The costs of trade protectionism: evidence from Spanish firms and non-tariff measures

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A fall in tariff rates...

Average tariffs in advanced economies and emerging market economies

(Percentages)

Source: World Bank (WDI).
Notes: Tariff rate, applied, simple mean, all products in percentages. Aggregates based on the 14 largest countries in the world (according to PPP GDP weights in 2010). AEs include the United States, Japan, Germany, France, United Kingdom, Italy and Spain. EMEs include China, India, Russia, Brazil, Indonesia, Mexico and Korea. Tariffs are three-year moving averages. Missing years have been extrapolated.
...with a rise in protectionist measures
ECB (2016) enumerates three potential causes behind the recent trade slowdown:

(1) Economic activity is moving away from trade-intensive sectors and towards less trade-intensive countries

(2) Expansion of global value chains during the 90s and the 2000s leaves small room for growth in the 2010s

(3) Rise in trade protectionism
The purpose of the paper is to evaluate the effects of trade protectionism on firm outcomes using Spanish micro-panel data.

The period of analysis is 2009-2013, following the collapse of trade and the rise in non-tariff protectionist measures.

We also investigate the effects of liberalizing non-tariff measures.
Firm data

- We use administrative data for Spanish exporting firms from Balance of Payments including exports by country at the 2-digit level according to the HS classification.

- The Balance of Payment data represents 97% of Spanish aggregate exports.

- We combine exports data with balance sheet information from the Spanish Mercantile Registry gathered by the Banco de España and SABI-AMADEUS as described in Almunia et al. (2018).

- Correlation between micro-aggregated output growth and National Accounts output growth is 0.96.
### Summary statistics from BP data.

|                   | 2009 | 2010 | 2011 | 2012 | 2013 |
|-------------------|------|------|------|------|------|
| **Number of products** |      |      |      |      |      |
| p10               | 1    | 1    | 1    | 1    | 1    |
| Mean              | 1.74 | 1.78 | 1.81 | 1.84 | 1.86 |
| Median            | 1    | 1    | 1    | 1    | 1    |
| p90               | 3    | 3    | 3    | 3    | 4    |
| **Number of destinations** |      |      |      |      |      |
| p10               | 1    | 1    | 1    | 1    | 1    |
| Mean              | 2.91 | 3.01 | 3.11 | 3.23 | 3.29 |
| Median            | 1    | 1    | 1    | 2    | 2    |
| p90               | 6    | 7    | 7    | 7    | 7    |
| **Exports (EUR thousands)** |      |      |      |      |      |
| p10               | 61   | 63   | 65   | 68   | 70   |
| Mean              | 1,734 | 1,931 | 2,070 | 2,199 | 2,256 |
| Median            | 324  | 350  | 376  | 389  | 404  |
| p90               | 4,687 | 5,200 | 5,454 | 5,726 | 5,884 |
| **Number of firms** |      |      |      |      |      |
|                  | 22,543 | 22,524 | 23,442 | 23,619 | 23,496 |
NTMs data

- We use the Global Trade Alert (GTA) Database, a CEPR Initiative (Fritz and Johannes, 2008).

- It gathers information on different types of trade interventions including tariff and non-tariff measures:
  - It contains detailed information at the 6-digit HS level including measures not officially recorded by the WTO as in the WTO IT-TIP/UN TRAINS database.
  - It also provides a brief description of each measure including the implementing and affected countries as well as the products targeted by the policy.
## NTMs by products

**Table: Most affected Spanish products by foreign NTMs**

| Product                                                                 | Total NTB | Liberalizing | Protectionist | Indeterminate |
|-------------------------------------------------------------------------|-----------|--------------|---------------|---------------|
| Articles of iron or steel.                                              | 284       | 15           | 257           | 12            |
| Iron and steel.                                                         | 270       | 10           | 240           | 20            |
| Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof. | 201       | 29           | 154           | 18            |
| Electrical machinery and equipment and parts thereof.                   | 189       | 25           | 142           | 22            |
| Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof. | 156       | 15           | 119           | 22            |
| Organic chemicals.                                                      | 86        | 4            | 72            | 10            |
| Plastics and articles thereof.                                           | 71        | 7            | 52            | 12            |
| Miscellaneous chemical products.                                         | 64        | 6            | 50            | 8             |
| Mineral fuels, mineral oils and products of their distillation; bituminous substances. | 62        | 5            | 47            | 10            |
| Inorganic chemicals; organic or inorganic compounds of precious metals. | 61        | 4            | 50            | 7             |
| Rubber and articles thereof.                                             | 54        | 6            | 41            | 7             |
| Pharmaceutical products.                                                | 52        | 5            | 41            | 6             |
| Optical, photographic, cinematographic, measuring, medical or surgical instruments. | 52        | 9            | 38            | 5             |
| Fish and crustaceans, molluscs and other aquatic invertebrates.          | 51        | 4            | 39            | 8             |
## NTMs by countries

### Table: # NTMs implemented by different countries that affect Spain.

| Country         | Total NTB | Liberalizing | Protectionist | Indeterminate |
|-----------------|-----------|--------------|---------------|---------------|
| India           | 1,000     | 138          | 762           | 100           |
| US              | 490       | 34           | 433           | 23            |
| China           | 263       | 23           | 226           | 14            |
| Brazil          | 236       | 5            | 221           | 10            |
| Russia          | 162       | 6            | 148           | 8             |
| Argentina       | 128       | -            | 114           | 14            |
| Venezuela       | 117       | 69           | 47            | 1             |
| Indonesia       | 99        | 13           | 81            | 5             |
| Turkey          | 77        | -            | 77            | 5             |
| Germany         | 50        | 1            | 49            | 6             |
| Algeria         | 47        | -            | 4             | 43            |
| Saudi Arabia    | 44        | -            | 44            | -             |
| France          | 45        | 1            | 34            | 12            |
| Kazakhstan      | 39        | -            | 39            | 2             |
| Korean Republic | 38        | 2            | 35            | 1             |
## Table: Tariff vs non-tariff measures affecting Spain.

| Year | Tariff | Protectionist | Liberalizing | Indeterminate | Non-tariff | Protectionist | Liberalizing | Indeterminate |
|------|--------|---------------|--------------|---------------|------------|---------------|--------------|---------------|
| 2008 | 5      | 3             | 2            | -             | 157        | 140           | 1            | 16            |
| 2009 | 299    | 82            | 201          | 16            | 578        | 519           | 26           | 33            |
| 2010 | 385    | 77            | 293          | 15            | 611        | 493           | 55           | 63            |
| 2011 | 372    | 83            | 269          | 20            | 522        | 418           | 68           | 36            |
| 2012 | 432    | 174           | 257          | 1             | 618        | 589           | 17           | 12            |
| 2013 | 327    | 123           | 198          | 6             | 869        | 619           | 154          | 96            |
| Total| 1820   | 542           | 1220         | 58            | 3355       | 2778          | 321          | 256           |
Econometric model

Diff-in-diff strategy where the baseline specification is:

\[ \Delta \ln X_{ipd,t} = \beta NTM_{pd,t-1} + \text{Fixed Effects} + \epsilon_{ipd,t} \]  

- \( X \) refers to export volume of product \( p \) to country \( d \) from firm \( i \) in year \( t \).
- \( NTM_{pd,t-1} \) is a dummy variable that takes the value 1 if there is at least one non-tariff measure affecting product \( p \) and country \( d \) in year \( t - 1 \).
- The measure can be either protectionist (\( NTM^{ PROT}_{pd,t-1} \)) or liberalizing (\( NTM^{ LIBE}_{pd,t-1} \)).
- Finally, different sets of Fixed Effects are included in the specifications in order to enhance identification:
  1. Firm-country-product fixed effects to exploit time variation
  2. Year-firm-product fixed effects to exploit variation across countries
  3. Year-firm-country fixed effects to exploit variation across products
Baseline estimates at the firm-product-destination level

Protectionist NTMs

Table: Effect of protectionist non-tariff measures on export growth.

|                  | (1)     | (2)     | (3)     | (4)     | (5)     | (6)     | (7)     | (8)     |
|------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| $NTM_{prot}^{pd,t-1}$ | -0.048*** | -0.048*** | -0.047*** | -0.025*** | -0.031*** | -0.024*** | -0.003 | -0.014 |
| (s.e.)           | (0.017) | (0.012) | (0.013) | (0.007) | (0.007) | (0.007) | (0.046) | (0.010) |
| R2               | 0.24    | 0.24    | 0.11    | 0.22    | 0.29    | 0.22    | 0.43    | 0.22    |
| # obs            | 132,381 | 146,736 | 165,245 | 148,320 | 129,807 | 148,313 | 43,855  | 148,253 |
| # firms          | 12,564  | 10,327  | 14,516  | 10,439  | 8,771   | 10,438  | 5,170   | 10,438  |
| # countries      | 187     | 188     | 189     | 196     | 196     | 196     | 145     | 184     |
| # products       | 118     | 118     | 118     | 118     | 117     | 117     | 118     | 118     |

Fixed effects:
- Firm × country × product: YES NO NO NO NO NO NO NO
- Firm × year: NO YES NO YES NO YES NO YES
- Firm: NO NO YES NO NO NO NO NO
- Year: YES NO YES NO NO NO NO NO
- Product × country: NO YES YES NO NO NO YES NO
- Product: NO NO NO YES NO NO YES YES
- Country: NO NO NO YES YES YES NO NO
- Product × year: NO NO NO NO YES NO NO NO
- Country × year: NO NO NO NO NO NO NO YES
- Firm × product × year: NO NO NO NO YES NO NO NO
- Firm × country × year: NO NO NO NO NO NO YES NO

Notes. Dependent variable is export growth at the firm-country-product level ($\Delta \ln X_{ipd,t}$). Sample covers 2009-2013. Standard errors are clustered at the product-destination level.
Baseline estimates at the firm-product-destination level

Liberalizing NTMs

|                     | (1)    | (2)    | (3)    | (4)    | (5)    | (6)    | (7)    | (8)    |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| NTM_{LIBE}^{p,t−1}  | 0.030  | 0.009  | 0.026  | 0.009  | 0.001  | 0.010  | 0.053  | 0.001  |
| (s.e.)              | (0.031)| (0.030)| (0.032)| (0.023)| (0.020)| (0.022)| (0.040)| (0.028)|
| R2                  | 0.24   | 0.24   | 0.11   | 0.22   | 0.29   | 0.22   | 0.43   | 0.22   |

# obs                | 132,381| 146,736| 165,245| 148,320| 129,807| 148,313| 43,855 | 148,253|
# firms              | 12,564 | 10,327 | 14,516 | 10,439 | 8,771  | 10,438 | 5,170  | 10,438 |
# countries          | 187    | 188    | 189    | 196    | 196    | 196    | 145    | 184    |
# products           | 118    | 118    | 118    | 118    | 117    | 117    | 118    | 118    |

Fixed effects:
- Firm × country × product YES NO NO NO NO NO NO NO
- Firm × year NO YES NO YES NO YES NO YES
- Firm NO NO YES NO NO NO NO NO
- Year YES NO YES NO NO NO NO NO
- Product × country NO YES YES NO NO NO NO NO
- Product NO NO NO YES NO NO YES YES
- Country NO NO NO YES YES YES YES NO
- Product × year NO NO NO NO NO YES NO NO
- Country × year NO NO NO NO NO NO NO YES
- Firm × product × year NO NO NO NO YES NO NO NO
- Firm × country × year NO NO NO NO NO YES NO NO

Notes. Dependent variable is export growth at the firm-country-product level (Δ ln X_{ipd,t}). Sample covers 2009-2013. Standard errors are clustered at the product-destination level.
The role of tariff changes

### Table: Effect of non-tariff measures and tariffs on export growth.

|                      | (1)    | (2)    | (3)    | (4)    | (5)    | (6)    | (7)    | (8)    |
|----------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| $NTM_{pdt-1}^{ROT}$  | -0.057*** | -0.058*** | -0.057*** | -0.030*** | -0.036*** | -0.030*** | -0.022 | -0.017 |
| (s.e.)               | (0.023) | (0.017) | (0.019) | (0.011) | (0.010) | (0.010) | (0.047) | (0.013) |
| $NTM_{pdt-1}^{LIBE}$ | 0.023   | 0.024   | 0.024   | 0.006   | -0.011  | 0.005   | 0.032   | -0.033  |
| (s.e.)               | (0.034) | (0.040) | (0.038) | (0.031) | (0.034) | (0.032) | (0.061) | (0.028) |
| Tariff increase$_{pdt-1}$ | -0.017 | -0.044 | -0.029 | -0.019 | -0.031 | -0.021 | 0.067 | 0.002 |
| (s.e.)               | (0.034) | (0.045) | (0.035) | (0.022) | (0.021) | (0.022) | (0.055) | (0.019) |
| Tariff cut$_{pdt-1}$  | -0.013 | -0.012 | -0.011 | -0.0005 | 0.002 | 0.001 | -0.012 | -0.005 |
| (s.e.)               | (0.031) | (0.024) | (0.021) | (0.018) | (0.017) | (0.019) | (0.039) | (0.017) |
| R2                   | 0.24   | 0.24   | 0.11   | 0.22   | 0.29   | 0.22   | 0.44   | 0.22   |
| # obs                | 132,381 | 146,736 | 165,245 | 148,320 | 129,807 | 148,313 | 43,855 | 148,253 |
| # firms              | 12,564  | 10,327  | 14,516  | 10,439  | 8,771   | 5,170   | 2,401  | 10,438  |
| # countries          | 187     | 188     | 189     | 196     | 196     | 145     | 184    |
| # products           | 118     | 118     | 118     | 118     | 117     | 117     | 118    | 118     |

Fixed effects:
- Firm × country × product
  - YES
  - NO
  - NO
  - NO
  - NO
  - NO
  - NO
  - NO
- Firm × year
  - NO
  - YES
  - NO
  - YES
  - NO
  - YES
  - NO
  - YES
- Firm
  - NO
  - NO
  - YES
  - NO
  - NO
  - NO
  - NO
  - NO
- Year
  - YES
  - NO
  - YES
  - NO
  - NO
  - NO
  - NO
  - NO
- Product × country
  - NO
  - YES
  - YES
  - NO
  - NO
  - NO
  - NO
  - NO
- Product
  - NO
  - NO
  - NO
  - YES
  - NO
  - NO
  - YES
  - YES
- Country
  - NO
  - NO
  - NO
  - YES
  - YES
  - YES
  - NO
  - NO
- Product × year
  - NO
  - NO
  - NO
  - YES
  - YES
  - NO
  - NO
  - NO
- Country × year
  - NO
  - NO
  - NO
  - NO
  - NO
  - NO
  - NO
  - NO
- Firm × product × year
  - NO
  - NO
  - NO
  - YES
  - NO
  - NO
  - NO
  - NO
- Firm × country × year
  - NO
  - NO
  - NO
  - NO
  - NO
  - NO
  - NO
  - YES

Notes. Dependent variable is export growth at the firm-country-product level ($\Delta \ln X_{ipd,t}$). Sample covers 2009-2013. Standard errors are clustered at the product-destination level.
Firm level regressions

Specification

\[
\Delta \ln X_{i,t} = \beta_F NTM_{i,t-1} + \theta Z_{i,t-1} + \eta_i + \delta_t + \nu_{i,t} \tag{2}
\]

where \( \Delta \ln X_{i,t} \) refers to overall export (output, employment, TFP) growth of firm \( t \) in year \( t \). \( Z_{i,t-1} \) refers to a set of firm controls, a set of firm and year fixed effects is also included (\( \eta_i \) and \( \delta_t \)). \( NTM_{i,t-1} \) is the average exposure of firm \( i \) to NTMs:

\[
NTM_{i,t} = \sum_{pd} \frac{X_{ipd,t-1}}{X_{i,t-1}} NTM_{pd,t-1} \tag{3}
\]

- TFP is estimated using Levinsohn-Petrin (2003)
- Average \( NTM_{i,t} \) is 7.2% with a 0 median and 22.2% 90th percentile.
Firm level regressions

Estimates

**Table:** Firm-level outcomes and non-tariff measures.

| Dep. Variable | Exports growth | Output growth | Employment growth | TFP growth |
|---------------|----------------|---------------|-------------------|------------|
|               | (1)            | (2)           | (3)               | (4)        |
| $NTM_{i,t-1}^{PROT}$ | -0.045***     | -0.045***     | -0.017***         | -0.016***  |
| (s.e.)        | (0.003)        | (0.003)       | (0.007)           | (0.006)    |
| $NTM_{i,t-1}^{LIBE}$ | 0.06          | 0.05          | 0.007             | 0.005      |
| (s.e.)        | (0.05)         | (0.05)        | (0.009)           | (0.008)    |
| Average Dep. Variable | 0.07          | 0.09          | 0.004             | 0.005      |
| R2            | 0.19           | 0.21          | 0.24              | 0.47       |
| # obs         | 81,192         | 59,477        | 61,092            | 58,485     |
| # firms       | 24,077         | 17,963        | 18,484            | 17,693     |
| Firm FE       | YES            | YES           | YES               | YES        |
| Year FE       | YES            | YES           | YES               | YES        |
| Firm Controls | YES            | NO            | YES               | NO         |

Notes. Dependent variable is export (output, employment, TFP) growth at the firm level ($\Delta \ln X_{i,t}$). Sample covers 2009-2013. Standard errors are clustered at the firm level.
Conclusions

- Non-tariff barriers (NTBs) play an important role in rising protectionism.

- We estimate large negative effects of NTBs on Spanish exports growth.

- In contrast, the estimated impact of liberalizing NTMs is not statistically significant.

- Firm outcomes such as output and TFP growth are also negatively affected by the use of NTBs.

- Our estimates suggest that the negative effects of tariffs increases may be larger in absolute value than the benefits of tariffs cuts.
A. Robustness

**Table:** Effect of protectionist and liberalizing non-tariff measures on export growth.

|                  | (1)   | (2)   | (3)   | (4)   | (5)   | (6)   | (7)   | (8)   |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| NTM$_{p}^{ROT}$  | -0.049*** | -0.046*** | -0.047*** | -0.023*** | -0.028*** | -0.023*** | -0.006 | -0.011 |
| (s.e.)           | (0.018) | (0.017) | (0.015) | (0.009) | (0.008) | (0.009) | (0.045) | (0.012) |
| NTM$_{p}^{LIBE}$ | -0.004  | -0.022  | 0.002  | -0.022  | -0.042  | -0.023  | 0.063  | -0.050  |
| (s.e.)           | (0.043) | (0.021) | (0.025) | (0.026) | (0.027) | (0.025) | (0.050) | (0.029) |
| R²               | 0.24   | 0.24   | 0.11   | 0.22   | 0.29   | 0.22   | 0.44   | 0.22   |

|                  |       |       |       |       |       |       |       |       |
| # obs            | 132,381 | 146,736 | 165,245 | 148,320 | 129,807 | 148,313 | 43,855 | 148,253 |
| # firms          | 12,564 | 10,327 | 14,516 | 10,439 | 8,771 | 10,438 | 5,170 | 10,438 |
| # countries      | 187    | 188    | 189    | 196    | 196   | 196    | 106   | 184    |
| # products       | 118    | 118    | 118    | 118    | 117   | 117    | 116   | 118    |

**Fixed effects:**
- Firm × country × product: YES NO NO NO NO NO NO NO
- Firm × year: NO YES NO YES NO YES NO YES
- Firm: NO NO YES NO NO NO NO NO
- Year: YES NO YES NO NO NO NO NO
- Product × country: NO YES YES NO NO NO NO NO
- Product: NO NO NO YES NO NO YES YES
- Country: NO NO NO YES YES YES NO NO
- Product × year: NO NO NO NO YES NO NO NO
- Country × year: NO NO NO NO NO NO NO YES
- Firm × product × year: NO NO NO NO NO NO YES NO
- Firm × country × year: NO NO NO NO NO NO NO YES

**Notes.** Dependent variable is export growth at the firm-country-product level ($\Delta \ln X_{ipd,t}$). Sample covers 2009-2013. Standard errors are clustered at the product-destination level.
### A. Robustness

**Table:** Effect of protectionist non-tariff measures and tariffs on export growth.

|                | (1)            | (2)            | (3)            | (4)            | (5)            | (6)            | (7)            | (8)            |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| $NTB_{pd,t-1}$ | -0.047**       | -0.047***      | -0.046**       | -0.025***      | -0.032***      | -0.025***      | 0.0004         | -0.014         |
| (s.e.)         | (0.020)        | (0.013)        | (0.015)        | (0.008)        | (0.007)        | (0.008)        | (0.048)        | (0.010)        |
| $Tariff_{pd,t-1}$ | -0.059**       | -0.010         | -0.041**       | 0.0004         | 0.001          | 0.003          | -0.083**       | 0.020          |
| (s.e.)         | (0.012)        | (0.018)        | (0.013)        | (0.016)        | (0.016)        | (0.016)        | (0.042)        | (0.020)        |
| R2             | 0.24           | 0.24           | 0.11           | 0.22           | 0.29           | 0.22           | 0.43           | 0.22           |

| # obs         | 132,381        | 146,736        | 165,245        | 148,320        | 129,807        | 148,313        | 43,855         | 148,253        |
| # firms       | 12,564         | 10,327         | 14,516         | 10,439         | 8,771          | 10,438         | 5,170          | 10,438         |
| # countries   | 187            | 188            | 189            | 196            | 196            | 196            | 145            | 184            |
| # products    | 118            | 118            | 118            | 118            | 117            | 117            | 118            | 118            |

Fixed effects:
- Firm $\times$ country $\times$ product
  - YES NO NO NO NO NO NO NO
- Firm $\times$ year
  - NO YES NO YES NO YES NO YES
- Firm
  - NO NO YES NO NO NO NO NO
- Year
  - YES NO YES NO NO NO NO NO
- Product $\times$ country
  - NO YES YES NO NO NO NO NO
- Product
  - NO NO NO YES NO NO YES YES
- Country
  - NO NO NO YES YES YES YES NO
- Product $\times$ year
  - NO NO NO NO NO YES NO NO
- Country $\times$ year
  - NO NO NO NO NO NO NO YES
- Firm $\times$ product $\times$ year
  - NO NO NO NO NO YES NO NO
- Firm $\times$ country $\times$ year
  - NO NO NO NO NO NO YES NO

**Notes.** Dependent variable is export growth at the firm-country-product level ($\Delta \ln X_{ipd,t}$). Sample covers 2009-2013. Standard errors are clustered at the product-destination level.
## A. Robustness

**Table**: Effect of liberalizing non-tariff measures and tariffs on export growth.

|               | (1)   | (2)   | (3)   | (4)   | (5)   | (6)   | (7)   | (8)   |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|
| $NTB_{pd,t-1}$ | 0.029 | 0.008 | 0.025 | 0.009 | 0.001 | 0.010 | 0.050 | 0.0005 |
| (s.e.)        | (0.031)| (0.030)| (0.031)| (0.022)| (0.020)| (0.022)| (0.036)| (0.027) |
| $Tariff_{pd,t-1}$ | -0.062*** | -0.014 | -0.044* | -0.003 | -0.004 | -0.0003 | -0.080* | -0.022 |
| (s.e.)        | (0.008) | (0.016) | (0.016) | (0.015) | (0.016) | (0.016) | (0.046) | (0.020) |
| R2            | 0.24  | 0.24  | 0.11  | 0.22  | 0.29  | 0.22  | 0.43  | 0.22  |
| # obs         | 132,381 | 146,736 | 165,245 | 148,320 | 129,807 | 148,313 | 43,855 | 148,253 |
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| # countries   | 187    | 188    | 189    | 196    | 196    | 196    | 145    | 184    |
| # products    | 118    | 118    | 118    | 118    | 117    | 117    | 118    | 118    |
| Fixed effects: |       |       |       |       |       |       |       |       |
| Firm × country × product | YES | NO | NO | NO | NO | NO | NO | NO |
| Firm × year | NO | YES | NO | YES | NO | YES | NO | YES |
| Firm | NO | NO | YES | NO | NO | NO | NO | NO |
| Year | YES | NO | YES | NO | NO | NO | NO | NO |
| Product × country | NO | YES | YES | NO | NO | NO | NO | NO |
| Product | NO | NO | NO | YES | NO | YES | YES | NO |
| Country | NO | NO | NO | YES | YES | YES | NO | NO |
| Product × year | NO | NO | NO | NO | NO | NO | NO | NO |
| Country × year | NO | NO | NO | NO | NO | NO | NO | YES |
| Firm × product × year | NO | NO | NO | NO | YES | NO | NO | NO |
| Firm × country × year | NO | NO | NO | NO | NO | NO | YES | NO |

**Notes.** Dependent variable is export growth at the firm-country-product level ($\Delta \ln X_{ipd,t}$). Sample covers 2009-2013. Standard errors are clustered at the product-destination level.
### B. Regressions by UN MAST type

**Table:** Effect of protectionist non-tariff measures on export growth by UN MAST category.

|                | (1)   | (2)   | (3)   |
|----------------|-------|-------|-------|
| \( NTM_{pd,t-1}^{PROT} \) (Category A) | -0.089*** | 0.131** | -0.348 |
| (s.e)          | (0.044) | (0.066) | (0.369) |
| \( NTM_{pd,t-1}^{PROT} \) (Category B) | -0.081 | -0.095** | 0.183 |
| (s.e)          | (0.069) | (0.040) | (0.211) |
| \( NTM_{pd,t-1}^{PROT} \) (Category D) | 0.086 | 0.057 | 0.003 |
| (s.e)          | (0.096) | (0.060) | (0.119) |
| \( NTM_{pd,t-1}^{PROT} \) (Category F) | 0.266*** | 0.255** | -0.072 |
| (s.e)          | (0.088) | (0.081) | (0.249) |
| \( NTM_{pd,t-1}^{PROT} \) (Category E) | 0.028 | -0.017 | 0.057 |
| (s.e)          | (0.094) | (0.037) | (0.100) |
| \( NTM_{pd,t-1}^{PROT} \) (Category G) | -0.272*** | -0.289*** | -1.379*** |
| (s.e)          | (0.037) | (0.081) | (0.223) |

**Fixed effects:**
- Firm × country × product: YES NO NO
- Year: YES NO NO
- Product: NO NO YES
- Country: NO YES NO
- Firm × product × year: NO YES NO
- Firm × country × year: NO NO YES
### B. Regressions by UN MAST type (cont.)

**Table:** Effect of protectionist non-tariff measures on export growth by UN MAST category.

| NTM<sub>PROT</sub><sup>pd,t−1</sup> (Category I) | (1)  | (2)  | (3)  |
|-----------------------------------------------|------|------|------|
| NTM<sub>PROT</sub><sup>pd,t−1</sup> (Category I) | -0.013 | 0.018 | 0.057 |
| s.e                                           | (0.061) | (0.048) | (0.049) |
| NTM<sub>PROT</sub><sup>pd,t−1</sup> (Category L) | -0.031 | -0.017 | -0.029 |
| s.e                                           | (0.031) | (0.019) | (0.058) |
| NTM<sub>PROT</sub><sup>pd,t−1</sup> (Category M) | -0.146*** | -0.073*** | -0.023 |
| s.e                                           | (0.052) | (0.021) | (0.102) |
| NTM<sub>PROT</sub><sup>pd,t−1</sup> (Category P) | -0.017 | -0.035 | 0.080 |
| s.e                                           | (0.040) | (0.032) | (0.047) |
| NTM<sub>PROT</sub><sup>pd,t−1</sup> (Category X) | 0.019 | -0.009 | 0.061 |
| s.e                                           | (0.041) | (0.026) | (0.065) |
| R2                                            | 0.24  | 0.29  |      |

| # obs | 132,381 | 129,807 | 43,855 |
| # firms | 12,564 | 8,771 | 5,170 |
| # countries | 187 | 196 | 145 |
| # products | 118 | 117 | 118 |
### C. Cumulative effects

**Table: Cumulative effect of non-tariff measures on export growth.**

| Cumulative growth | Firm-country-product FE | Firm-product-year FE | Firm-country-year FE |
|-------------------|-------------------------|----------------------|----------------------|
|                   | (1) 1-year | (2) 2-year | (3) 3-year | (4) 1-year | (5) 2-year | (6) 3-year | (7) 1-year | (8) 2-year | (9) 3-year |
| $NTM_{pd,t-1}^{PROT}$ | -0.051*** | -0.074*** | 0.007 | -0.048*** | -0.067*** | 0.009 | 0.009 | 0.016 | 0.052 |
| (s.e.)            | (0.014) | (0.030) | (0.006) | (0.012) | (0.017) | (0.026) | (0.044) | (0.070) | (0.075) |
| $NTM_{pd,t-1}^{LIBE}$ | 0.043 | 0.055* | 0.070*** | 0.013 | 0.011 | 0.025 | 0.079 | 0.048 | -0.053 |
| (s.e.)            | (0.032) | (0.028) | (0.023) | (0.027) | (0.057) | (0.051) | (0.129) | (0.074) | (0.037) |
| $R^2$             | 0.15 | 0.31 | 0.55 | 0.31 | 0.33 | 0.34 | 0.46 | 0.48 | 0.49 |
| # obs             | 66,824 | 63,752 | 47,046 | 50,236 | 47,865 | 35,306 | 9,512 | 8,889 | 6,511 |
| # firms           | 5,951 | 5,951 | 5,951 | 2,574 | 2,574 | 2,574 | 640 | 640 | 640 |
| # countries       | 152 | 152 | 152 | 150 | 150 | 150 | 69 | 69 | 69 |
| # products        | 113 | 113 | 113 | 101 | 101 | 101 | 100 | 100 | 100 |

**Fixed effects**

- **Firm × country × product**: YES YES YES NO NO NO NO NO NO
- **Year**: YES YES YES NO NO NO NO NO NO
- **Product**: NO NO NO NO NO NO YES YES YES
- **Country**: NO NO NO YES YES YES NO NO NO
- **Firm × product × year**: NO NO NO YES YES YES NO NO NO
- **Firm × country × year**: NO NO NO NO NO NO YES YES YES

**Notes.** Dependent variable is export growth at the firm-country-product level ($Δ \ln X_{ipd,t}$) over 1, 2, and 3 years. Sample covers 2009-2013. Standard errors are clustered at the product-destination level. Sample of permanent firm-product-destinations triplets.
D. Aggregate effects (I)

For each firm $i$ in our sample we compute the export growth one would have observed if $NTM_{i,t-1} = 0$:

$$\Delta \ln X_{i,t} = \Delta \ln X_{i,t} - \hat{\beta}_F NTM_{i,t-1}$$

(4)

Then simply aggregate across all firms in our sample using firm-specific export shares ($\phi_{i,t}$) as weights:

$$\Delta \ln X_t = \sum_i \phi_{i,t} \Delta \ln X_{i,t}.$$  

(5)
D. Aggregate effects (II)

Figure 1: Aggregate export growth in the absence of NTBs.

*Notes.* Actual refers to annual nominal growth of goods exports. Counterfactual refers to aggregate growth in the absence of NTBs as computed in equation (6).