aircraft n.e.c. in heading n ...	-0.85 *	-1.38 **	2.87	2.27	0.80	0.37	130
8803	Aircraft; parts of heading n ...	-0.60 *	-0.28	-1.23	-	0.22	0.27	393
8804	Parachutes (including dirigi ...	-0.81 *	-0.39	0.04	-	0.92	0.20	44
8805	Aircraft launching gear, dec ...	-1.07 *	-0.02	0.46	-	-1.10	0.31	52
8903	Yachts and other vessels; fo ...	-0.44 *	0.09	3.15 *	-	2.26 *	0.64	218
8907	Boats, floating structures, ...	-0.57 *	-	1.01	-	0.88	0.29	212
9001	Optical fibres and optical f ...	-0.30 *	-0.13	-1.84 *	-	-0.79	0.24	588
9002	Lenses, prisms, mirrors and ...	-0.57 *	-0.11	-2.37 *	-	-0.81	0.40	473

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate		log relative transit time		Mode: Sea		Mode: Rail		Mode: Road		R^2	N
9003	Frames and mountings; for sp ...	-0.49	*	0.94	*	-4.80	*	-		-4.24	*	0.34	262
9004	Spectacles, goggles and the ...	-0.39	*	0.38	**	-1.95	*	-		-1.52	*	0.07	651
9005	Binoculars, monoculars, othe ...	-0.61	*	0.58	*	-1.59	*	-6.97	*	-2.05	*	0.16	548
9006	Cameras, photographic (exclu ...	-0.84	*	0.13		-0.84	**	-5.62	*	-0.79		0.15	699
9007	Cinematographic cameras and ...	-0.56	*	0.84	*	-3.03	*	-		-3.22	*	0.13	392
9008	Image projectors, other than ...	-0.58	*	-1.36	*	3.49	*	-		5.28	*	0.20	100
9010	Photographic (including cine ...	-0.23	**	0.37	**	-0.17		-		-0.37		0.24	220
9011	Microscopes, compound optica ...	-0.60	*	0.03		-2.34	*	-6.32	**	-1.35	**	0.33	277
9012	Microscopes (excluding optic ...	-0.62	*	-0.15		-0.53		-		2.13		0.19	112
9013	Liquid crystal devices not c ...	-0.54	*	0.68	*	-3.78	*	-		-2.84	*	0.22	523
9014	Navigational instruments and ...	-0.55	*	0.13		-2.63	*	-		-1.69	*	0.35	421
9015	Surveying (including photogr ...	-0.53	*	0.15		-1.82	*	-6.08	*	-1.69	*	0.21	959
9016	Balances; of a sensitivity o ...	-0.50	*	0.28		-1.88	**	-		-1.73	**	0.14	233
9017	Drawing, marking-out, mathem ...	-0.44	*	0.25		-0.75		-3.39		-1.08	**	0.07	924
9018	Instruments and appliances u ...	-0.72	*	0.40	*	-1.93	*	-6.85	*	-1.73	*	0.12	1836
9019	Mechano-therapy, massage app ...	-0.45	*	0.40	**	-1.19	*	-4.41		-1.48	*	0.07	827
9020	Breathing appliances and gas ...	-0.04		0.06		0.34		-		-0.08		0.03	463
9021	Orthopaedic appliances; incl ...	-1.00	*	0.44	*	-4.58	*	-		-2.73	*	0.58	771
9022	X-ray, alpha, beta, gamma ra ...	-0.37	*	0.93	*	-2.77	*	-		-2.88	*	0.08	620
9023	Instruments, apparatus and m ...	-0.53	*	-0.21		-0.64		-4.82	*	-0.64		0.16	652
9024	Machines and appliances for ...	-0.45	*	-0.02		-0.78		-		0.08		0.06	446
9025	Hydrometers and similar floa ...	-0.32	*	0.21	**	-1.48	*	-6.21	*	-1.44	*	0.14	1722
9026	Instruments, apparatus for m ...	-0.22	*	0.26	*	-1.49	*	-5.54	*	-1.34	*	0.14	1941
9027	Instruments and apparatus; f ...	-0.62	*	0.42	*	-3.86	*	-8.27	*	-2.76	*	0.44	1361
9028	Gas, liquid or electricity s ...	-0.56	*	-0.26		0.56		-3.25		0.26		0.13	495
9029	Revolution counter, producti ...	-0.38	*	0.78	*	-2.69	*	-1.39		-2.44	*	0.07	1180
9030	Instruments, apparatus for m ...	-0.34	*	0.19		-2.06	*	-6.05	*	-2.17	*	0.23	1353
9031	Measuring or checking instru ...	-0.33	*	0.32	*	-1.73	*	-5.00	*	-1.62	*	0.12	1772
9032	Regulating or controlling in ...	-0.29	*	0.08		-0.70	*	-4.50	*	-0.70	*	0.08	2036
9033	Machines and appliances, ins ...	-0.16	**	0.16		-0.95	*	-5.25	*	-1.10	*	0.06	1071
9101	Wrist-watches, pocket-watche ...	-0.69	*	1.78	*	-5.59	*	-		-6.16	*	0.19	128
9102	Wrist-watches, pocket-watche ...	-0.65	*	1.10	*	-5.42	*	-		-3.79	*	0.32	425
9103	Clocks; with watch movements ...	-0.18		0.16		1.35		-		-0.08		0.29	81
9104	Instrument panel clocks and ...	-0.53	*	0.51		-1.38		-		-1.06		0.20	171
9105	Clocks, other, n.e.c.	-0.45	*	-0.02		0.55		-		0.03		0.10	304
9106	Time of day recording appara ...	-0.35	*	0.46		-1.87	**	-		-1.65	**	0.06	328

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate		log relative transit time		Mode: Sea		Mode: Rail		Mode: Road		R^2	N
9107	Time switches; with clock, w ...	-0.54	*	0.78	*	-2.35	*	-2.34	**	-1.51	**	0.14	288
9108	Watch movements; complete an ...	-0.68	*	3.75	*	-12.82	*	-		-13.24	*	0.49	56
9109	Clock movements; complete an ...	-0.19		1.74		-3.73		-		-2.38		0.17	27
9110	Watch or clock movements, co ...	-0.13		-0.46		1.09		-		0.07		0.06	50
9111	Watch cases and parts thereof	-0.29		1.28		-4.74		-		-4.94	**	0.21	63
9113	Watch straps, watch bands, w ...	0.06		1.70	*	-5.86	*	-		-5.99	*	0.38	142
9114	Clock or watch parts; n.e.c. ...	-0.21		0.48		-2.55	**	-		-1.95		0.11	148
9201	Pianos; including automatic ...	-1.24	*	0.69		-1.10		-		-1.15		0.41	95
9202	Musical instruments; string, ...	-0.80	*	0.24		0.74		-		-0.40		0.36	206
9205	Musical instruments; wind (e ...	-0.41	**	0.38		-0.20		-		-0.78		0.16	202
9206	Musical instruments; percuss ...	-0.12		0.44		1.21		-		0.28		0.42	258
9207	Musical instruments; the sou ...	-0.30	**	0.09		1.90	*	-		1.02		0.45	296
9208	Musical boxes, fairground an ...	-0.09		-0.46		2.57		-		1.50		0.19	141
9209	Musical instrument parts (fo ...	-0.50	*	0.08		0.29		-5.48	*	-0.01		0.16	774
9302	Revolvers and pistols; other ...	-0.56		11.59	*	-34.06	*	-		-35.94	*	0.59	31
9303	Firearms; other similar devi ...	-0.47	*	2.78		-8.41	**	-		-9.71	**	0.19	66
9304	Firearms; (e.g. spring, air ...	-0.76	*	-2.40	*	7.40	*	-		6.09	**	0.39	127
9305	Firearms; parts and accessor ...	-0.64	*	-0.68	**	1.00		-6.82	*	1.49		0.11	354
9306	Bombs, grenades, torpedoes, ...	-0.77	*	0.07		0.81		-7.82	*	-0.31		0.24	334
9307	Arms; swords, cutlasses, bay ...	-0.62	*	1.62		-4.89		-		-4.05		0.22	70
9401	Seats (not those of heading ...	-0.34	*	0.03		2.20	*	-4.12	*	1.55	*	0.48	1543
9402	Furniture; medical, surgical ...	-0.46	*	0.11		0.71		-2.37		0.43		0.30	689
9403	Furniture and parts thereof, ...	-0.25	*	-0.02		2.75	*	-2.13	**	1.86	*	0.53	1528
9404	Mattress supports; articles ...	-0.35	*	0.15		2.15	*	1.65		1.45	*	0.50	832
9405	Lamps, light fittings; inclu ...	-0.37	*	0.24	**	-0.36		-4.59	*	-0.41		0.09	1565
9406	Buildings; prefabricated	-0.26		-0.20		5.00	*	-		4.51	*	0.73	139
9503	Tricycles, scooters, pedal c ...	-0.41	*	0.54	*	0.85	**	-3.87		0.71		0.49	1041
9504	Video game consoles and mach ...	-0.68	*	0.50	*	-0.88	**	-6.41	*	-0.97	*	0.18	1045
9505	Festive, carnival or other e ...	-0.42	*	0.85	*	-0.91		-		-2.14	*	0.25	466
9506	Gymnastics, athletics, other ...	-0.49	*	0.33	*	0.63		-5.03	*	-0.12		0.39	1311
9507	Fishing rods, fish-hooks and ...	-0.24	*	0.10		0.01		-2.46		0.06		0.07	402
9508	Roundabouts, swings, shootin ...	-0.46	*	0.05		3.03	*	-		0.24		0.74	139
9601	Ivory, bone, tortoise-shell, ...	-0.49	*	0.13		0.55		-		-0.75		0.32	131
9602	Vegetable, mineral carving m ...	-0.35		2.48	*	-4.48	*	-		-5.07	*	0.44	142
9603	Brooms, brushes (including p ...	-0.21	*	0.57	*	0.38		-0.08		-0.27		0.34	1264
9604	Hand sieves and hand riddles	-0.60	*	0.11		-0.10		-		-1.00		0.15	128

Commodity group (HS Rev. 2017)		log relative ad-valorem freight rate	log relative transit time	Mode: Sea	Mode: Rail	Mode: Road	R^2	N
9605	Travel sets; for personal to ...	-0.26	0.67 **	-0.06	-	-0.99	0.37	102
9606	Buttons, press-fasteners, sn ...	-0.58 *	0.41 **	-1.62 *	-	-1.85 *	0.12	330
9607	Slide fasteners and parts th ...	-0.66 *	0.45 **	-0.92	-	-1.76 *	0.28	313
9608	Pens; ball-point, felt tippe ...	-0.58 *	1.00 *	-1.76 *	-8.32 *	-1.06 **	0.35	1020
9609	Pencils (not of heading no. ...	-0.34 *	0.83 *	0.72	-	0.02	0.57	519
9610	Slates and boards, with writ ...	-0.25	0.76 **	0.57	-	-0.69	0.42	149
9611	Stamps; date, numbering, sea ...	-0.65 *	0.75 *	-1.43	-	-1.79 **	0.30	280
9612	Typewriter, similar ribbons, ...	-0.63 *	1.50 *	-4.11 *	-	-4.10 *	0.24	478
9613	Cigarette lighters and other ...	-0.51 *	0.23	0.52	-3.54 **	-0.80	0.31	315
9614	Smoking pipes (including pip ...	-0.46 **	0.20	0.78	-	-0.45	0.34	120
9615	Combs, hair-slides and simil ...	-0.25 *	0.91 *	-1.25 **	-	-1.27 **	0.26	361
9616	Scent sprays and similar toi ...	0.02	0.48 **	0.41	-	-1.02	0.20	255
9617	Vacuum flasks and other vacu ...	-0.26 **	0.85 *	-0.17	-	-1.71 **	0.37	252
9618	Tailors' dummies and other l ...	-0.27 *	0.73 *	-1.58 **	-	-2.06 *	0.13	245
9619	Sanitary towels (pads) and t ...	-0.22	0.28	4.28 *	5.78 *	4.30 *	0.70	310
9620	Monopods, bipods, tripods an ...	-0.56 *	0.37 *	-0.71	-5.79 *	-1.52 *	0.12	686
9701	Paintings, drawings, pastels ...	-0.95 *	0.25	-1.90 *	-	-1.75 **	0.26	338
9702	Engravings, prints and litho ...	-1.15 *	-1.48	2.63	-	6.59	0.40	41
9703	Sculptures and statuary; ori ...	-0.63 *	-0.28	0.02	-	0.25	0.21	230
9705	Collections and collectors' ...	-0.44 **	-0.89	2.10	-	4.04 **	0.16	92
9706	Antiques; of an age exceedin ...	-0.90 *	-0.13	0.08	-	-0.14	0.34	91

Source: UNCTAD.

Note: Results of independent OLS regressions.

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