Public Procurement-Related Protection: Insights form the *Global Trade Alert* Database *

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Abstract

Although representing a big chunk of GDP in many countries, little is known on how public procurement policies affect international trade in goods and services. Part of the difficulty is indeed data availability. The novelty of this paper is to rely on a recently developed database within the PRONTO consortium and to extend the analysis to public subsidies. It maps a treatment of the Global Trade Alert (GTA) database focusing on obstacles to public procurement policies and on public subsidies with the matrix of world trade flows at the bilateral and product level (BACI). Considering the 2009-15 period, we show that the most active restrictive policies are enforced in large markets, that the most successful exporters are targeted by these policies, and finally that these policies significantly deflect sales of targeted exporters for the targeted goods in imposing countries.

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1 Introduction

Public procurement amounts to 14 percent of EU GDP and 10 percent in the US, excluding utilities (Cernat & Kutlina-Dimitrova 2015). Despite this quantitative importance, little is known on how public procurement policies affect international trade in goods and services beyond the anectodical evidence that governments are inclined to support their national champions and use public purchases to that purpose. Part of the difficulty is data availability: policies are not transparent, rules are complex, and decision levels multiple. Against this background, the current paper proposes a treatment of the Global Trade Alert (GTA) database (Evenett & Fritz 2017) focusing on obstacles to public procurement policies.

Information on protectionist practices in relation with public procurement are scarce for several reasons. Firstly, public procurement does not fall under multilateral disciplines at the WTO; the agreement on public procurement is only a plurilateral[1], grouping mostly industrialized countries.[2]

Another difficulty is that public procurement takes place at different levels, national, subnational or even local, and therefore is hardly documented. When data is collected, openness to competition of public procurement is subject to complex thresholds depending on the nature of the good or service and on the authority purchasing it.

Finally, there is a multiplicity of measures and regulations related to public procurement to be documented. Against this background, international institutions are currently developing a typology of Non-Tariff Measures (hereafter NTMs) associated with public procurement policies. The third version of the MAST adopted in 2012[3] classification of NTMs has a chapter on public procurement.[4] The OECD has finally proposed in September 2016 a refinement of the MAST classification, distinguishing 10 categories of measures related to public procurement: M1 (market access), M2 (domestic price preferences), M3 (local content requirement), M4 (collateral restrictions), M5

[1]The first plurilateral agreement on Goverment Procurement Agreement was signed in 1979 and entered into force two years later. The second was signed at the completion of the Uruguay Round. It was then further renegotiated until 2011, and the current version entered into force in 2014. The first part of this agreement sets "rules requiring that open, fair and transparent conditions of competition be ensured in government procurement" and the second comprises the commitments made by signatory countries. Importantly, only a subset of procurement activities are covered by the rules, and this subset is subject to commitment by the signatory members. Limitations concern goods or services, as well as thresholds in terms of value. See $https://www.wto.org/english/docs_e/legal_e/gpr-94_e.pdf$

[2]Armenia, Aruba, Canada, EU28, Hong Kong, Iceland, Israel, Japan, Korea, Liechtenstein, Moldova, Montenegro, New Zealand, Norway, Singapore, Switzerland, Taipei, Ukraine, United States.

[3]Multi Agency Support Team grouping Food and Agriculture Organization, International Monetary Fund, International Trade Center Geneva, OECD, United Nations Industrial Development Organization, World Bank, and World Trade Organization.

[4]The MAST classification distinguishes technical measures on imports (e.g. sanitary and phytosanitary), non-technical measures on imports and export-related measures. The second category – non-technical measures – comprises two categories interesting for us: subsidies excluding export subsidies ("L"), and government procurement restrictions ("M"). The WTO has also compiled information for 47 member countries of the plurilateral agreement on public procurement.

(conduct of procurement methods), M6 (qualification criteria), M7 (evaluation criteria), M8 (complaint mechanisms), M9 (transparency and information), M10 (effectiveness of ethics and anti-corruption systems).[5]

The collection of data on unilateral changes in public policies hurting commercial interests of other countries was launched in June 2009 in order to track *new* trade policies. The Global Trade Alert initiative (GTA) was launched in June 2009 in response to the fear that the global financial crisis would lead governments to adopt widespread protectionist policies. Although initially designed to monitor trade policy initiatives, as policy announcements grew in number, the GTA database has become large enough to allow for systematic analyzes of trade policies. This database is of particular interest to us.

In the GTA, 4 types of measures related to public procurement are recorded, in relation to access, localisation, preference margin, and others. State aids can also impact public procurement and will be considered accordingly here. Finally, the database we could use was coded according to the new MAST classification, such that public procurement access falls under the "M1" category, preference margin under "M2", localisation under "M3" and other measures under "M5". Interestingly, measures affecting trade in goods and services, as well as investment and migration are considered. Although the vast majority of records point to protectionist measures, in principle records compile measures that can affect positively or negatively commercial interests of foreign companies. Our recollection being however that even measures presented as favouring trade are actually hindering it, we finally disregarded these entries.

We are not the first to investigate the impact of government procurement policies on trade flows. There is a quite established strand of literature aiming at providing an indirect evidence on the restrictiveness of public procurement policies, based on systematic deviation of observed trade flows from a benchmark and making use of input output tables and gravity. Trionfetti (2000) uses input-output tables and compares import-shares of private and public spending to illustrate the stronger home bias of public procurement. Such assessment of the home bias in public procurement is refined by Riker (2013), comparing the imported value added in private and public consumption, making use of WIOD data. Interestingly however, such home bias is lower in value added terms, as foreign producers have indirect access to public markets through their downstream local clients providing goods and services to the governments. Building on the border effects literature à la McCallum (1995) Crozet & Trionfetti (2002) rely on the observed impact

[5] See OECD (2017).

of the share of public spending in sectoral demand and show that it reinforces trade deflection. This is confirmed by the recently collected WIOD data: Mulabdic & Rotunno (2017) show that public procurement is twice as home-biased as private purchases and show that accession to the EU has a magnified impact on public procurement imports, as compared to transactions involving private parties only. Shingal (2015) identifies determinants of discrimination n public procurement relying on a sector-level dataset on domestic and foreign purchases by Japanese and Swiss governments over 1990–2003. Kutlina-Dimitrova & Lakatos (2016) use data published on Tenders Electronic Daily covering public procurement contract award notices and isolates the determinants of the probability of cross-border provision within the EU with a multivariate logit model. *Inter alie*, it is shown that local governments have the lowest probability to award cross-border contracts. Reciprocally, the trade impact of liberalizing public procurement has also been investigated using a gravity framework (Chen & Whalley 2017), concluding that membership of the GPA (the plurilateral agreement of the WTO) led to a significant positive impact on trade between parties.

An important issue is the impact of price preferences, granting a preferential margin to local providers – practice falling under the M2 entry of the MAST classification. Accordingly, the bid of a foreign company can be considered only if it falls under a certain percentage of the price of the local firm. Such policy has the flavour of a tariff but might have different impacts, at least because the absence of tariff revenue induced by price preferences and also because a price preference distorts only public purchases while private consumers escape this protection of the domestic market (Evenett & Hoekman 2005). The conditions of equivalence are addressed theoretically by Cole et al. (2017). More generally, public procurement practices are more appealing than tariffs to governments aiming to protect their domestic producers. Tariffs are consolidated, while the potential for regulatory innovation is large in terms of government procurement. This reinforces the case for using data on newly introduced measures – as reported in the GTA – and addressing their impact on trade.

2 Data and Descriptive Statistics

2.1 Construction of the dataset

This paper starts by combining information in the GTA with trade data at the most disaggregated level (Harmonized system 6-digit, hereafter HS6). The overall GTA database

covers information for 9613 different decisions on 5206 products from 2008-2017. These decisions are classified according to the MAST classification into 29 categories. We combine this information with a reconciled matrix of world trade at the HS6 level – BACI (Gaulier & Zignago 2010). Among all reported non-tariff measures documented in the GTA, we solely consider those concerning Public Procurement and State Subsidy. For each decision (measure) implemented by an importing country (the implementing jurisdiction) there is information on the targeted exporting country, affected products (in HS6 classification) and duration (period where these measures were in force). Based on information about the year of the implementation and the duration of each measure, we split grouped data so that each observation contains information at the origin-destination-measure-year-HS6 product level.

Each measure is attributed a color in the GTA database, taking three modalities (red, amber and green) depending on the expected effect that it might have on trade. Most of measures are amber and red. As green flags represent a tiny fraction of documented measures (35 green measures implemented by the US), they are dropped from the final database and the color dimension is finally not considered in our analysis.[6]

The selected sample of measures contains information on 34 importers (destination), 178 affected exporters (origin), 3385 affected HS6 product categories and 549 decisions. In total, there are 502,564 quadruplets importer-exporter-measure-HS6: this is the total number of combinations affected at least in a given year over the period. We assume that if a measure appears at least once, but not through the whole period, its absence for an exporter-importer-year-HS6 means that it has not been enforced in that year. In other words, zeros have to be tackled as they contain information. Therefore, *for measures that appear at least once for an exporter-importer-HS6*, we fill-in the database with the relevant zeros.[7] For instance, if the USA as an importing country j implement a measure m for an HS6 product category k exported by Brazil (exporting country i) in 2010, 2011 and 2012, we add zeros for the (i, j, k, m) for the years where the measure m is not reported, respectively 2009, 2013, 2014, 2015. This extends the database resulting in a total number of observations (i, j, k, m, t) equal to 3,517,948 (502,564 x 7) among which there are 2,125,347 observations for which a measure is *not* in force and 1,392,601 are subject of a measure in force.

The next step is to merge this information on public procurement and subsidies with trade data having the same dimension (i, j, k, m, t). To proceed, we rely on the BACI

[6] We observed in non reported regressions that even the measures flagged green were hampering trade.

[7] Since we add zeros for all years when the combination exporter-importer-year-HS6 is absent, i.e. when the measure was not in force, this procedure balances the panel.

database. This matrix of world trade contains information on reconciled trade flows for 223 exporters, 223 importers and 5047 product categories (HS6 classification) for the period 2008-2015. The product classification used in BACI it the 2007 version of the HS6, whereas products in GTA are expressed in the 2012 version of the HS6. Based on a correspondence table which contains information on the allocation of each HS6-2007 to be converted in HS6-2012, we express all products of BACI in the HS6-2012 classification without losing any trade flows.

Two final decisions have to be made regarding the dimension of the panel i) since there are few observations in terms of measures for 2008 (this is the year of the launch of the GTA initiative) we disregard 2008; ii) since there is no information after 2015 in we disregard 2016-17. Accordingly, our database is restricted to the period 2009-2015. As showed above, there is a significant difference between the number of importing countries that appear in BACI and those that appear in the GTA database: in the final database we only keep importers that appear at least once in the GTA database, meaning that these importers impose at least one mesure on public procurement, or provide a public subsidy, over the period.

Concerning the number of exporters to be taken on board, we must restrict the sample of origin countries of a given product to the relevant exporters: not all zeros are meaningful. Exporters present in our database are all countries that have exported at least once over the period an HS6 product subject to at least a measure imposed at least by one destination country. So, if the USA implement a measure on an imported HS6 exported by Brazil in 2010 and Brazil has never implemented a measure on that HS6 on its own imports, then Brazil appears in the final database not as an importer of that product category (because Brazil never implemented a measure on that HS6) but just as an exporter of that product for the whole period, even if the measure was in force only in 2010 in the USA.

The final database has a total number of observations equal to 4,568,574, among which 30% (1,350,983 observations) correspond to a measure in force and positive trade flows. One percent of observations correspond to a measure in force with no trade flow at all (41,576 observations). We finally record more than two-third of observations without any measure in force but with positive trade flows (3,108,015 observations).

2.2 Descriptive Statistics

In the final database, the total number of exporters and importers is that of GTA, respectively 34 importers: 29 countries have implemented state subsidy measures (rather systematically state loans: 97.6%) and 16 countries have implemented public procurement measures (table 1). Nevertheless, as shown in table 2, the majority of measures have been imposed on public procurement (62.5%), among which the vast majority (89.2%) imposed the criterion of "Public Procurement Localization".

As shown in table 3, the average number of measures faced by each affected exporter throughout the period is 131. On average, each importer (recorded as imposing at least one measure over the period) imposes 16 measures. Among 3385 products affected by public procurement/subsidies measures present in the database, each is subject to 20 measures on average. Lastly, 240 measures are enforced each year, although not all indeed are new measures.

On average, within our sample of affected exporters and products, each exporter-product pair has been subject to 15 measures, whereas each importer has implemented on average 9 measures on a product, considering the whole period. The occurence of measures (table 4) is quite uneven during the period. We observe a continuous increase in the number of measures in force between 2009 and 2015 (from 84 to 399), as a result of the 3-year mean duration of measures; 18% of the measures are present only 2 years and 17% only 1 year (table 5). On average each importer is present with at least a measure during 4 years, whereas each exporter is subject of at least a measure for 6 years (table 6).

The number of new measures is more stable, although with a lower bound in 2010 and 2011. The highest number of new measures has been implemented in 2014 (98 new measures). Taking into account also years when importers have not implemented measures, each importer has implemented 7 measures each year and each exporter has been subject to 52 measures each year. As destination markets, USA and Saudi Arabia impose the highest number of measures each year, followed by Brazil. Interestingly, USA was imposing 70% of the measures present in the database in 2009, a proportion reduced to 40% in 2015. Notwithstanding such "diversification" of imposing countries, the data suggests that restrictive public procurement policies are actively used in the US, somehow confirming previous findings that this country maintains very active "Buy national" programs (Weiss & Thurbon 2006). Finally, each triplet importer-exporter-product has been subject of 4.3 measures and there are 6.4 measures on average implemented by an

importer to a certain exporter each year. These statistics suggest that there is a continuous flow of new restrictions, meaning that discriminatory public procurement policies are frequent. However, to better assess the extent of such distortions in competition, we must count the number of products affected, and compute trade affectedness.

Concerning the number of affected products, each measure impacts on average 123 HS6 product categories, meaning that the actual impact of the restrictions is potentially high. In terms of affectedness (i.e. the proportion of affected flows), we firstly count the affected flows in table 7: 2% of flows per importer are affected by at least a measure each year (with a maximum of 22% of the flows). The same proportion is found on the exporting side. At the HS2 chapter level, 6% of the flows at the importer-exporter-year-industry level are affected by a measure. Another metric is worth considering: at the industry (HS2) level, 12% of the flows of imposing countries are affected by measures, which gives an insight into the extent of the distortions.

Indeed, these descriptive statistics computed in terms of affectedness do not tell us how much trade is restricted by the imposition of public procurement or subsidies. To proceed, we must turn to an econometric approach.

3 Econometric Approach and Results

We now want to measure to what extent the presence of a measure (public procurement or subsidy) imposed at destination on a given category of product deflects trade between origin and destination for the considered product and year. Indeed, the information we rely on is rather crude, as we only observe whether a measure is in place or not, and not what is the exact nature of the measure enforced.

3.1 Estimation Strategy

Our estimation sample has a total number of 3,864,165 observations. Each observation is defined at the exporter (i)– importer (j) – product (k) – year (t) and measure (m) level. The main interest of the estimations lies in investigating the impact of a decision on the probability of exporting and the value of trade flows conditional on exporting.

Our first estimated equation is about the probability of exporting, meaning the extensive margin of trade. We run the following linear probability model:

$$E_{ijkh} = \alpha Measure_{ijkh} + \mathbf{FE} + \varepsilon_{ijkh} \tag{1}$$

The dependent variable E is a dummy equal to 1 if a positive trade flow between an importer-exporter for a product k in year t is observed. $Measure$, our variable of interest, is a dummy equal to 1 if an observation is subject to a measure implemented by the importing jurisdiction (destination country). Alternatively, we count the number of measures imposed. FE is a set of fixed effects depending on the specification and ε is the error term. The parameter of interest which captures the effect of a measure on state subsidy and public procurement decisions is α. The final database includes cases of zero trade flows or positive ones when there is a measure and *vice versa*, leading to an "almost" squared matrix.

We chose to control for all unobservable characteristics of exporters, importers and products, as well as importer-exporter pairs characteristics, using fixed effects. Indeed an naive estimation without fixed effects would lead to spurious estimates, whereby large trade flows are associated with the presence of public procurement measures. This approach is in line with a theory-consistent specification of a gravity equation (Anderson & Van Wincoop 2003). The important decision to be made is accordingly about the structure of fixed effects and thus the dimension in which the trade impact of the measure is identified. We present systematically 5 different estimation strategies:

- Column 1 in each table presents results with only exporter-product-year fixed effects. Here, identification of the effect of the decision solely comes from the variation across importers, imposing or not a measure.
- Column 2 in each table replicates the estimation but includes importer-product-year fixed effects. The identification relies on variations across exporters, affected or not.
- Column 3 uses importer-exporter-year fixed effects, and then the identification is across products, affected or not.
- Column 4 uses importer-exporter-product fixed effects, and the identification comes from the variation across time in the imposition of measures.
- Finally column 5 relies on the full set of fixed effects.

Concerning the intensive margin of trade, we estimate the following equation explaining the logarithm of the value of trade:

$$X_{ijkt} = \beta Measure_{ijkt} + \mathbf{FE} + \varepsilon_{ijkt} \tag{2}$$

Where X denotes trade flows in value between exporter i and importer j for product k in year t, conditional on exporting (we consider the logarithm of the dollar value of bilateral trade flows at product level). $Measure$, the variable of interest, is a dummy equal to 1 if an observation is subject to a measure implemented by the importing jurisdiction (destination country). FE is a set of fixed effects depending on the specification and ε is the error term. The parameter of interest which captures the effect of a measure on state subsidy and public procurement decisions is β.

The structure of fixed effects is identical as for the extensive margin of trade.

3.2 Impact on Public Procurement Restrictions on the Extensive Margin of Trade

Results presented in table 8 show that the *occurrence* of a measure impacts negatively the probability of trading between two countries in a certain year for a specific product. This result is robust whatever the identification strategy is used. The exception is when we do not control for years in column 4. Indeed, this specification does not control for all possible variations that interferes with trade, other than measures.

In table 9 we estimate the effect of *number* of measures on the probability to trade. These results are interesting because they suggest that the intensity of the distortions is positively related with the presence of trade within country pairs for a given product. This can be interpreted as the evidence of very active policies targeting actual imports of products imposed by importing countries. This is only when the full set of fixed effects is introduced in column 5 that the expected negative impact on the probability of trading a given product within a country pair in a certain year becomes negative. Such econometric outcome is suggesting that the impact of public procurement measures on the intensity of trade, conditional on exporting, will be difficult to identify in absence of a full set of fixed effects.

3.3 Impact on Public Procurement Restrictions on the Intensive Margin of Trade

Results of the intensive margin estimations are shown in table 10. Column 1 includes exporter-product-year fixed effects. The estimated positive effect coefficient confirms that public procurement measures are imposed by large importers. This result is indeed driven by the active policy of the US, as suggested by our descriptive statistics above.

Column 2 replicates the estimation now including importer-product-year fixed effects and exporter dummies. The positive coefficient on the measure dummy confirms that restrictive policies are targeting large exporters for each product.

In column 3, the positive impact of the presence of measure shows that public restrictive procurement measures are targeting successful products.

The positive correlation between of measures and trade is also present when the triplet exporter-product-importer is fixed and identification is across years, confirming that large trade flows and restrictive public procurement measures occur simultaneously.

By controlling for all variations simultaneously in the last column (fixing simultaneously quadruplets importer-exporter-product-year), we are confident that this structure in theory-consistent and allows circumventing many simultaneity bias. Once this demanding structure is applied to data, we estimate a negative coefficient. It confirms that public procurement measures on average have a trade-dampening effect.

As for the extensive margin, we now are interested in studying the impact of the number of measures on the value of trade flows, here conditional on exporting. The parameter of interest α shows the impact of number of measures on trade flows for each quadruplet importer-exporter-product-year. Results are reported in 11. Now the difference is that the simultaneity bias cannot be fully controlled by the more demanding structure of fixed effects.

Finally, we ask whether there is a different outcome for "L type" and "M type" measures. In table 12, we separate the sample into two sub-samples, identifying separately the impact of public procurement measures from that of state subsidy measures. The negative impact of a measure at the intensive margin seems to be driven by the state subsidy measures. One possible interpretation is that state subsidies to a producer for a product are driving public purchases, even in absence of public procurement measures, due for instance to hidden practices. Another interpretation would be that certain categories of products combine the two types of measures. We leave the choice between these two interpretations for future research.

4 Conclusion

Although it represents a big chunk of GDP in many countries, little is known on how public procurement practises affect international trade in goods and services. Part of the difficulty is data availability. In this paper we relied on the recently developed database within the PRONTO consortium and extended the usual analysis of public procurement policies to public subsidies. We merged the relevant information provided by Global Trade Alert database with BACI – the matrix of world trade flows at the bilateral and product level. An important econometric issue is to rely on a theoretical consistent trade equation, distinguishing the probability of exporting (the extensive margin) from the value exported (intensive margin) while avoiding simultaneity bias. Adopting a complex structure of fixed effects, and considering the 2009-15 period, we showed that the most active restrictive policies are enforced in large markets, that the most successful exporters are targeted by these policies, and finally that these policies significantly deflect sales of targeted exporters for the targeted goods in imposing countries. These results confirm the need of a more systematic collection of information on public procurement and public subsidies policies at the international level.

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5 Tables

Table 1: General Descriptive statistics (2009-2015)

	.	L	M
MAST code	All measures	Subsidies	Public Procurement
Nb of imposing exporters	178	132	173
Nb of affected importers	34	29	16
Nb of concerned HS6 product categories	3385	2149	2852
Nb of measures	549	206	343

Table 2: Number of measures per sub-chapter (2009-2015)

Sub-chapter	Number of measures
State loan	201
State aid, nes	5
Public procurement access	12
Public procurement localisation	306
Public procurement preference margin	25

Table 3: Descriptive Statistics (2009-2015)

	Obs	Mean	Sd	Min	Max
Measures per exporter (i)	178	131.5337	152.35	1	458
Measures per importer (j)	34	16.26	48.95	1	268
Measures per product (k)	3385	20.04	62.71	1	256
Measures per year (t)	7	240.14	110.49	84	399
Measures per exp-pduct (ik)	32080	15.65	51.45	1	256
Measures per imp-pduct (jk)	7219	9.4	43.25	1	245
Measures per exp-year (it)	1246	52.9	66.7	0	308
Measures per imp-year (jt)	238	7.1	22.5	0	129
Measures per pduct-year (kt)	23695	8	24.45	0	118
Measures per exp-imp (ij)	1477	15.9	51.65	1	268
Measures per exp-imp-pduct (ijk)	46344	10.8	43.0	1	245
Measures per exp-imp-year (ijt)	10339	6.4	20.97	0	129
Measures per exp-pduct-year (ikt)	224560	6.2	20.68	0	118
Measures per imp-pduct-year (jkt)	50533	3.8	16.9	0	110
Per exp-imp-pduct-year (ijkt)	324408	4.3	17.28	0	110
Number of products per measure	549	123.56	122.6	1	680
Duration of a measure	549	3.0	1.6	1	7

Table 4: Number of measures per year (2009-2015)

Year	Number of measures in force	Number of new measures
2009	84	84
2010	138	55
2011	203	66
2012	237	78
2013	278	76
2014	342	98
2015	399	92
Total	549	549

Table 5: Duration of measures (2009-2015)

Duration (nb of years)	Nb of measures
1	95
2	100
3	217
4	45
5	33
6	23
7	36
Total	549

Table 6: Years with measures (2009-2015)

	Obs	Mean	Sd	Min	Max
Number of years with a measure per importer	34	4.7	2.24	1	7
Number of years with a measure per exporter	178	6.5	1.14	1	7

Table 7: Affected Flows (2009-2015)

	Obs	Mean	Sd	Min	Max
Affected flows per imp-year (jt)	238	0.02	0.041	0	0.22
Affected flows exp-year (it)	1448	0.02	0.045	0	0.39
Affected flows exp-imp (ij)	1477	15.9	51.65	1	268
Affected flows imp-year-HS2 (jtk)	2338	0.12	0.16	0	0.57
Affected flows exp-year-HS2 (itk)	55515	0.02	0.06	0	1
Affected flows imp-exp-year (ijt)	20621	0.02	0.07	0	1
Affected flows imp-exp-year-HS2 (ijkt)	128224	0.06	0.15	0	1

Table 8: Baseline Estimation - Extensive Margin

Dependent variable	Trade dummy				
	(1)	(2)	(3)	(4)	(5)
Measure dummy	-.0019	-.00477	-.0090	.0031621	-.0000222
	(.00004)	(.00015)	(.00015)	(.00012)	(.00002)
Exporter-product-year FE	x				x
Importer-product-year FE		x			x
Exporter-importer-year FE			x		x
Exporter-importer-product FE				x	x
Observations	3,864,165	3,864,165	3,864,165	3,864,165	3,864,165
R^2	0.9502	0.1270	0.1117	0.5122	0.9798

Table 9: Extensive Margin

Dependent variable	Trade dummy				
	(1)	(2)	(3)	(4)	(5)
Number of measures	.0000788	.0001605	.0006512	.0015221	-.0001618
	(2.29e-06)	(2.52e-06)	(2.26e-06)	(2.77e-06)	(7.20e-06)
Exporter-product-year FE	x				x
Importer-product-year FE		x			x
Exporter-importer-year FE			x		x
Exporter-importer-product FE				x	x
Observations	3,864,165	3,864,165	3,864,165	3,864,165	
R^2	0.9502	0.5126	0.1270	0.1814	0.9798

Table 10: Baseline Estimation - Intensive Margin

Dependent variable	Log Trade flows				
	(1)	(2)	(3)	(4)	(5)
Measure dummy	.2566	.8063	.8298	.1183	-.0005
	(.0010)	(.0022)	(.00238)	(.00106)	(.00043)
Exporter-product-year FE	x				x
Importer-product-year FE		x			x
Exporter-importer-year FE			x		x
Exporter-importer-product FE				x	x
Observations	3,864,165	3,864,165	3,864,165	3,864,165	3,864,165
R^2	0.8792	0.4900	0.4281	0.8921	0.9814

Table 11: Baseline Estimation - Intensive Margin

Dependent variable	Log Trade flows				
	(1)	(2)	(3)	(4)	(5)
Number of measures	.0259	.0085	.0350	.0360	.0016
	(.00005)	(.00002)	(.00003)	(.00003)	(.00011)
Exporter-product-year FE	x				x
Importer-product-year FE		x			x
Exporter-importer-year FE			x		x
Exporter-importer-product FE				x	x
Observations	3,864,165	3,864,165	3,864,165	3,864,165	3,864,165
R^2	0.8844	0.8959	0.5458	0.5576	0.9814

Table 12: Intensive Margin

Dependent variable	Trade flows							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Measure	.0086	.1207	.0527	-.0000	-.0300	.0400	.0098	-.0029
	(.00031)	(.00098)	(.00202)	(.00009)	(.0155)	(.00618)	(.02181)	(.00988)
Exporter-product-year FE	x			x	x			x
Importer-product-year FE		x		x		x		x
Exporter-importer-year FE			x	x			x	x
Public procurement sub-sample	x	x	x	x				
State subsidy sub-sample					x	x	x	x
Observations	3,168,108	3,273,348	3,272,546	3,162,776	68,098	134,569	133,255	64,154
R^2	0.9816	0.7901	0.1298	0.9982	0.7586	0.7956	0.2265	0.9790