The GTA handbook

Data and methodology used by the Global Trade Alert initiative

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This handbook is incomplete and subject to updates. For questions, please refer to data@globaltradealert.org.

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1 Scope and content of the database

The Global Trade Alert (GTA) was launched in June 2009 when it was feared that the global financial crisis would lead governments to adopt widespread 1930s-style beggar-thy-neighbour policies.Each GTA database entry documents a government statement made after November 2008 which included a credible announcement of a meaningful and unilateral change in the relative treatment of foreign versus domestic commercial interests.

The documentation goes beyond the central government statements to include those of subnational actors as well as public corporations and public financial institutions. The GTA database thus includes various forms of government action from national legislation to the contract terms of individual state agencies. All documented changes reflect unilateral government action and thus exclude changes coordinated within bilateral trade agreements or the multilateral trading system.

The foreign commercial interests considered by the GTA are trade in goods and services, investment as well as labour force migration. We document beneficial as well as harmful changes in the relative treatment of foreign versus domestic commercial interests. Each GTA database entry provides information about the direction of the change (harmful or liberalising), the announced policy instrument, its announcement date and, where available, implementation date as well as the sectors and products targeted by the statement. Finally, the database entry includes the potentially affected trading partners which are identified based on official statistics.

Each database entry is documented through the official statement by the acting institution wherever possible. For cases where an official statement cannot be located, press clippings from multiple original sources are analysed for their consistency. All database entries undergo a two-stage review process before publication.

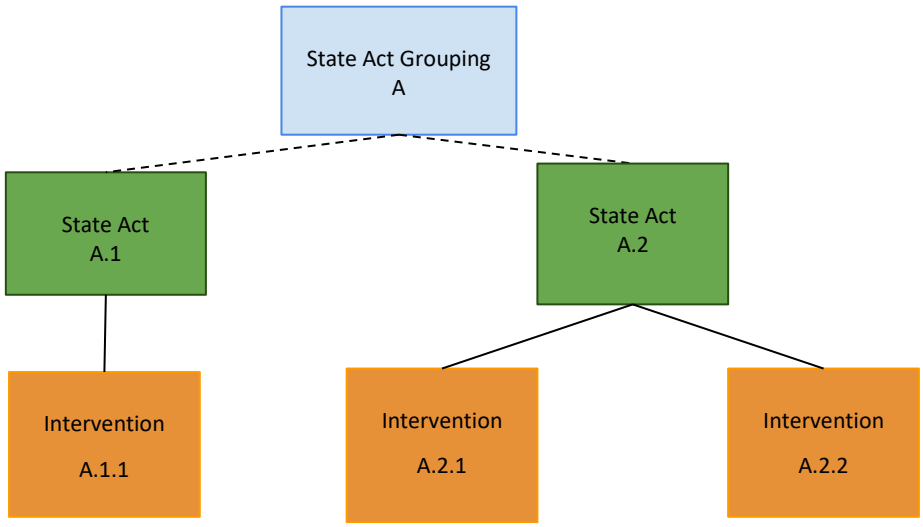
The monitoring period starts in November 2008, when the G20 heads of state pledged to refrain from protectionist action in the aftermath of the Global Financial Crisis. The GTA database only includes relative treatment changes announced since this pledge. The database is updated continuously as new information arrives.

2 Database structure

The GTA database organises governmental changes to market conditions into three levels. From top to bottom, these three levels are the state act grouping, the state act and the intervention. For reasons explained below, all information is collected at the intervention and the state act level. The first version of the GTA database was organised around the state act (referred to as "measure" then). We thus start the description of the database structure at this level.

2.1 State acts and interventions

Figure 1: Stylized database structure



For the GTA database, a **state act** is equivalent to an announcement by a government body. Each announcement documented by the GTA team includes at least one new and credible promise for change in market conditions at home or abroad.

Each state act in the GTA database consists of one or more **interventions**. The interventions represent the used policy instrument plus the direction of the induced change (liberalising or harmful). The clear majority of GTA database entries are state acts with a single associated intervention. For example, the announcement of a new production subsidy to steel producers would be recorded as one state act with one intervention (State Act A.1 in Figure 1).

The GTA team splits state acts into multiple interventions in two cases. First, state acts are split into multiple interventions when various policy instruments are described within a single announcement. For example, a government may announce to assist the domestic steel industry by raising import tariffs on steel and the introduction of a new "buy national" clause for the public procurement of steel. Such a case would be recorded as one state act with two interventions (State Act A.2 with interventions A.2.1 and A.2.2 in Figure 1).

Second, measures are split into multiple interventions when one policy instrument is used to simultaneously improve and worsen foreign market. For example, the domestic steel industry may be assisted by raising import tariffs on steel but also lowering import tariffs for iron ore, an important steel input. Such a case would also be recorded as one state act with two interventions (State Act A.2 with interventions A.2.1 and A.2.2 in Figure 1).

In contrast to the other levels, **groupings of state acts** (or state act series) are merely an expositional tool. The groupings in the GTA database connect two or more state acts for expositional purposes. State acts can be associated to zero, one or more groupings at a time. Hence the dashed line in Figure 1.

The primary use of a grouping of state acts is to relate the various state acts of a long-term industrial programme. For instance, the different state acts described above could be part of a country's "Global Steel Strategy 2030". To orientate database users about such connections, the GTA team may create groupings and present the individual measures as well as aggregate statistics in one place. Besides this use case, the GTA team may introduce groupings to visualize the global usage of prominent policy instruments such as anti-dumping or localisation requirements over time.

2.2 Data collection along the different levels

In the GTA database, all information is collected at the intervention and the state act level. More precisely, the only pieces of information collected at the state act level are the announcement date and the source. Only these two pieces of information are constant across the possibly many interventions included in an individual state act. All others may differ from intervention to intervention.

To disentangle the different policy instruments used, the directions of the change as well as the different affected products and sectors, the GTA database stores this and more information at the intervention level.

As noted above, no additional information is collected on the groupings of state acts level. The groupings are an editorial tool to aggregate and visualize the statistics of related state acts. The GTA team may add summarising text to guide the interested reader, but no original information is stored that has not already been collected in the associated state acts and interventions.

The required fields for each database entry are:

1. Announcement date
2. Source
3. Intervention type
4. GTA evaluation

Of these, the first two are collected at the state act level and the latter two at the intervention level.

3 State act relevance assessment

For a state intervention to warrant a new entry in the GTA database, the following six conditions have to be satisfied.

3.1 Condition 1 ("Relative Treatment Test")

The GTA contains information on unilateral state acts that alter the relative treatment of domestic commercial interests vis-à-vis foreign competitors. Note that:

- ➔ This condition must be satisfied based on the text of the sources provided. The team member may draw logical inferences from the sources. In general, speculative interpretation of the source is not a basis for acceptance.
- ➔ This condition is not met for state acts that are not sector or activity specific but rather seek to improve the overall competitiveness of the national economy.
- ➔ Only in very well documented cases will state acts amounting to de facto, rather than de jure, discrimination against foreign commercial interests be considered. The team member discusses borderline cases before their submission.

3.2 Condition 2 ("Meaningful Change")

The Global Trade Alert contains information on state acts that are likely to meaningfully change international commercial flows (goods, services, investment, or labour force migration). State acts that merely prolong a relevant earlier act without meaningful change are submitted as an update to the original state act. The team member is advised to seek feedback before submitting borderline cases. For some state acts, specific threshold values for their inclusion are described below.

- ➔ For financial incentives such as subsidies, bailouts and other forms of state aid, an intervention with a volume exceeding USD 10 million is considered meaningful. For financial incentives involving loans, this threshold applies to the loan volume.
- ➔ Trivial changes in the costs of complying with regulations (such as a change in the cost of obtaining an import licence, or minor changes in the necessary paperwork) are not considered meaningful. The team member discusses borderline cases before their submission.
- ➔ Cases that do not pass this condition may be added as updates to existing measures in the database.

3.3 Condition 3 ("Credible Action")

The Global Trade Alert contains information about state acts which are already implemented or whose future implementation is enacted. The GTA does not include information about state acts which are likely to be enacted, but still pending in the legislative process. Furthermore, mere statements of intent (e.g. speeches, MOUs for unspecified collaboration) are beyond the scope of the GTA database.

3.4 Condition 4 ("Commercial Interest")

The Global Trade Alert contains information on state acts whose dominant motive is commercial. Announcements made by the judicial system, such as court orders, are not considered a state act. More generally, this excludes humanitarian or social welfare assistance. This further excludes state acts that serve

the following public interests, unless there is compelling evidence that the rationale provided for the state act is false:[1]

- ➔ Protection of public morals;
- ➔ Protection of human, animal or plant health or life[2];
- ➔ Acts taken in pursuance of foreign policy or national security goals;
- ➔ Achievement of the monetary policy mandate (except competitive devaluations that are explicitly motivated in commercial terms in state documents)
- ➔ Protection of artistic, historical or archaeological treasure; and
- ➔ Conservation of natural resources or wildlife protected by international treaty

3.5 Condition 5 ("One announcement, one entry")

All state acts that satisfy the above conditions and are covered within the same announcement, are to be reported in the same GTA database entry.

3.6 Condition 6 ("GTA monitoring period")

To fall into the monitoring period of the GTA, the meaningful change described along Condition 2 has to be announced after 1 November 2008. If the new information is an update, then the original act has to be implemented within the GTA monitoring period.

[1] This clause does not withstand the reporting of cases involving strong de facto discrimination. The team member discusses borderline cases before their submission.

[2] Until notified to the contrary, individual SPS and TBT measures should not be reported. However, changes in TBT and SPS legislation should be reported if they have implications (as they invariably do) for the treatment of imported goods, animals etc.

4 Data classification

This chapter includes descriptions of all fields in the GTA database and their potential values. Except for the announcement date, all described fields are recorded on the intervention level.

4.1 Intervention types

This section describes the content of each intervention type monitored by the Global Trade Alert. To orientate the reader, the different intervention types are described under unifying subheadings. An alphabetical list with references to those subheadings can be found in section 4.1.10.

A concise table of the new intervention types including correspondences to those used by other monitoring initiatives as well as those used on the first version of the GTA database can be found section appendix A starting on page 13.

The details of what constitutes each intervention type will be added shortly.

4.1.1 Capital controls and exchange rate policy

- Control on personal transactions
- Controls on commercial transactions and investment instruments
- Controls on credit operations
- Competitive devaluation
- Repatriation & surrender requirements
- Trade payment measure (see export and import section)

4.1.2 Export and import policy instruments

- Export ban
- Export licensing requirement
- Export quota
- Export subsidy
- Export tariff quota
- Export tax
- Export tax incentive
- Export-related non-tariff measure, nes
- Other export inventive
- Import ban
- Import incentive
- Import licensing requirement
- Import monitoring
- Import quota
- Import tariff
- Import tariff quota
- Import-related non-tariff measure, nes
- Internal taxation of imports
- Foreign customer rule
- Trade balancing measure
- Trade finance
- Trade payment measure

4.1.3 Foreign investment policy

- FDI: Entry and ownership rule
- FDI: Financial incentive
- FDI: Treatment and operations, nes

4.1.4 Labor force migration policy

- Labour market access
- Post-migration treatment

4.1.5 Localisation policy

- Local labour
- Local operations
- Local sourcing

4.1.6 Public procurement policy

- Public procurement access
- Public procurement localisation
- Public procurement preference margin
- Public procurement, nes

4.1.7 Subsidies and state aid

- Bailout (capital injection or equity participation)
- Financial assistance in foreign market
- Financial grant
- In-kind grant
- Interest payment subsidy
- Production subsidy
- State loan
- Tax or social insurance relief
- State aid, nes

4.1.8 Trade defense instruments

- Anti-Circumvention
- Anti-Dumping
- Anti-Subsidy
- Safeguard

4.1.9 Other instruments

- Intellectual property protection
- Sanitary and phytosanitary measure
- Technical barrier to trade

4.1.10 Intervention type index

Click on the intervention type of interest to be forwarded to the relevant document section.

- Anti-Circumvention
- Anti-Dumping
- Anti-Subsidy
- Bailout (capital injection or equity participation)
- Competitive devaluation
- Control on personal transactions
- Controls on commercial transactions and investment instruments
- Controls on credit operations
- Export ban
- Export licensing requirement
- Export quota
- Export subsidy
- Export tariff quota
- Export tax
- Export tax incentive
- Export-related non-tariff measure, nes
- FDI: Entry and ownership rule
- FDI: Financial incentive
- FDI: Treatment and operations, nes
- Financial assistance in foreign market
- Financial grant
- Foreign customer rule
- Import ban
- Import incentive
- Import licensing requirement
- Import monitoring
- Import quota
- Import tariff
- Import tariff quota
- Import-related non-tariff measure, nes
- In-kind grant
- Intellectual property protection
- Interest payment subsidy
- Internal taxation of imports
- Labour market access
- Loan guarantee
- Local labour
- Local operations
- Local sourcing
- Other export inventive
- Post-migration treatment
- Production subsidy

- Public procurement access
- Public procurement localisation
- Public procurement preference margin
- Public procurement, nes
- Repatriation & surrender requirements
- Safeguard
- Sanitary and phytosanitary measure
- State loan
- Tax or social insurance relief
- Technical barrier to trade
- Trade balancing measure
- Trade finance
- Trade payment measure

4.2 Further classification choices

This section describes the contents of each classification field collected in the GTA database.

4.2.1 GTA evaluation

We record the direction of the change for each intervention using the "GTA evaluation". The evaluation is signalled by a triangle in one of three different colours. These are:

- Red triangle: The intervention almost certainly discriminates against foreign commercial interests.
- Amber triangle: The intervention likely involves discrimination against foreign commercial interests.
- Green triangle: The intervention liberalises on a non-discriminatory (i.e., most favoured nation) basis; or improves the transparency of a relevant policy.

4.2.2 Affected commercial flow

The affected commercial flow field includes the predominantly affected flow direction. There are three potential values. Only one value can be assigned to each intervention.

- Inward: The predominantly distorted market is the domestic market of the implementing jurisdiction.
- Outward: The documented change concerns an outflow restriction. The predominantly affected market is the outflow destination.
- Outward subsidy: In general, this value is only chosen for export incentives and trade finance interventions. In exceptional cases, a state aid awarded to an exporting company which generates its sales exclusively abroad may be classified as an outward subsidy.

4.2.3 Dates

Subject to availability, various dates are collected for each database entry. These are:

- Announcement date: The issuance date of the documented government statement.
- Inception date: The date the documented change is enforced.
- Prolongation date: The prolongation date of a change that was originally announced as temporary.
- Revocation date: The date the documented change is either withdrawn or fully replaced by a further change. Note that changes that have only been partially replaced or withdrawn do not include a revocation date.

- Investigation status date: see trade defence taxonomy.

The "announced as temporary" field signals which measures were from the outset implemented for a limited time only. This field distinguishes such measures from those which have been withdrawn or supplanted by a further deliberate act from the responsible government entity.

4.2.4 Implementation level

The GTA database differentiates the announcements of different government levels or agencies. In total, it distinguishes 6 different actors. These are:

- Supra-national: Announcement by supra-national bodies with binding consequences for its member states. Examples include the European Commission as well as the steering bodies of customs unions.
- National: Announcements made by central government including the central bank, where relevant.
- Sub-national: Announcements made by lower levels of government such as regional, state, provincial and municipal governments.
- National Financial Institution (NFI): Announcements made by a publicly owned bank such as the National Development or Export-Import bank. GTA-relevant central bank announcements are subsumed as part of the national level.
- International Financial Institution (IFI): Announcements made by a publicly owned bank with more than one shareholding member state.

Note that the GTA relevance assessment described in section 3 restricts the documented announcements to those with a discriminatory component and a likely impact on market conditions. This generally rules out changes made by economically small entities or many of the world's IFIs.

4.2.5 Jurisdictions

Besides the acting jurisdiction(s), each GTA database entry may include two additional sets of countries. Each is defined as follows:

- Implementing jurisdiction(s): The jurisdiction(s) for which the described change is announced. Note that for announcements made by supra-national entities, all complying member states are marked as implementing jurisdictions. An example would be import tariff changes announced by the European Commission and enforced by all member states. Also see the "Implementation level" field for the allocation of database entries across various governmental agents.
- Distorted market(s): The jurisdiction(s) whose market conditions are about to be changed. For actions affecting inflows such as an import tariff or an FDI restriction, the distorted market is equal to the implementing jurisdiction. For an outflow-related measure such as an export ban or an export subsidy, the distorted market is the export destination of the affected product, service, investment or labour force. See also the "affected flow" field for this distinction.
- Affected Jurisdiction(s): The jurisdictions whose commercial interests are potentially affected by the announced change. For inflow-related measures, the affected jurisdictions are the inflow sources of the affected goods, service, investment or labour force. For outflow restrictions, the affected jurisdictions are the export destinations of the affected product, service, investment or labour force. For outward subsidies, the affected jurisdictions are the exporters to the distorted market which now compete with a subsidised rival in the affected product, service or investment.

4.2.6 Product classification and identification

The GTA uses the Harmonised System (HS, version 2012) at the 6-digit level. At this level, the Harmonised System includes more than 5'000 different products. Each product is commonly referred to as its own "tariff line". The details of this classification and its correspondence to others are available from the World Customs Organisation. The United Nations Statistics Division published a helpful summary.

In cases where the official source includes product information in the Harmonised System or a related classification, the products are chosen accordingly. In cases where no such information is available, the GTA team chooses the likely tariff lines based on the announcement text and the Harmonised System descriptions.

The "Official tariff line" box signals how the affected products are identified. The box is ticked in cases where the official source included the necessary information. In all others, it is left empty.

4.2.7 Sector classification and identification

The GTA uses the Common Product Classification (CPC, version 2.1) at the 3-digit level. The details of this classification and its correspondence to others are available from the United Nations Statistics Division.

For interventions that include product-level information, the associated sectors are selected based on the United Nation's correspondence table for CPC 2.1 and HS 2012. In all other cases, the sector code is chosen by the GTA team according to the wording of the official source.

4.2.8 Selectiveness of the intervention

Most GTA database entries bound the scope of a government interventions through the identification of the affected products and sectors. However, such interventions may be further selective within the products and sectors affected. Two classification fields of the GTA database are designed to collect such differences.

First, the "eligible firms" field specifies which subset of the firms active in the affected product or sector is subject to the documented change. The field may take one of the following values.

- All: There is no additional selection beyond the sectors and products.
- SMEs: Only SMEs which are active in the selected products and sectors are subject to the documented change.
- Firm-specific: The documented change targets enumerated firms.
- State-controlled: The documented change was made for enumerated state-controlled firms. Firms with a public ownership stake exceeding 50 percent are considered "state-controlled".
- State trading: The documented change was made for enumerated state trading enterprises. State trading enterprises are majority publicly owned firms that have special privileges on cross-border transactions e.g. the monopoly on imports of a staple food.

The final piece of the classification that signals the selectiveness of an intervention is the "horizontal intervention" box. It signals that all sectors have been affected.

4.2.9 Severity of the intervention

To compare the differences across the collected government interventions, the severity of the change in market conditions is a key concern. It is very difficult to construct such a metric which is valid across the 50+ policy instruments and the different commercial flows (goods, services, investment and labour force migration) documented by the GTA. In general, the information collected via the product and sector scope, the implementation period as well as the selectiveness of the intervention may provide some guidance. Besides these fields, three direct attempts to provide *additional* information about the severity of an intervention are made in the GTA database.

First, where possible, we record the prior and the new value of the changed market condition. These fields thus collect quantifiable information about the height of the documented change. The units permitted by this field are US Dollar values (e.g. for subsidies, grants or state loans), percentages and USD per measuring unit MT/tonne/kg/item (e.g. for tariffs) as well as quantities (e.g. for quotas). These prior and new values can be collected for the intervention as a whole (e.g. in sector-wide industrial policy interventions) or on the product level (e.g. individual tariff changes).

Second, two tick boxes offer a binary classification in more and less severe interventions. The "tariff peak" tick box is marked in export and import tariff cases which cross or end up with an applied tariff of 15 percentage points. Furthermore, the "jumbo" tick box is marked for interventions that affect a large amount of trade (this function is currently not deployed).

Finally, three subjective scores are collected for each intervention. The GTA editor who investigated the database entry plus each of the two reviewers leave a subjective judgement about the severity of the documented change before the entry is published. The question answered by this score is "*How much will the documented intervention change market access for foreign interests which are active in the affected sector/products?*" This question is answered on scale from 1 to 10, where 1 is "very little" and 10 is "completely".

4.2.10 Trade defence taxonomy

Due to their internationally standardized implementation process, trade defence instruments have two additional taxonomy fields. The trade defence instruments documented in detail by the GTA are anti-circumvention, anti-dumping, anti-subsidy and safeguard investigations.

The two additional taxonomy fields for trade defence instruments are the investigation status and the investigation status date. Using these two fields, GTA database entries on trade defence include the dates for the initiation of the investigation, the date on which a preliminary duty and/or a definitive duty was imposed, the extension date of a trade defence duty, as well as the review date of a definitive duty. The termination date is collected for investigations that were terminated without the imposition of a preliminary or definitive duty.

The investigation status dates correspond to the dates in the regular GTA taxonomy as follows. The initiation date of the investigation is equal to the announcement date. The date on which the first duty of the investigation is enforced is the inception date. This first duty can be either a preliminary or a definitive duty. The date a trade defence duty is withdrawn or no longer prolonged is equal to the revocation date.

Section appendix

A: Correspondence of intervention types to UN MAST

MAST chapter	Description	GTA intervention type
A	A Sanitary and phytosanitary measure	Sanitary and phytosanitary measure
B	B Technical barriers to trade	Technical barrier to trade
CAP	Capital control measures	Repatriation & surrender requirements
CAP	Capital control measures	Controls on commercial transactions and investment instruments
CAP	Capital control measures	Controls on credit operations
CAP	Capital control measures	Control on personal transactions
D	D Contingent trade-protective measures	Import monitoring
D1	D1 Antidumping	Anti-dumping
D1	D1 Antidumping	Anti-circumvention
D2	D2 Countervailing measure	Anti-subsidy
D31	D31 General (multilateral) safeguard	Safeguard
D32	D32 Agricultural special safeguard	Special safeguard
E1	E1 Non-automatic import-licensing procedures other than authorizations for SPS or TBT reasons	Import licensing requirement
E2	E2 Quotas	Import quota
E3	E3 Prohibitions other than for SPS and TBT reasons	Import ban
E6	E6 Tariff-rate quotas (TRQ)	Import tariff quota
P12	Export quotas	Foreign customer limit
F7	F7 Internal taxes and charges levied on imports	Internal taxation of imports
FDI	FDI measures	FDI: Entry and ownership rule
FDI	FDI measures	FDI: Treatment and operations, nes
FDI	FDI measures	FDI: Financial incentive
G	G Finance measures	Competitive devaluation
G	G Finance measures	Trade payment measure
I1	I1 Local content measures	Local sourcing
I1	I1 Local content measures	Local operations
I1	I1 Local content measures	Local labour
I1	I1 Local content measures	Localisation incentive
I2	I2 Trade-balancing measures	Trade balancing measure
X	Instrument unclear	Import-related non-tariff measure, nes
X	Instrument unclear	Instrument unclear
L	L Subsidies (excluding export subsidies under P7)	Bailout (capital injection or equity participation)
L	L Subsidies (excluding export subsidies under P7)	State loan
L	L Subsidies (excluding export subsidies under P7)	Financial grant
L	L Subsidies (excluding export subsidies under P7)	In-kind grant
L	L Subsidies (excluding export subsidies under P7)	Production subsidy
L	L Subsidies (excluding export subsidies under P7)	Interest payment subsidy
L	L Subsidies (excluding export subsidies under P7)	Loan guarantee
L	L Subsidies (excluding export subsidies under P7)	Tax or social insurance relief

L	L Subsidies (excluding export subsidies under P7)	Consumption subsidy
L	L Subsidies (excluding export subsidies under P7)	Import incentive
L	L Subsidies (excluding export subsidies under P7)	Financial assistance in foreign market
L	L Subsidies (excluding export subsidies under P7)	State aid, nes
L	L Subsidies (excluding export subsidies under P7)	Price stabilisation
M1	M1 Government Procurement Market Access Restrictions	Public procurement access
M2	M2 Government Procurement Domestic Price Preference	Public procurement preference margin
M3	M3 Government Procurement Local Content Requirement	Public procurement localisation
M5	M5 Government Procurement Tendering Process	Public procurement, nes
MIG	Migration measures	Labour market access
MIG	Migration measures	Post-migration treatment
N	N Intellectual Property	Intellectual property protection
P11	P11 Export prohibition	Export ban
P12	P12 Export quotas	Export tariff quota
P12	P12 Export quotas	Export quota
P13	P13 Licensing- or permit requirements to export	Export licensing requirement
P5	P5 Export taxes and charges	Export tax
P7	P7 Export subsidies	Tax-based export incentive
P7	P7 Export subsidies	Export subsidy
P7	P7 Export subsidies	Trade finance
P8	P8 Export credits	Other export incentive
P9	P9 Export measures, n.e.s.	Export-related non-tariff measure, nes
TARIFF	Tariff measures	Import tariff

B: Correspondence of intervention types used on the old GTA website

Prior website	New website
Bailout / State aid	Bailout (capital injection or equity participation)
Bailout / State aid	State loan
Bailout / State aid	Financial grant
Bailout / State aid	In-kind grant
Bailout / State aid	Production subsidy
Bailout / State aid	Interest payment subsidy
Bailout / State aid	Loan guarantee
Bailout / State aid	Tax or social insurance relief
Bailout / State aid	State aid, nes
Bailout / State aid	Price stabilisation
Competitive Devaluation	Competitive devaluation
Consumption Subsidy	Consumption subsidy
Export Incentive	Tax-based export incentive
Export Incentive	Export subsidy
Export Incentive	Other export incentive
Export Taxes or Restriction	Export tax
Export Taxes or Restriction	Export ban
Export Taxes or Restriction	Export tariff quota
Export Taxes or Restriction	Export quota
Import Ban	Import ban
Import Subsidy	Import incentive
Import tariff	Import tariff
Import tariff	Internal taxation of imports
Intellectual Property Protection	Intellectual property protection
Investment Measure	Repatriation & surrender requirements
Investment Measure	Controls on commercial transactions and investment instruments
Investment Measure	Controls on credit operations
Investment Measure	Control on personal transactions
Investment Measure	FDI: Entry and ownership rule
Investment Measure	FDI: Treatment and operations, nes
Investment Measure	FDI: Financial incentive
Localisation Requirement	Local sourcing
Localisation Requirement	Local operations
Localisation Requirement	Local labour
Localisation Requirement	Localisation incentive
Migration Measure	Labour market access
Migration Measure	Post-migration treatment
Non-Tariff Measure (not otherwise specified)	Trade payment measure
Non-Tariff Measure (not otherwise specified)	Trade balancing measure
Non-Tariff Measure (not otherwise specified)	Export licensing requirement
Non-Tariff Measure (not otherwise specified)	Import licensing requirement
Non-Tariff Measure (not otherwise specified)	Export-related non-tariff measure, nes
Non-Tariff Measure (not otherwise specified)	Import-related non-tariff measure, nes
not available	Instrument unclear
Other Service sector measure	Foreign customer limit

Public procurement localization	Public procurement localisation
Public procurement preference	Public procurement preference margin
Public procurement, nes	Public procurement access
Public procurement, nes	Public procurement, nes
Quota (incl. Tariff-Rate Quote)	Import tariff quota
Quota (incl. Tariff-Rate Quote)	Import quota
Sanitary and Phytosanitary Measure	Sanitary and phytosanitary measure
Technical Barrier to Trade	Technical barrier to trade
Trade Defence Measure (AD, SG, CVD)	Import monitoring
Trade Defence Measure (AD, SG, CVD)	Anti-dumping
Trade Defence Measure (AD, SG, CVD)	Safeguard
Trade Defence Measure (AD, SG, CVD)	Anti-subsidy
Trade Defence Measure (AD, SG, CVD)	Anti-circumvention
Trade Defence Measure (AD, SG, CVD)	Special safeguard
Trade Finance	Trade finance
Trade Finance	Financial assistance in foreign market

5 Trade coverage estimates

The estimates presented here are the percentage of bilateral trade affected by policy interventions implemented since 1 November 2008.

The estimates include all policy instruments relating to goods trade which are included in the GTA database (see chapter 3 above). Note that this excludes notifications of Technical Barriers to Trade (TBT) as well as Sanitary and Phytosanitary (SPS) measures.

The estimates are calculated based on GTA policy data as well as UN COMTRADE trade statistics on the product level.[3] The product classification used here is the 2012 vintage of the Harmonized System at the 6-digit level. The product-level estimates are then summed up and divided by the total value of imports by the importing country originating from the exporting country.

As policy interventions can influence the magnitude of trade flows, the trade shares are calculated over the trade values observed in a base period rather than the trade value observed in the implementation year. For the Global Trade Alert, the base period is 2005 to 2007.

The estimates account for geographic restrictions on the import origins such as FTA exemptions or targeted interventions. Furthermore, the affected trade values are adjusted for the number of days each intervention was enforced in the given year. When a policy intervention lapses then from that date on it no longer contributes to the export coverage totals reported above. When date of lapse is uncertain the most conservative possible date is used. Trade defence interventions are only included in the calculations starting on the enforcement date of a preliminary or definitive duty, if applicable.

The Global Trade Alert database includes interventions enacted by different government levels or agencies. Conditional on their discriminatory nature and subject to size thresholds such as the USD amount spent per year, the GTA documents interventions by publicly owned banks or subnational levels of government. Likewise, the GTA further includes sufficiently large interventions targeted at a subset of the producers such as SMEs. Given that no disaggregated trade data is comprehensively available, the estimates for such interventions constitute an upper bound.

The estimates are further disaggregated by implementing country and policy instrument. Policies affecting bilateral trade can thus be implemented by either the importing countries (e.g. a local content requirement), the exporting country (e.g. an export tariff), or a 3rd country (e.g. an export subsidy).

Missing importer-exporter-implementer-instrument combinations should be interpreted as zeros i.e. no trade affected.

All estimates are subject to revision as new information is incorporated into the GTA database.

[3] We convert the Comtrade data into the 2012 vintage of the Harmonized System and balance the panel through estimates based on reported export data from trading partners. For more details on this process, please see chapter 6 of this handbook. No import data is available for Chinese Taipei, Lesotho, Nepal, and Papua New Guinea.

6 Goods trade data

The data set used to identify the affected trading partners in state acts relating to goods trade is based on the trade statistics assembled by UN COMTRADE. To receive a balanced and consistently classified data set, we perform the various estimations described below.

6.1 Source and scope

We use goods trade data from the UN COMTRADE database. The data currently used by the GTA was last updated on 6 April 2017. The data is annual and stretches from 2005 to 2016. The data from 2005 to 2007 is used in the construction of trade shares (see section **Fehler! Verweisquelle konnte nicht gefunden werden.**). The data since 2008 is used to identify the affected trading partners in interventions concerning goods trade (see section **Fehler! Verweisquelle konnte nicht gefunden werden.**).

The data query directed at UN COMTRADE had the following specification:

- HS code: as reported
- Commodity Codes: AG6
- Reporter codes: all
- Partner codes: all
- Years: 2005-2016
- Trade Flow: Imports

No further filters were applied. Before we processed the data any further, it went through the following cleaning steps:

- The redundant columns were erased to reduce the size of the file.[4]
- COMTRADE entities that do not constitute jurisdictions were deleted from the sample.[5]
- Removal of observations that described "imports from self".[6]
- Removal of observations under the product code 999999 ("Commodities not specified according to kind").

For goods trade, the GTA uses the Harmonized System classification. On the website, we use the Harmonized System in its 2012 vintage (HS 2012) at the 6-digit level. As only a subset of COMTRADE data is available at this vintage, our conversion method to receive a consistent data set in HS 2012 is described in section 6.2.

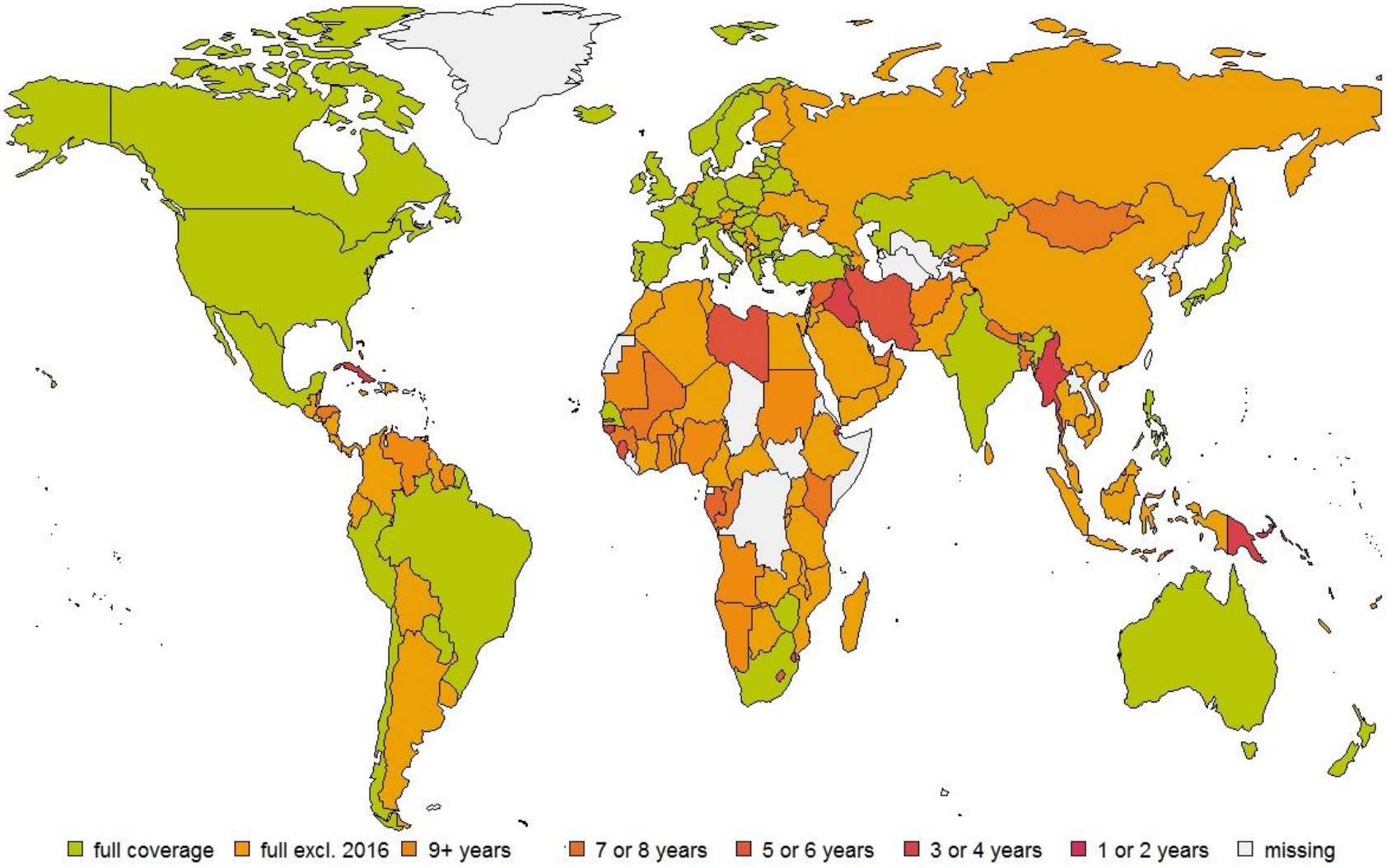
Figure 2 shows a map of the geographical scope of our final goods trade data set. The displayed coverage includes two further processing steps. First, we have to convert the different goods trade classifications used by COMTRADE into a common one. The approach to this problem is described in the next section. Second, an effort to increase the data coverage for 2016 is described in section 6.3.

[4] The erased columns are "trade flow direction", "net weight of the traded goods", "units of the traded goods", "trade quantity" and "commodity description".

[5] The delete entities are "Free Zones", "LAIA, nes", "Neutral Zone", "Fr. South Antarctic Terr.", Other Africa, nes", "Areas, nes", "Br. Indian Ocean Terr.", "Bunkers", "North America and Central America, nes", "Oceania, nes", "Other Asia, nes", "Other Europe, nes", "World", "Antarctica", "Bouvet Island" and "Special Categories".

[6] For instance, COMTRADE data includes imports of China from China or imports of France from France. Such observations also exist for Indonesia and the Republic of Korea.

Figure 2: Goods trade data availability between 2005 and 2016



6.2 Harmonized System vintage conversion

Since its first release, the Harmonized System (HS) classification has been updated roughly every 5 years. In our sample, countries report their import statistics in 5 different HS code vintages.[7] Only 40 percent of all trade observed between 2005 and 2015 is reported in HS 2012.[8] To receive an internally consistent data set, we thus must convert all earlier HS vintages into HS 2012. Our conversion is based on the correlation and conversion tables published by the UN Statistics Division.

In this conversion, two cases can arise. There can be either a *1:1* correspondence between the old and the new HS 6-digit code. Or there can be a *1:n* correspondence meaning that 1 old HS 6-digit code is reallocated to *n* new HS 6-digit codes. In the *1:n* cases, the trade values observed on the old HS code must be split into several new HS codes.

The following section describes the methodology used to allocate the observed trade values across the *n* new HS codes.[9] Section 0 presents the results.

6.2.1 Estimation method

We use a stepwise approach to convert older HS code vintages into HS 2012. That is, we first convert all trade data available in HS 1992 into HS 1996. We then combine this converted data with the COMTRADE trade data provided in HS 1996 and convert the combined data into HS 2002. We proceed through HS 2007 and finally reach HS 2012. In the description below, we will refer to the older HS code vintage as the "origin code". The newer HS code vintage will be referred to as "destination code". As the conversion of *1:1* correspondences is trivial, the section below relates exclusively to the case where the trade value of 1 origin code has to be re-allocated to *n* destination codes (i.e. *1:n* correspondences).

For our estimation, we exploit that COMTRADE publishes national trade statistics in more than one HS code vintage. For instance, COMTRADE publishes HS 6-digit-level import data in both HS 2007 and HS 2012 for a total of 140 countries for at least one year between 2012 and 2016. Based on these figures, one can estimate the re-allocation of the trade values from the origin to the destination codes.

The re-allocation shares observed in the data do not support the choice of a simple estimation solution. Figure 3 depicts the cumulative distribution of the observed re-allocation shares for trade values observed in both HS 2007 and HS 2012.[10] The striking feature of this distribution is the concentration of extreme observations. Slightly more than three-quarters of all destination codes have a re-allocation share that is either zero or one. Put differently, three out of four of the *n* new HS 2012 code unite either all or nothing of the corresponding HS 2007 code trade value on themselves. Unfortunately, this extreme re-allocation is not systematic across trading partners. One thus cannot simply re-allocate all or zero of the trade value observed for HS 2007 to the corresponding HS 2012 codes. Furthermore, Figure 3 demonstrates that a simple rule that re-allocates a fraction $\frac{1}{n}$ to each of the *n* destination codes would be considerably off the mark.

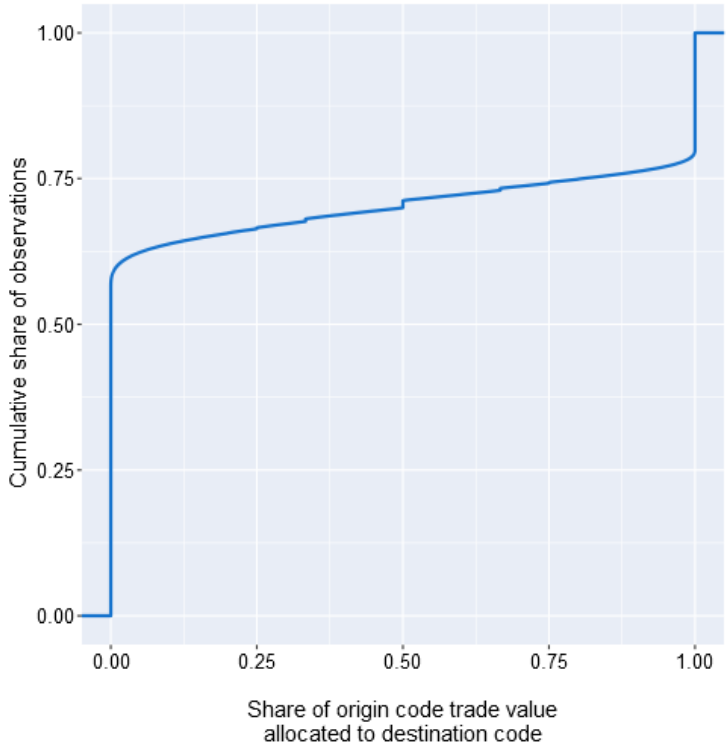
[7] HS 1992, 1996, 2002, 2007 and 2012.

[8] See section annex C starting on page 11 for details.

[9] The described methodology differs from that put forth by Pierce and Schott (2012) because of a different focus. Pierce and Schott created a time-consistent system of synthetic HS codes at the 10-digit level. Their algorithm could also be applied at the 6-digit level which is of interest here. However, our goal is to generate a consistent data set based on the HS codes of the 2012 vintage. The synthetic codes would be difficult to label and use for the purposes of the GTA.

[10] This graph omits cases in which the sum of the destination code trade values is less than that of the origin code. In those cases, no meaningful re-allocation shares can be calculated. The estimations below are based on absolute trade values, not re-allocation shares, and are thus conducted with the full set.

Figure 3: Distribution of observed trade value re-allocation (HS 2007 → 2012)



Instead of a simple rule, we choose our re-allocation method based on a horse race between three estimation approaches. The basis of each estimation method is the "HS pair" i.e. the unique combination of origin and destination code. The three estimations compute re-allocation shares that are (1) HS-pair-specific, (2) HS-pair- and importer-specific and (3) HS-pair- and exporter-specific.

$$imports_t^{HS\ destination} = \beta^{HS-pair} \times imports_t^{HS\ origin} \quad (1)$$

$$imports_t^{HS\ destination} = \beta^{HS-pair,importer} \times imports_t^{HS\ origin} \quad (2)$$

$$imports_t^{HS\ destination} = \beta^{HS-pair,exporter} \times imports_t^{HS\ origin} \quad (3)$$

For illustration, assume that the HS 2007 code for cars is split into blue cars and red cars under HS 2012. For the HS-pair-specific share, we estimate the average trade share of blue car imports in total car imports within the entire sample. Furthermore, we estimate the average trade share of red car imports in total car imports within the entire sample. This method gives us the worldwide average share of blue/red car imports in total world car imports.

For the HS-pair-importer-specific share, we estimate the average trade share of blue car imports and that of red car imports in total car imports separately for each importing nation. This method yields national averages of the blue/red car import share in total national car imports. The estimation of the HS-pair-exporter-specific share is analogous.

To validate each estimator, we split the sample into two halves. We create these halves through the random assignment of the available years into the training and the test set.[11] We use the first half of the sample as a "training set" to estimate the re-allocation share. This estimate is then used to predict the observed values in the other half of the sample (the "test set"). Based on these predictions, we can compute the accuracy of each estimator to guide our choice. To gauge the robustness of this precision, we validate each estimator three times.

We use two criteria to judge the accuracy of the estimates. The first is the R^2 i.e. the share of the variance captured by each estimator. As our second accuracy criterion, we use the relative size of the prediction error compared to the origin trade value (equation 4). Based on this calculation, we calculate the share of all estimated observation within a given margin of error.

6.2.2 Estimation results

We present two sets of estimation results. The first concerns the validation exercise described above. The second compares the resulting estimated trade values to the observed trade values.

Table 1 on page 24 contains the results of validation.[12] Apart from the conversion from HS 2002 to HS 2007, all estimators show high R^2. We are thus confident that the predictions capture the observed variation very well. As for the estimation precision, we note that all estimators misallocate relatively small shares of the origin code. This includes the estimator from HS 2002 to HS 2007. The misallocation error is less than 10 percent for (more than) half the observations; two-thirds to three-quarters are within 25 percent.

Based on these estimators, we generate a replica of the original COMTRADE data set in a single HS vintage, namely HS 2012. To convert the vintages, we rank the estimators for each vintage pair as listed below. We then use our first preference to map all trade values provided by COMTRADE in a given origin code into the adjacent destination code. This procedure may not map all trade flows, however. Importer-product or exporter-product combinations that were not observed in our training sets cannot be mapped in cases where this is the preferred estimator. In these cases, we apply our second or third preference to receive the sought destination code trade value.

Estimator preference ranking

- HS 1992 → HS 1996: (1) HS-pair-exporter, (2) HS-pair-importer, and (3) HS-pair only.
- HS 1996 → HS 2002: (1) HS-pair-importer, (2) HS-pair-exporter, and (3) HS-pair only.
- HS 2002 → HS 2007: (1) HS-pair-importer, (2) HS-pair-exporter, and (3) HS-pair only.
- HS 2007 → HS 2012: (1) HS-pair-exporter, (2) HS-pair-importer, and (3) HS-pair only.

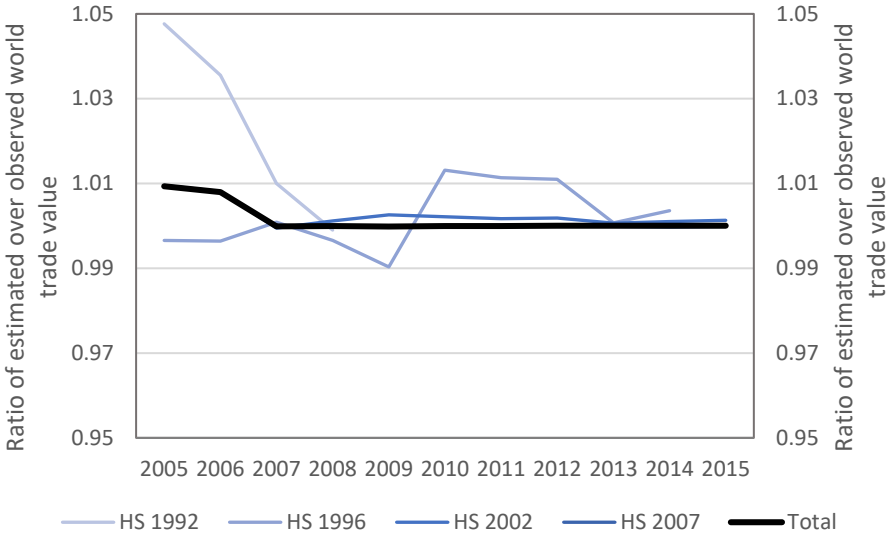
We compare our replica of UN COMTRADE in HS 2012 to the original data. To see whether the conversion may have altered the observed global trade dynamics, we take the ratio of the estimated trade value in HS 2012 over the trade values in their original HS vintage. The black line in Figure 4 reveals that our conversion had little impact on the worldwide trade total in any given year. The estimated and the observed worldwide

[11] The HS vintage pairs include different sample length. For instance, data for the pair HS07-HS12 is only available from 2012 to 2016 and we randomly assign 3 of those years into the training set. For the pair HS02-HS07, the sample period is 2008 to 2015 and we assign 4 years for training. For HS96-HS02, we train on 7 years between 2002 and 2015. For HS92-HS96, we train on 10 years between 1996 and 2015.

[12] Table 1 includes the averages over the three validations. See the section appendix A and B from page 8 for the statistics of each individual validation and also for the subset of trade flows with a value greater than USD 1 million.

trade value remain within 1 percent of each other throughout the sample. This close relationship is true for trade value of all HS vintages except 1992. The trade values converted from HS 1992 to HS 2012 differ by 4-5 percent from the observed value in the years 2005 and 2006. Fortunately, this imprecision is inconsequential as less than 1 percent of world trade in those years has been reported in HS 1992.[13]

Figure 4: Estimated vs observed world trade



[13] See appendix C on page 11 for a detailed breakdown of the conversion precision by year and original HS vintage.

Table 1: Accuracy of HS conversion estimates for all trade flows

(a) HS 1992 → HS 1996

Estimator	R^2	Share of observations with a misallocated trade value percentage below …				
		1 %	5 %	10 %	20 %	25 %
HS-pair	0.90	0.18	0.33	0.43	0.59	0.64
HS-pair-importer	0.92	0.24	0.42	0.53	0.65	0.69
HS-pair-exporter	0.91	0.26	0.43	0.53	0.65	0.69

(b) HS 1996 → HS 2002

Estimator	R^2	Share of observations with a misallocated trade value percentage below …				
		1 %	5 %	10 %	20 %	25 %
HS-pair	0.86	0.35	0.46	0.54	0.64	0.66
HS-pair-importer	0.94	0.42	0.55	0.62	0.72	0.75
HS-pair-exporter	0.91	0.42	0.54	0.62	0.70	0.74

(c) HS 2002 → HS 2007

Estimator	R^2	Share of observations with a misallocated trade value percentage below …				
		1 %	5 %	10 %	20 %	25 %
HS-pair	0.50	0.46	0.61	0.66	0.74	0.76
HS-pair-importer	0.51	0.56	0.67	0.72	0.78	0.80
HS-pair-exporter	0.53	0.56	0.66	0.71	0.77	0.79

(d) HS 2007 → HS 2012

Estimator	R^2	Share of observations with a misallocated trade value percentage below …				
		1 %	5 %	10 %	20 %	25 %
HS-pair	0.99	0.30	0.49	0.60	0.72	0.74
HS-pair-importer	0.99	0.47	0.61	0.69	0.76	0.79
HS-pair-exporter	0.99	0.52	0.65	0.71	0.78	0.80

6.3 Balancing the panel

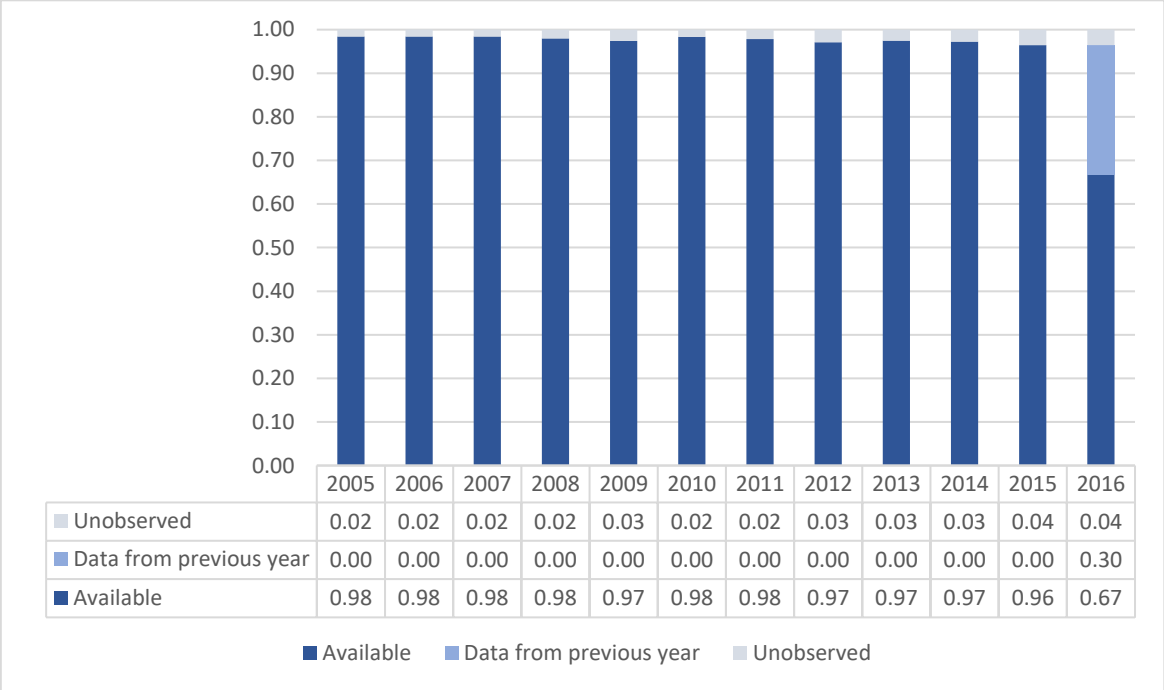
Besides reporting in different HS vintages, a further challenge is the varying country coverage of UN COMTRADE. Import data is not available for all countries and all years.[14]

The data offered by UN COMTRADE includes full coverage for 52 countries for the entire sample 2005 to 2016 at the HS 6-digit level. For a further 68 countries, import data is available from 2005 to 2015. Finally, for another 67 countries, the UN COMTRADE data includes at least 1 year of HS 6-digit trade statistics in our sample.[15]

However, as Figure 5 illustrates, the unobserved countries generally only account for a small fraction of world GDP. Except for 2016, COMTRADE provides Figure 1 import data for 96 percent or more of the same year's world GDP. The 52 countries for which COMTRADE reports 2016 import data still accounted for two thirds of world GDP.

To increase the completeness of the goods trade data, we use 2015 for those countries for which COMTRADE currently does not report the latest annual figures. We will update the goods trade data set as new information becomes available.

Figure 5: Availability of COMTRADE data as a share of world GDP[16]



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Unobserved	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.03	0.03	0.03	0.04	0.04
Data from previous year	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30
Available	0.98	0.98	0.98	0.98	0.97	0.98	0.98	0.97	0.97	0.97	0.96	0.67

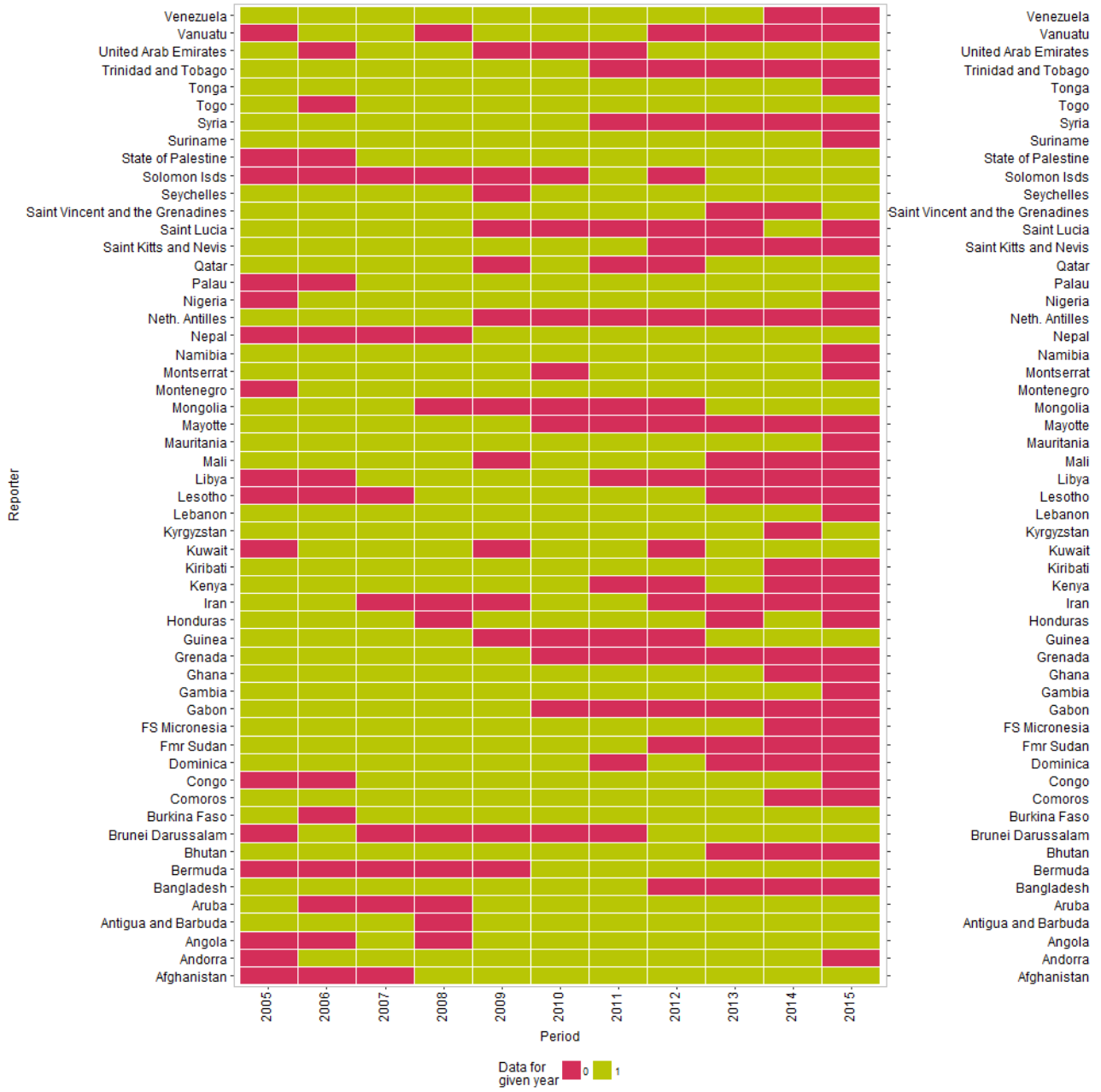
Figure 2 and Figure 6 summarise the data set visually. Figure 2 on page 19 shows the geographic scope of the available date. Figure 6 on the next page shows the data gaps for those countries missing 2016 and at least two further years in greater detail.

[14] The numbers correspond to the last update of our data on 6 April 2017.

[15] Of these 67 countries, 8 report imports worth more than USD 10 billion in the most complete year for COMTRADE data (2007). These are: Nigeria (USD 32 billion; overall 9 out of 12 years reported), Venezuela (USD 31 bn; 9/12), Qatar (USD 23 bn; 9/12), Kuwait (USD 21 bn; 8/12), Bangladesh (USD 17 bn; 7/12), Syria (USD 14 bn; 6/12), Lebanon (USD 12 bn; 10/12), and Angola (USD 10 bn; 8/12).

[16] Percentage of world GDP for given year as retrieved from the World Bank WDI databank on 21-03-2017. GDP figures for 2015 used in the calculation of COMTRADE's coverage for 2016.

Figure 6: Data availability per year for incompletely reporting countries



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Section appendix

A: Accuracy of HS conversion estimates for trade flows above USD 1 million

(a) HS 1992 → HS 1996

Estimator	R^2	Share of observations with a misallocated trade value percentage below …				
		1 %	5 %	10 %	20 %	25 %
HS-pair	0.95	0.14	0.28	0.39	0.58	0.63
HS-pair-importer	0.96	0.17	0.35	0.48	0.64	0.70
HS-pair-exporter	0.97	0.18	0.36	0.49	0.66	0.71

(b) HS 1996 → HS 2002

Estimator	R^2	Share of observations with a misallocated trade value percentage below …				
		1 %	5 %	10 %	20 %	25 %
HS-pair	0.87	0.31	0.41	0.48	0.60	0.65
HS-pair-importer	0.94	0.34	0.48	0.58	0.71	0.76
HS-pair-exporter	0.92	0.33	0.47	0.56	0.69	0.73

(c) HS 2002 → HS 2007

Estimator	R^2	Share of observations with a misallocated trade value percentage below …				
		1 %	5 %	10 %	20 %	25 %
HS-pair	0.50	0.40	0.48	0.52	0.59	0.61
HS-pair-importer	0.51	0.43	0.51	0.56	0.62	0.64
HS-pair-exporter	0.53	0.43	0.51	0.56	0.61	0.63

(d) HS 2007 → HS 2012

Estimator	R^2	Share of observations with a misallocated trade value percentage below …				
		1 %	5 %	10 %	20 %	25 %
HS-pair	0.99	0.19	0.42	0.52	0.70	0.72
HS-pair-importer	1.00	0.36	0.54	0.64	0.75	0.78
HS-pair-exporter	0.99	0.39	0.57	0.67	0.78	0.82

B: R^2 stability across the different HS vintage conversion test sets

(a) HS 1992 → HS 1996

R^2	All trade values			Trade values above USD 1 million		
	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3
HS-pair	0.90	0.88	0.81	0.95	0.89	0.81
HS-pair-importer	0.92	0.88	0.83	0.96	0.89	0.84
HS-pair-exporter	0.91	0.88	0.83	0.97	0.91	0.84

(b) HS 1996 → HS 2002

R^2	All trade values			Trade values above USD 1 million		
	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3
HS-pair	0.86	0.88	0.86	0.87	0.89	0.87
HS-pair-importer	0.94	0.95	0.93	0.94	0.95	0.94
HS-pair-exporter	0.91	0.91	0.90	0.92	0.92	0.91

(c) HS 2002 → HS 2007

R^2	All trade values			Trade values above USD 1 million		
	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3
HS-pair	0.50	0.48	0.50	0.50	0.48	0.50
HS-pair-importer	0.51	0.50	0.51	0.51	0.50	0.51
HS-pair-exporter	0.53	0.50	0.53	0.53	0.50	0.53

(d) HS 2007 → HS 2012

R^2	All trade values			Trade values above USD 1 million		
	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3
HS-pair	0.99	0.99	0.99	0.99	0.99	0.99
HS-pair-importer	0.99	1.00	1.00	1.00	1.00	1.00
HS-pair-exporter	0.99	0.99	0.99	0.99	1.00	0.99

C: Comparison of the converted to the original trade flow values

2005	Total (USD billion)	… of which originally reported in/converted from …				
		HS 1992	HS 1996	HS 2002	HS 2007	HS 2012
Converted value in HS 2012	9'673.87	18.68	188.12	9'467.07	-	-
Observed value	9'584.62	17.83	188.78	9'377.75	-	-
Ratio of converted over observed value	1.01	1.05	1.00	1.01	n/a	n/a
2006	**Total** (USD billion)	**… of which originally reported in/converted from …**				
		HS 1992	HS 1996	HS 2002	HS 2007	HS 2012
Converted value in HS 2012	11'073.71	18.74	172.35	10'882.62	-	-
Observed value	10'992.11	18.10	172.97	10'794.91	-	-
Ratio of converted over observed value	1.01	1.04	1.00	1.01	n/a	n/a
2007	**Total** (USD billion)	**… of which originally reported in/converted from …**				
		HS 1992	HS 1996	HS 2002	HS 2007	HS 2012
Converted value in HS 2012	12'739.14	24.48	142.19	1'419.54	11'152.93	-
Observed value	12'717.76	24.24	142.07	1'420.28	11'154.21	-
Ratio of converted over observed value	1.00	1.01	1.00	1.00	1.00	n/a
2008	**Total** (USD billion)	**… of which originally reported in/converted from …**				
		HS 1992	HS 1996	HS 2002	HS 2007	HS 2012
Converted value in HS 2012	14'751.64	1.19	135.76	891.53	13'723.16	-
Observed value	14'850.89	1.19	136.22	890.50	13'724.81	-
Ratio of converted over observed value	0.99	1.00	1.00	1.00	1.00	n/a
2009	**Total** (USD billion)	**… of which originally reported in/converted from …**				
		HS 1992	HS 1996	HS 2002	HS 2007	HS 2012
Converted value in HS 2012	11'139.12	-	98.39	218.21	10'822.53	-
Observed value	11'043.41	-	99.35	217.65	10'823.83	-
Ratio of converted over observed value	1.01	n/a	0.99	1.00	1.00	n/a

(continued from previous page)

2010	**Total** (USD billion)	**… of which originally reported in/converted from …**				
		HS 1992	HS 1996	HS 2002	HS 2007	HS 2012
Converted value in HS 2012	13'711.76	-	1.95	317.28	13'392.53	-
Observed value	13'712.41	-	1.93	316.60	13'393.89	-
Ratio of converted over observed value	1.00	n/a	0.99	1.00	1.00	n/a
2011	**Total** (USD billion)	**… of which originally reported in/converted from …**				
		HS 1992	HS 1996	HS 2002	HS 2007	HS 2012
Converted value in HS 2012	16'429.86	-	0.58	202.91	16'226.37	-
Observed value	16'430.85	-	0.58	202.56	16'227.70	-
Ratio of converted over observed value	1.00	n/a	1.01	1.00	1.00	n/a
2012	**Total** (USD billion)	**… of which originally reported in/converted from …**				
		HS 1992	HS 1996	HS 2002	HS 2007	HS 2012
Converted value in HS 2012	16'593.99	-	0.34	191.59	1'060.90	15'341.17
Observed value	16'593.73	-	0.33	191.23	1'061.00	15'341.17
Ratio of converted over observed value	1.00	n/a	1.01	1.00	1.00	1.00
2013	**Total** (USD billion)	**… of which originally reported in/converted from …**				
		HS 1992	HS 1996	HS 2002	HS 2007	HS 2012
Converted value in HS 2012	16'981.81	-	0.39	158.74	316.81	16'505.88
Observed value	16'981.74	-	0.39	158.64	316.84	16'505.88
Ratio of converted over observed value	1.00	n/a	1.00	1.00	1.00	1.00
2014	**Total** (USD billion)	**… of which originally reported in/converted from …**				
		HS 1992	HS 1996	HS 2002	HS 2007	HS 2012
Converted value in HS 2012	17'004.55	-	0.31	144.05	105.19	16'755.00
Observed value	17'004.43	-	0.31	143.91	105.22	16'755.00
Ratio of converted over observed value	1.00	n/a	1.00	1.00	1.00	1.00

(continued from previous page)

2015	Total (USD billion)	… of which originally reported in/converted from …				
		HS 1992	HS 1996	HS 2002	HS 2007	HS 2012
Converted value in HS 2012	14'670.19	-	-	70.75	22.34	14'577.09
Observed value	14'670.09	-	-	70.66	22.34	14'577.09
Ratio of converted over observed value	1.00	n/a	n/a	1.00	1.00	1.00

7 Migration data

To identify the potentially affected countries from migration-related state acts, we collected official migration statistics where available. The section below describes the choices made and the method applied to balancing the panel. Figure 9 on page 35 depicts the geographical scope of the dataset. The detailed sources can be found on page 36.

7.1 Sources and scope

The GTA migration dataset is based on official bilateral migration statistics from 58 countries.[17] We use data on migration inflows i.e. new immigrants rather than the total resident immigrant population. We collect data for the years 2007 to 2016, where possible.

The data availability for those 58 countries fluctuates from sample year to sample year. In sum, we collect more than 43'000 observations by country-pair and year. The destination countries in the collected statistics account for up to 87 percent of world GDP for the most completely reported year in our sample (2014, see Table 2).

Only a fraction of the countries with bilateral migration data provide details for commercial migration such as work visas. To allow for an apple-to-apples comparison, we decided to include total migration, rather than business-related migration, for the countries in our dataset.[18]

There are countries for which multiple sources provide migration statistics. For instance, European migration statistics are provided by Eurostat, the OECD as well as national statistics offices. Where available, we prefer national information. Where both Eurostat and OECD data was available, we chose the OECD data due to the statistical definition used in that data.[19]

Finally, we exclude origins below a threshold level of migration from the dataset. The GTA migration threshold is set at 100 migrations in a country-pair for a given year. Introducing this threshold leaves close to 18'000 observations and thus cuts close 60 percent of the original observations (see Figure 7).

7.2 Balancing the panel

Balancing the dataset has two components: (1) filling in the missing pieces of a reporter's data and (2) extrapolating into 2015 and 2016. We use a common procedure for both.

The objective of balancing the dataset is to infer what countries had migrant flows above the GTA migration threshold in the unobserved years. This objective is different from estimating the exact value of the unobserved migration flows. Rather than a specific numeric forecast, we seek to classify the potential migrant origins into countries above and below the GTA migration threshold.

We will only balance the panel for those destination countries which report migration statistics for at least three years between 2007 and 2016. For these countries, we seek to establish the likelihood that a migration

[17] The data is annual and for the sample period from 2007 to 2016. See section appendix A from page 14 for a detailed account of the sources.

[18] The only exception to this rule are the Philippines as we could only locate commercial migration statistics for this country.

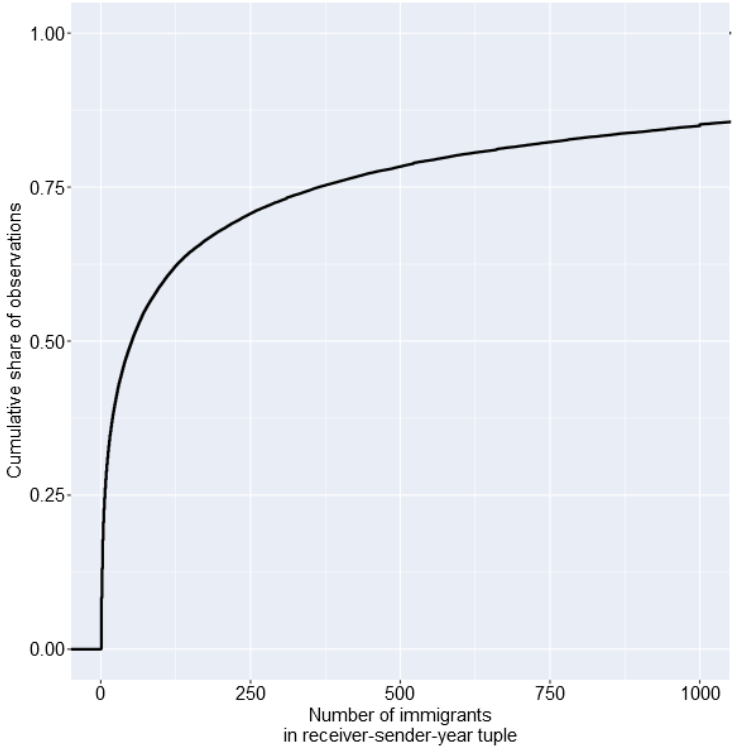
[19] The OECD classifies the migration origin as the last country of residency. The Eurostat classification is based on the country of citizenship.

origin included in the observed statistics would be above the GTA migration threshold in the unobserved years.[20]

Framing this as a classification problem implies that we want to minimise type 1 ("false positive") and type 2 ("false negatives") errors. Since there is no discernible time trend that could be exploited, we rely on a simple conditional likelihood. Figure 8 depicts the likelihood of a type 1 and a type 2 error conditional on the observed migration flow. For example, for the statement "We observe 100 migrants from origin X in year Y, therefore we infer that there were also 100 or more migrants from that origin in the year Z." the risk of a type 1 error is around 80 percent. Put differently, 80 percent of country-pair observations in our dataset that had an observed value of 100 in one year of the dataset also had at least one year with a value below 100 in our dataset. By contrast, only 5 percent of the country-pair observations with one value of 500 migrants also included at least one observation below 100.

We choose to tolerate a type-1-error risk of 10 percent. That is, we assume that a country pair with at least one observed value above 400 also has a value above the GTA migration threshold in unobserved years. Put differently, in unobserved years we only include origin countries which have sent 400 or more migrants at least once according to the official immigration statistics of the destination country.

Figure 7: Distribution of observed migration flow size



[20] This procedure assumes that there are no new origin countries in the unobserved years. Furthermore, we ignore all potential time trends in the data. Arguably, both assumptions bias the number of affected countries for migration measures downward.

Figure 8: Likelihood of at least one observation on both sides of the GTA migration threshold

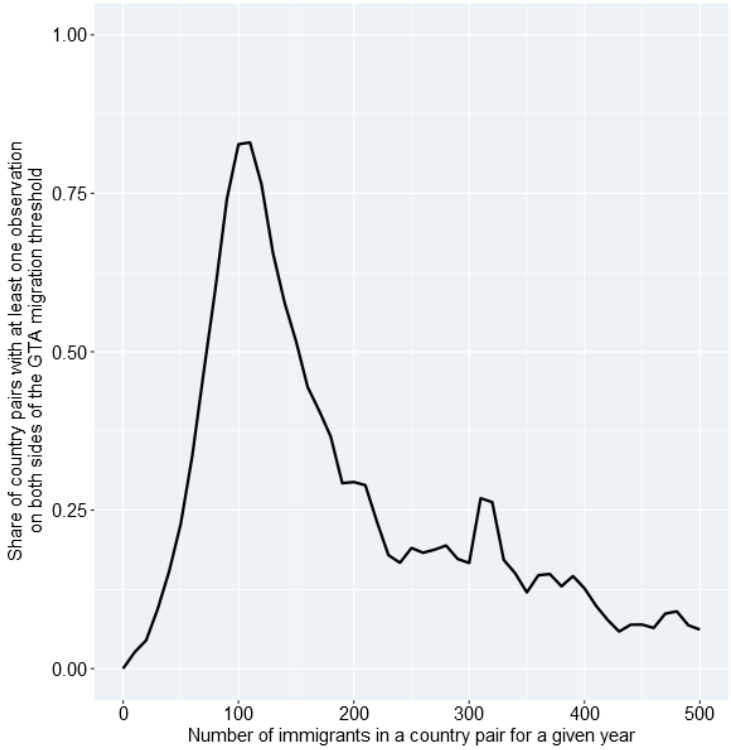


Table 2: Percentage of 2015 world GDP accounted for by countries with migration data[21]

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Official statistics	61%	72%	68%	75%	83%	83%	85%	87%	17%	0%
+ GTA estimates	68%	74%	70%	76%	84%	85%	87%	90%	86%	86%

[21] Percentage of 2015 world GDP as retrieved from the World Bank WDI databank on 06 April 2017.

Figure 9: Geographical scope of the migration statistics

Section appendix

A: Sources for the migration statistics

Country	Source[22]
Argentina	Dirección Nacional de Migraciones, http://www.migraciones.gov.ar/accesible/indexP.php?estadisticas, 16-03-2018
Australia, Canada, New Zealand	OECD, International Migration Database, https://stats.oecd.org/Index.aspx?DataSetCode=MIG, 11-03-2018; UN ESA, http://www.un.org/en/development/desa/population/migration/data/empirical2/migrationflows.shtml, 11-03-2018
Austria, Czech Republic, Denmark, Finland, Germany, Greece, Hungary, Iceland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Turkey, United Kingdom	OECD, International Migration Database, https://stats.oecd.org/Index.aspx?DataSetCode=MIG, 11-03-2018; Eurostat, http://ec.europa.eu/eurostat/data/database (migr_imm1ctz), 18-03-2018
Azerbaijan, Armenia, Kazakhstan, Rep. of Moldova	UN ESA, http://www.un.org/en/development/desa/population/migration/data/empirical2/migrationflows.shtml, 11-03-2018
Belarus, Cyprus	Eurostat, http://ec.europa.eu/eurostat/data/database (migr_imm1ctz), 18-03-2018; UN ESA, http://www.un.org/en/development/desa/population/migration/data/empirical2/migrationflows.shtml, 11-03-2018
Belgium, Ireland, Slovenia, Switzerland	Eurostat, http://ec.europa.eu/eurostat/data/database (migr_imm1ctz), 18-03-2018; OECD, International Migration Database, https://stats.oecd.org/Index.aspx?DataSetCode=MIG, 11-03-2018
Bosnia Herzegovina, Bulgaria, Croatia, Kyrgyzstan, Liechtenstein, Lithuania, Malta, Montenegro, Romania, TFYR of Macedonia	Eurostat, http://ec.europa.eu/eurostat/data/database (migr_imm1ctz), 18-03-2018
Chile, France, Israel, Japan, Rep. of Korea, Latvia, Mexico, USA	OECD, International Migration Database, https://stats.oecd.org/Index.aspx?DataSetCode=MIG, 11-03-2018

[22] Source format: Issuing authority, URL, retrieval date (DD-MM-YYYY).

Country	Source[22]
China	National Tourist Administration, http://www.cnta.gov.cn/zwgk/lysj/201506/t20150610_18446.shtml, 14-02-2017.; National Tourist Administration, http://www.cnta.gov.cn/zwgk/lysj/201506/t20150610_18529.shtml, 14-02-2017.; National Tourist Administration, http://www.cnta.gov.cn/zwgk/lysj/201506/t20150610_18628.shtml, 14-02-2017.; National Tourist Administration, http://www.cnta.gov.cn/zwgk/lysj/201506/t20150610_18704.shtml, 14-02-2017.; National Tourist Administration, http://www.cnta.gov.cn/zwgk/lysj/201506/t20150610_18785.shtml, 14-02-2017.; National Tourist Administration, http://www.cnta.gov.cn/zwgk/lysj/201506/t20150610_18821.shtml, 14-02-2017.; National Tourist Administration, http://www.cnta.gov.cn/zwgk/lysj/201506/t20150610_18859.shtml, 14-02-2017.; National Tourist Administration, http://www.cnta.gov.cn/zwgk/lysj/201601/t20160118_758408.shtml, 14-02-2017.
Estonia	Eurostat, http://ec.europa.eu/eurostat/data/database (migr_imm1ctz), 18-03-2018; OECD, International Migration Database, https://stats.oecd.org/Index.aspx?DataSetCode=MIG, 11-03-2018; UN ESA, http://www.un.org/en/development/desa/population/migration/data/empirical2/migrationflows.shtml, 11-03-2018
India	Indian Ministry of Home Affairs, Issuance of VISA to Various Foreign Nationals against Various Categories of VISAs, https://data.gov.in/catalog/issuance-visa-various-foreign-nationals-against-various-categories-visas, 10-03-2018
Indonesia	BPS, https://www.bps.go.id/website/pdf_publikasi, Statistik Mobilitas Penduduk dan Tenaga Kerja, 22-03-2018
Russian Federation	Eurostat, http://ec.europa.eu/eurostat/data/database (migr_imm1ctz), 18-03-2018; Russian Statistics Agency, http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1140096034906, Vintage: 18-03-2018
South Africa	Statistics South Africa, http://www.statssa.gov.za/publications/D03514/D035142011.pdf , 14-02-2017; Statistics South Africa, http://www.statssa.gov.za/publications/P03514/P035142012.pdf , 14-02-2018; Statistics South Africa, http://beta2.statssa.gov.za/publications/D03514/D035142013.pdf, 14-02-2019; Statistics South Africa, http://www.statssa.gov.za/publications/P03514/P035142014.pdf , 14-02-2020; Statistics South Africa, http://www.statssa.gov.za/publications/P03514/P035142015.pdf, 18-03-18